

# THE FUTURE OF FRACKING IN ENGLAND: A COMPARATIVE LEGAL ANALYSIS

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## TABLE OF CONTENTS

I.	INTRODUCTION .....	226
II.	BACKGROUND.....	228
	<i>A. England as an Example of Effective Regulation</i> .....	229
	<i>B. Fracking Basics</i> .....	230
	<i>C. Fracking in the United States and England</i> .....	233
III.	A FRAMEWORK FOR LEGAL ANALYSIS .....	234
IV.	ANALYSIS.....	236
	<i>A. The United States' and England's Regulatory Schemes</i> .....	236
	<i>B. The Dissemination of Information in England and the</i> <i>United States</i> .....	239
	<i>C. The Power of Well-Informed Local Planning Authorities</i> <i>in England</i> .....	239
	<i>D. The Prospect of Increased Bargaining Power</i> .....	241
	<i>E. Landowners and Localities as Gatekeepers</i> .....	242
V.	CONCLUSION.....	246

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## I. INTRODUCTION

On August 19, 2013, the Sussex Police arrested dozens of individuals for taking part in a protest of a natural gas drilling well in Balcombe, United Kingdom.<sup>1</sup> Among the protestors was Caroline Lucas, a member of parliament from the U.K.'s Green Party.<sup>2</sup> Protesting the possible use of a controversial drilling process called hydraulic fracturing, Lucas attributed her participation to her desire to give a voice to the concerns of the ordinary British public, which she said were being trumped by the interests of big business in pursuing hydraulic fracturing in England.<sup>3</sup> Due to a variety of interrelated environmental and human health risks often attributed to hydraulic fracturing, the process has become a hotly debated topic across the U.K. and in many other countries.

Almost two months after her arrest, Lucas wrote an article explaining why she was willing to risk arrest.<sup>4</sup> According to Lucas, pursuing hydraulic fracturing in England would not lower energy prices.<sup>5</sup> She pointed to multiple studies that show energy prices rising in England regardless of the supply of natural gas from hydraulic fracturing.<sup>6</sup> She noted that the effect of hydraulic fracturing on energy prices would be less significant than energy efficiency measures and renewable energy development.<sup>7</sup> According to Lucas, alternatives to hydraulic fracturing are needed to “get off the collision course we’re on with climate catastrophe.”<sup>8</sup> Hydraulic fracturing raises many concerns for the English communities and individual landowners that may be faced with deciding whether to allow hydraulic fracturing wells to operate near their homes or on their property. Beyond global climate change and highly publicized protests, hydraulic fracturing implicates numerous other issues of concern for English communities and individual landowners in deciding whether to allow wells to operate near their homes or on their property.

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<sup>1</sup> Fiona Harvey & Peter Walker, *Caroline Lucas Among Dozens Arrested in Balcombe Anti-fracking Protest*, THE GUARDIAN (Aug. 19, 2013, 11:59 AM), <http://www.theguardian.com/environment/2013/aug/19/caroline-lucas-arrest-balcombe-anti-fracking>.

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

<sup>3</sup> *Id.*

<sup>4</sup> Caroline Lucas, *I Risked Arrest at Balcombe to Send the Coalition a Message on Climate Change*, THE GUARDIAN (Oct. 15, 2013), <http://www.theguardian.com/commentisfree/2013/oct/16/i-risked-arrest-to-send-a-message>.

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

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

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

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

This Note examines these concerns faced by English communities and landowners by examining how similarly situated communities and landowners in the United States, where hydraulic fracturing is widespread, responded to the concerns.<sup>9</sup> While useful, this comparison should not overshadow the fact that the applicable American regulations and laws created an environment conducive to the unrestrained growth of hydraulic fracturing.

Some have argued that this predisposition in the U.S. is a consequence of inadequacies in the regulatory framework that cause communities and landowners to suffer from informational asymmetries when negotiating leases with drilling companies.<sup>10</sup> Such informational deficits may lead to inefficient bargaining.<sup>11</sup> These problems in the formation of lease agreements seriously undermine the presumption of rational actors freely bargaining in their own best interest as a justification for the expansion of hydraulic fracturing in the U.S. But for these problems in establishing leases, the traditional understanding is that competitive markets will deliver an efficient resource allocation, and the success of American hydraulic fracturing results from markets moving toward societally beneficial outcomes.

Given these concerns about the system of establishing leases in the U.S., this Note asks an important question: whether or not the English regulatory framework and mineral rights system can better address the problems of informational asymmetries and unequal bargaining power? This Note concludes that the English are better equipped to face the issues of hydraulic fracturing and, consequently, will likely not experience a rapid expansion of the practice.

It may seem odd that this Note focuses on the country of England rather than the U.K. The power to regulate fracking has, by default, traditionally belonged to the U.K. Government. However, the licensing power for fracking is planned to be devolved to the Scottish and Welsh Governments.<sup>12</sup>

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<sup>9</sup> *Fracking Across the United State*, EARTHJUSTICE (May 9, 2011), <http://earthjustice.org/features/campaigns/fracking-across-the-united-states>.

<sup>10</sup> Jared A. Fish, Note, *The Rise of Hydraulic Fracturing: A Behavioral Analysis of Landowner Decision-Making*, 19 BUFF. ENVTL. L.J. 219 (2012). *But see* Nathan Richardson, *The UK, Fracking, and Mineral Rights*, RESOURCES FOR THE FUTURE (Aug. 28, 2013), <http://common-resources.org/2013/the-uk-fracking-and-mineral-rights/> (noting the growing potential for shale gas in Europe due to increase in American natural gas reserves from shale resources).

<sup>11</sup> Fish, *supra* note 10, at 224.

<sup>12</sup> *UK Ministers Halt Scottish Fracking Ahead of Holyrood Move*, BBC NEWS (Feb. 12, 2015), <http://www.bbc.com/news/uk-scotland-scotland-business-31644137>; Rowena Mason, *Wales to Get Power to Ban Fracking and Lower Voting Age to 16*, THE GUARDIAN (Dec. 26,

In anticipation of devolution, both Governments have placed a moratorium on planning approval for fracking.<sup>13</sup> The devolution of power to the individual countries of the U.K. means that their regulation of fracking may diverge in the future. Moreover, because England has the large majority of shale gas deposits in the U.K., it is the country in which fracking is probably most viable in the future and most closely contested at present.<sup>14</sup> However, to the extent that regulation of fracking remains consistent across the U.K. the principles discussed in this Note are applicable to the U.K. generally.

## II. BACKGROUND

The rapid expansion of hydraulic fracturing (commonly known as “fracking”) in the U.S. has generated a great deal of interest across Europe.<sup>15</sup> The prospect of tapping a previously inaccessible domestic energy resource has many public figures around the world advocating for the implementation of hydraulic fracturing in their own countries. These proponents generally cite the possibility of reduced energy costs, increased energy independence, and overall economic growth as benefits of pursuing fracturing.<sup>16</sup> In

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2015, 19:01 EST), <http://www.theguardian.com/uk-news-2015/feb27/wales-get-power-ban-fracking-lower-voting-age-16>.

<sup>13</sup> Libby Brooks, *Scotland Announces Moratorium on Fracking for Shale Gas*, THE GUARDIAN (Jan. 28, 2015, 11:42 EST), <http://www.theguardian.com/environment/2015/jan/28/scotland-announces-moratorium-on-fracking-for-shale-gas>; David Deans, *Is this the End of Fracking in Wales? Welsh Government Moves to Impose a ‘Moratorium’ on all of the planning bids*, WALES ONLINE (Feb. 13, 2015, 10:05), <http://www.walesonline.co.uk/news/wales-news/end-fracking-wales-welsh-government-8638802>.

<sup>14</sup> Lewis Smith, *Britain’s New Eldorado: Forget North Sea Oil, New Map Shows Massive Gas Deposits Under UK that Could Keep us Self Sufficient for Years*, DAILY MAIL (June 3, 2013, 9:49 EST), <http://www.dailymail.co.uk/sciencetech/article-2335163/Britains-new-Eldorado-Map-shows-massive-gas-deposits-self-sufficient-years.html>; Fiona Harvey, Adam Vaughan & Severin Carrell, *Scotland Shale Gas and Oil Reserves ‘Modest’ Compared with England*, THE GUARDIAN (June 30, 2014, 11:16 EDT), <http://www.theguardian.com/environment/2014/jun/30/Scotland-shale-gas-reserves-a-fraction-of-northernenglands>.

<sup>15</sup> See DEP’T OF ENERGY AND CLIMATE CHANGE, THE UNCONVENTIONAL HYDROCARBON RESOURCES OF BRITAIN’S ONSHORE BASINS – SHALE GAS I (2012); Justin P. Atkins, *Hydraulic Fracturing in Poland: A Regulatory Analysis*, 12 WASH. U. GLOBAL STUD. L. REV. 339, 339–40 (discussing Poland’s interest in fracking and analyzing the Polish regulatory framework).

<sup>16</sup> *Fracking Should Get Public Support Says David Cameron*, BBC NEWS (Aug. 12, 2013, 5:12 PM), <http://www.bbc.co.uk/news/uk-politics-23662583>; Monika Scisłowska, *Poland’s Proposed Shale Gas Law to Be Adopted in 2013*, HUFFINGTON POST (Jan. 1, 2013, 6:42 EDT), [http://www.huffingtonpost.com/2013/01/11/poland-shale-gas-law-regulation-fracking\\_n\\_2454572.html](http://www.huffingtonpost.com/2013/01/11/poland-shale-gas-law-regulation-fracking_n_2454572.html).

particular, European nations are currently experiencing impassioned national debates over whether to embrace or prohibit fracturing.<sup>17</sup>

#### A. England as an Example of Effective Regulation

In the United Kingdom (U.K.) the prospect of fracking in order to access previously untapped natural gas reserves has generated a great deal of support and equally strong criticism.<sup>18</sup> For example, the British Prime Minister, David Cameron, wants his nation to embrace fracturing,<sup>19</sup> while many English citizens protest fracturing in the streets.<sup>20</sup> English supporters of fracking point to promising estimates of the shale gas reserves in Northern England<sup>21</sup> as evidence of the magnitude of the possible economic benefit to the nation.<sup>22</sup>

A major focus of the English resistance to fracking is Balcombe,<sup>23</sup> where Cuadrilla Resources Ltd. has been undertaking exploratory drilling.<sup>24</sup> At Balcombe, many protestors have been camping and picketing near the gates

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<sup>17</sup> Kate Galbraith, *Some in Europe are Rethinking Opposition to Fracking*, N.Y. TIMES, May 29, 2013, available at [http://www.nytimes.com/2013/05/30/business/energy-environment/30iht-green30.html?\\_r=0](http://www.nytimes.com/2013/05/30/business/energy-environment/30iht-green30.html?_r=0).

<sup>18</sup> See Fiona Harvey, *Sir David King Warns Against Fracking*, THE GUARDIAN (Sept. 16, 2013, 12:42 EDT), <http://www.theguardian.com/environment/2013/sep/16/david-king-fracking-shale-gas> (discussing the views of Sir David King, a former chief scientific advisor to the government, who has spoken out about the environmental impacts of fracking, which he believes are too great for the U.K. to pursue fracking).

<sup>19</sup> Matthew Spencer, *David Cameron has Become Fracking's Biggest Cheerleader*, THE GUARDIAN (Aug. 21, 2013, 9:32 EDT), <http://www.theguardian.com/environment/2013/aug/21/david-cameron-fracking-green-investors>.

<sup>20</sup> Harvey & Walker, *supra* note 1.

<sup>21</sup> EDWARD WHITE ET AL., HOUSE OF COMMONS LIBRARY, SHALE GAS AND FRACKING, 2013, SN/SC/6073, at 8, available at <http://www.parliament.uk/briefing-papers/sn06073.pdf>; Sarah Young & John McGarrity, *Britain Doubles North England Shale Gas Estimate*, REUTERS (June 27, 2013, 1:46 PM), <http://uk.reuters.com/article/2013/06/27/uk-britain-shale-resources-idUKBRE95Q0CD20130627>.

<sup>22</sup> Chris Faulkner, *Why the UK Should Embrace Fracking*, THE GUARDIAN (Dec. 19, 2013, 6:18 EST), <http://www.theguardian.com/environment/2013/dec/19/uk-fracking-shale-gas>.

<sup>23</sup> Fiona Harvey, *Fracking Protestors can Remain at Balcombe until October, Court Rules*, THE GUARDIAN (Sept. 16, 2013, 9:32 EDT), <http://www.theguardian.com/environment/2013/sep/16/fracking-protesters-balcombe-court>; Joe Shute, *Fracking Protest at Balcombe: 'People Just Seem to be Looking for a Party'*, TELEGRAPH (Aug. 20, 2013, 8:04 PM), <http://www.telegraph.co.uk/earth/energy/10254924/Fracking-protest-at-Balcombe-People-just-seem-to-be-looking-for-a-party.html>.

<sup>24</sup> *Balcombe*, CUADRILLA RESOURCES, <http://www.cuadrillaresources.com/our-sites/locations/balcombe/> (last visited Sept. 21, 2014).

of the drilling site.<sup>25</sup> The protest activities have led to multiple arrests<sup>26</sup> and litigation over whether or not the protestors can be removed from their camp.<sup>27</sup> Based off of the positive results from its initial test drilling, Cuadrilla intends to obtain permission to continue test drilling in Balcombe.<sup>28</sup>

### *B. Fracking Basics*

In order to understand the contentious debates surrounding fracturing, it is necessary to explain in basic terms how the process works and why it is used. Hydraulic fracturing, or “fracking,” is a process used to extract oil and natural gas from subterranean shale formations.<sup>29</sup> The idea behind fracking dates back as far as the 1930s; however, only in the 1980s and 1990s did improvements in drilling technology make fracking as productive and economically attractive as it is today.<sup>30</sup>

Directional drilling, which allows for horizontal drilling, was arguably the most important of these technological advances.<sup>31</sup> The ability to drill directionally enables drilling rig operators to exploit the most carbon-rich regions at the points at which the shale is most susceptible to fracking.<sup>32</sup> Methane and, to a lesser extent, other gases are then extracted.<sup>33</sup> Because shale is relatively impermeable, traditional drilling methods fail to capture the Methane gas.<sup>34</sup>

Fracking works by injecting a high-pressure mixture of water, sand, and chemicals into underground shale formations in order to break the shale and

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<sup>25</sup> *Balcombe Camp Eviction: Protestors Arrested*, BBC NEWS (Sept. 10, 2013, 8:04 PM), <http://www.bbc.co.uk/news/uk-england-sussex-24022404>.

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

<sup>27</sup> Harvey, *supra* note 23 (the protestors challenged an eviction notice by the local council, and a court ruled that the protestors can stay until early October 2013).

<sup>28</sup> *Anti-fracking Protestors Pull Out of Balcombe Camp*, THE GUARDIAN, Sept. 30, 2013, <http://www.theguardian.com/environment/2013/sep/30/anti-fracking-protesters-balcombe-camp>.

<sup>29</sup> David Shukman, *What is Fracking and Why is it Controversial?*, BBC NEWS (June 27, 2013), <http://www.bbc.com/news/uk-14432401>; THE ROYAL SOC<sup>Y</sup>, SHALE GAS EXTRACTION IN THE UK: A REVIEW OF HYDRAULIC FRACTURING 9 (2012), *available* at <http://royalsociety.org/policy/projects/shale-gas/-extraction/report/>.

<sup>30</sup> *Id.* at 11.

<sup>31</sup> *Id.* at 12.

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

<sup>33</sup> *Id.* at 9.

<sup>34</sup> *Id.*

release trapped natural gas.<sup>35</sup> The process gets its name from the fractures it creates in the shale. The sand in the injected mixture props the fractures open and allows natural gas to pass through.<sup>36</sup>

Fracking has become controversial because of its connection to a variety of environmental concerns.<sup>37</sup> One main concern is that the chemicals injected into the shale formations, some of which may be carcinogenic, can enter the ground water.<sup>38</sup> Additionally, fracking may lead to contamination of drinking water with methane.<sup>39</sup> The issue of methane in drinking water has led to reports of flammable tap water in homes near fracking sites.<sup>40</sup>

Fracking also raises the issue of whether the fracking fluid producers must disclose the specific chemical ingredients in that fluid. In the U.S., there is no federal requirement to disclose ingredients.<sup>41</sup> However, in the U.K., an environmental regulator can demand disclosure of the ingredients.<sup>42</sup>

The producers argue that the chemical ingredients should be protected as trade secrets in order to protect the value of the time, expense, and research invested in developing their particular chemical mix.<sup>43</sup> On the other hand, many concerned environmental and public health groups are calling for legislation to require the disclosure of the chemicals.<sup>44</sup> This debate has led to the public spectacle of fracking supporters drinking fracking fluid in order to demonstrate the fluid's apparent harmlessness.<sup>45</sup>

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<sup>35</sup> *Id.*; DEP'T OF ENERGY AND CLIMATE CHANGE, THE UNCONVENTIONAL HYDROCARBON RESOURCES OF BRITAIN'S ONSHORE BASINS – SHALE GAS 1–2 (2013), available at [https://www.org.decc.gov.uk/UKpromote/onshore\\_paper/UK\\_onshore\\_shalegas.pdf](https://www.org.decc.gov.uk/UKpromote/onshore_paper/UK_onshore_shalegas.pdf).

<sup>36</sup> THE ROYAL SOC'Y, *supra* note 29, at 10.

<sup>37</sup> *Id.* at 12.

<sup>38</sup> *Id.* at 30.

<sup>39</sup> Mark Fischetti, *Groundwater Contamination May End the Gas-Fracking Boom*, SCIENTIFIC AM. (Sept. 12, 2013), <http://www.scientificamerican.com/article.cfm?id=ground-water-contamination-may-end-the-gas-fracking-boom> (discussing the high levels of methane found in drinking water near fracking operations in Pennsylvania).

<sup>40</sup> *Fracking Linked To Methane In Flammable Drinking Water For First Time in Scientific Study*, HUFFINGTON POST (May 9, 2011, 5:12 AM), [http://www.huffingtonpost.com/2011/05/09/fracking-methane-flammable-drinking-water-study\\_n\\_859677.html](http://www.huffingtonpost.com/2011/05/09/fracking-methane-flammable-drinking-water-study_n_859677.html); *Tap Water Catches On Fire In Debby And Jason Kline's Ohio Home Due To Methane Levels*, HUFFINGTON POST (Jan. 12, 2013, 11:15 AM), [http://www.huffingtonpost.com/2013/01/12/tap-water-catches-fire-methane-debby-jason-kline\\_n\\_2462981.html](http://www.huffingtonpost.com/2013/01/12/tap-water-catches-fire-methane-debby-jason-kline_n_2462981.html).

<sup>41</sup> THE ROYAL SOC'Y, *supra* note 29, at 14.

<sup>42</sup> *Id.* at 19.

<sup>43</sup> Trevor Brown, *Groups Want to Know, What's in Fracking Fluid*, WYO. TRIB. EAGLE (Apr. 18, 2013, 10:44 PM), [http://www.wyomingnews.com/articles/2013/04/20/news/19local\\_04-19-13.txt](http://www.wyomingnews.com/articles/2013/04/20/news/19local_04-19-13.txt).

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

<sup>45</sup> See Ben Wolfgang, *I Drank Fracking Fluid, Says Colorado Gov. John Hickenlooper*, WASH. TIMES (Feb. 12, 2013, 12:32 PM), <http://www.washingtontimes.com/blog/inside->

Some U.S. states have passed such disclosure legislation, but the issue remains unresolved in many other states.<sup>46</sup> In Congress, Representatives and Senators have introduced the FRAC Act,<sup>47</sup> which would repeal the Safe Drinking Water Act (SDWA) exemption for fracking and would require the disclosure of the chemicals used in fracking fluid.<sup>48</sup> The Act has not passed either chamber.

Additionally, fracking has been linked to the occurrence of small but perceptible earth tremors.<sup>49</sup> The occurrence of two such tremors near Blackpool, U.K.<sup>50</sup> caused the British government to suspend fracking operations for a year. That moratorium was lifted in December 2012.<sup>51</sup> Cuadrilla admitted that the tremors were likely caused by their drilling activities but characterized the tremors as being precipitated by an uncommon combination of geological features and pressures caused by the fracking, suggesting that tremors are a rare occurrence.<sup>52</sup>

Finally, many fear that the widespread use of fracking will divert investment from clean and renewable energy sources.<sup>53</sup> The perception of cheap and abundant fuel obtainable from fracking may crush incentives to pursue developments in sustainable energy technologies. Fracking is, after

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politics/2013/feb/12/colorado-gov-hickenlooper-i-drunk-fracking-fluid/; Catherine Tsai, *Halliburton Executive Drinks Fracking Fluid At Conference*, HUFFINGTON POST (Aug. 22, 2011, 5:12 AM), [http://www.huffingtonpost.com/2011/08/22/halliburton-executive-drinks-fracking-fluid\\_n\\_933621.html](http://www.huffingtonpost.com/2011/08/22/halliburton-executive-drinks-fracking-fluid_n_933621.html).

<sup>46</sup> Francis Gradijan, *State Regulations, Litigation, and Hydraulic Fracturing*, 7 ENV'TL & ENERGY L. & POL'Y J. 47, 63–79 (2012) (discussing disclosure legislation enacted in Colorado, Texas, and Wyoming).

<sup>47</sup> *FRAC Act Reintroduced as Bipartisan Bill*, BREAKING ENERGY (May 17, 2013, 12:00 PM), <http://breakingenergy.com/2013/05/17/frac-act-reintroduced-as-bipartisan-bill/>.

<sup>48</sup> *Id.*

<sup>49</sup> THE ROYAL SOC'Y, *supra* note 29, at 41 (discussing the two types of tremors created by fracking, the magnitude of the tremors, and the particular tremors occurring at Blackpool); Shukman, *supra* note 29.

<sup>50</sup> Oleg Vukmanovic, *UK Firm Says Shale Fracking Caused Earthquakes*, REUTERS (Nov. 2, 2011, 1:58 PM), <http://www.reuters.com/article/2011/11/02/us-gas-fracking-idUSTRE7A160020111102>.

<sup>51</sup> Laura Smith-Spark & Jim Bolden, *UK Lifts Ban on Fracking to Exploit Shale Gas Reserves*, CNN (May 3, 2013, 13:40 GMT), <http://edition.cnn.com/2012/12/13/business/uk-fracking/index.html>.

<sup>52</sup> Garry White, *Cuadrilla Admits Drilling Caused Blackpool Earthquakes*, TELEGRAPH (Nov. 2, 2011, 12:36 PM), <http://www.telegraph.co.uk/finance/newsbysector/energy/8864669/Cuadrilla-admits-drilling-caused-Blackpool-earthquakes.html>.

<sup>53</sup> EREC Factsheet: Shale Gas and its impact on Renewable Energy Sources, EUROPEAN RENEWABLE ENERGY COUNCIL (June 2013), [http://www.erec.org/newssingleview/article/erec-factsheet-shale-gas-and-its-impact-on-res.html?tx\\_ttnews%5BbackPid%5D=299&cHash=5aea450a2046be02937e37c4ad2a2b2](http://www.erec.org/newssingleview/article/erec-factsheet-shale-gas-and-its-impact-on-res.html?tx_ttnews%5BbackPid%5D=299&cHash=5aea450a2046be02937e37c4ad2a2b2).

all, simply a more advanced method to obtain a traditional hydrocarbon energy source. Though fracking may be able to access a vast new supply of energy, it is capturing a nonrenewable energy source that contributes to greenhouse gas emissions.<sup>54</sup>

### C. *Fracking in the United States and England*

In the U.S., fracking has expanded rapidly over the past decade.<sup>55</sup> This boom has been attributed to the lack of an effective national regulatory regime, informational asymmetries, and barriers to collaboration among landowners. Combined, these factors may encourage landowners to grant leases to mineral rights despite the growing evidence that it may not be in their best interest to do so.<sup>56</sup>

Unlike the U.S., where most landowners own the mineral rights including oil and natural gas below their property, in the U.K., the onshore oil and gas rights are retained by the Crown.<sup>57</sup> This means that individual mineral rights holders do not possess the subsurface rights relevant to any future fracking in England.<sup>58</sup> Still, companies engaging in fracking must obtain a lease from the landowner to operate a drilling rig on the property and must obtain approval from local planning councils.<sup>59</sup>

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<sup>54</sup> John Light, *Natural Gas Won't Decrease our Carbon Footprint*, MOYERS & COMPANY (Oct. 22, 2013), <http://billmoyers.com/2013/10/22/natural-gas-wont-decrease-our-carbon-footprint/>.

<sup>55</sup> Tim Mullaney, *U.S. Energy Lifting Economy More Than Expected*, USA TODAY (Sept. 4, 2013, 12:03 AM), <http://www.usatoday.com/story/money/business/2013/09/04/us-energy-economy-impact/2742461/>; David Blackmon, *Behold The Bounty That Shale Oil And Natural Gas Have Wrought*, FORBES (Sept. 4, 2013, 12:27 PM), <http://www.forbes.com/sites/davidblackmon/2013/09/04/behold-the-bounty-that-shale-oil-and-natural-gas-have-wrought/> (both articles refer to a 2013 IHS study that estimated the support of 1.2 million jobs and an increase of \$1,200 in the average American family's discretionary income due, in large part, to the success of fracking).

<sup>56</sup> See Fish, *supra* note 10 (briefly discussing the differences in mineral rights in the U.S. and U.K., explaining the possible effects of the different distributions of benefits in each country, and concluding that other factors such as culture play a significant role in whether there will be a future fracking boom in the U.K.); Richardson, *supra* note 10 (same).

<sup>57</sup> *Oil and Gas: Petroleum Licensing Guidance*, DEP'T OF ENERGY AND CLIMATE CHANGE (Dec. 4, 2012), <https://www.gov.uk/oil-and-gas-petroleum-licensing-guidance>; see Richardson, *supra* note 10.

<sup>58</sup> *Oil and Gas: Petroleum Licensing Guidance*, *supra* note 57; see Richardson, *supra* note 10.

<sup>59</sup> *Legislation & Policy: Mineral Ownership*, MINERALS UK, <http://www.bgs.ac.uk/mineral-suk/planning/legislation/mineralOwnership.html> (last visited Sept. 15, 2013); Town & Country Planning Act 1990, c.8 (Eng.). But see Fiona Harvey & Stuart Franklin, *Balcombe Landlord Publicly Reveals Support for Fracking*, THE GUARDIAN (Aug. 20, 2013, 12:10 EDT), <http://www.theguardian.com/environment/2013/aug/20/balcombe-landlord-support-fracking->

This Note contends that the U.K. regulatory scheme, mineral rights, and local planning law provide effective safeguards that improve access to information and strengthen the power of individuals and communities to decide whether or not to allow fracking. In contrast, the U.S. system is plagued by decentralized regulation that does not provide for an effective flow of information to communities and landowners. As a result, communities and landowners may feel compelled to accept fracking despite the valid reservations they may have.

### III. A FRAMEWORK FOR LEGAL ANALYSIS

Jared Fish constructed a brilliant behavioral analysis of the correlation between regulation and mineral rights systems and the proliferation of fracking in the United States.<sup>60</sup> His work elucidates the problems facing American landowners and communities when negotiating with potential fracking lessees.<sup>61</sup> Fish's analysis focuses on the lack of dissemination of information via the American regulatory system and the unequal bargaining power fracking companies wield over potential lessors due in part to the American system of mineral rights.<sup>62</sup> Fish's work provides a framework to analyze the English regulatory structure and mineral rights system and understand the potential for growth in fracking in England.

The traditional view of bargaining between two rational actors provides that when one party values a good more than the other party, the two parties will negotiate for a price in between their values.<sup>63</sup> This leads to an efficient allocation of the resource, because the good is transferred to the party that values it most, while the other party receives a payment of more than the

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oil (discussing how one large landowner, also a member of the local planning council, and the drilling company Cuadrilla were able to obtain planning permission at Balcombe, because planning council members are generally laypersons, the complexity of a proposal for fracking permission may leave council members ignorant as to what they are actually approving, as was apparently the case in this instance).

<sup>60</sup> Fish, *supra* note 10.

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

<sup>62</sup> *Id.*

<sup>63</sup> Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). Coase won a Nobel Prize for what has become known as the "Coase Theorem," which espoused the idea that given zero transaction cost and clearly defined property rights parties will bargain for an efficient allocation.

value he assigned to the good.<sup>64</sup> Such a transaction is Pareto efficient since it makes both parties better off and no party worse off.<sup>65</sup>

However, as many commentators have pointed out, this model of efficient transactions is based on a number of assumptions that do not always exist in the real world.<sup>66</sup> One of the most evident assumptions is the absence of transaction costs.<sup>67</sup> In the real world, these costs are inherent in the bargaining process and factor into the total bargained-for price such that the exchange of a good may no longer be Pareto efficient.<sup>68</sup> In short, with the additional cost to the parties, obtaining or selling a good may result in a loss in value.<sup>69</sup>

Another important assumption is that the parties have equal information when bargaining. If a party engages in a transaction with asymmetrical information the transaction will most likely result in a loss in value, because the party is not aware of the additional and substantial costs associated with the transaction.<sup>70</sup>

In applying this economic analysis to a community's decision to permit fracking or a landowner's decision to lease mineral rights or surface rights for fracking, it becomes apparent that the transaction is more complex than the traditional model would suggest. One of the primary issues is that the community or landowner may not be able to accurately predict the costs of fracking in terms of disturbance and environmental degradation.

This reasoning suggests that the total number of fracking leases may be above the efficient quantity. Lessors are likely to undervalue the costs of fracking in terms of the loss of enjoyment in their property and the environmental risks posed by fracking. As a result, some lessors may execute leases that result in a loss in value because they lacked adequate information.

To be truly effective, the regulatory scheme must disseminate information relevant to the costs of fracking to the general public so that potential lessors

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

<sup>65</sup> MEGAN MARTORANA, FEDERAL RESERVE BANK OF RICHMOND, JARGON ALERT: PARETO EFFICIENCY (2007), available at [http://www.richmondfed.org/publications/research/region\\_focus/2007/winter/pdf/jargon\\_alert.pdf](http://www.richmondfed.org/publications/research/region_focus/2007/winter/pdf/jargon_alert.pdf).

<sup>66</sup> Coase, *supra* note 63.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

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

<sup>70</sup> See George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213 (1961) (discussing in detail the issues of informational asymmetries with regard to the cost of obtaining information about different asking prices for similar goods in a market). An analysis like Stigler proposed could conceivably apply to the lease terms of different companies offering to lease rights relevant to fracking.

can be better informed when considering lease agreements. The more information a party has when negotiating, the more likely that party will be able to bargain for an efficient outcome.

Mineral rights laws also affect individual landowners' decision to permit leases on their property for fracking operations. As mentioned before, one major distinction between mineral rights in the U.S. and the U.K. is that U.K. landowners do not own the mineral rights to the oil and natural gas below their property.<sup>71</sup> By statute, those rights are exclusively vested in the Crown.<sup>72</sup> This difference has the potential to be a leading factor in the availability of fracking leases in England. Therefore, it is important to analyze the likely impact of the lack of private oil and natural gas rights on the potential for the expansion of fracking in England.

#### IV. ANALYSIS

##### *A. The United States' and England's Regulatory Schemes*

The U.S. Congress has exempted fracking from a number of important environmental statutes.<sup>73</sup> As a result, the federal regulatory scheme leaves many environmental concerns about fracking unaddressed.

The effect of this lack of regulation in the U.S. is two-fold. First, the possible environmental harms of fracking have not been substantively addressed. Second, because of exemptions from the National Environmental Policy Act (NEPA), the procedural benefit of public comment and study of the relevant environmental impacts has been eliminated.<sup>74</sup> In comparison, the existing English regulations for onshore drilling are better equipped to provide individuals and communities with more information about fracking and to vest them with greater bargaining power to turn down the offers of fracking companies.

NEPA does not apply to fracking on private land in the U.S., because Congress specifically exempted fracking from the SDWA permitting.<sup>75</sup>

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<sup>71</sup> *Oil and Gas: Petroleum Licensing Guidance*, *supra* note 57.

<sup>72</sup> *Id.*

<sup>73</sup> Fish, *supra* note 10, at 228–30.

<sup>74</sup> National Environmental Policy Act, 42 U.S.C. § 4332 (2012); Fish, *supra* note 10, at 229 (arguing that the lack of regulation leaves land owners at an informational disadvantage when deciding whether or not to lease their mineral rights to fracking operations).

<sup>75</sup> Fish, *supra* note 10, at 228. Fish shows that the SDWA exemption is accomplished by the express exception of fluids used in hydraulic fracturing in the definition of “underground injection.” 42 U.S.C. § 300h(d)(1)(b)(ii). *Id.* Fish also notes that because the triggering of NEPA requires a major federal action—like permitting—fracturing on private land does not

Additionally, Congress largely exempted oil and natural gas drilling on federal lands from requirements to undertake an Environmental Assessment or an Environmental Impact Statement under NEPA.<sup>76</sup> Fracking is also exempt from the Resources Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Clean Water Act.<sup>77</sup> As a result, states are left with the burden of regulating fracking, and many have leaned towards less regulation.<sup>78</sup>

In England, fracking has not been exempted from substantial regulation. There are four primary tracking regulators.<sup>79</sup> These are the Department of Energy and Climate Change (DECC), the Minerals Planning Authorities, the Environmental Agency, and the Health and Safety Executive.<sup>80</sup> The DECC<sup>81</sup> issues the petroleum licenses, gives the final consent to drill after planning permission and other approvals are in place, and is responsible for assessing risk and monitoring seismic activity.<sup>82</sup> The Minerals Planning Authorities grant permission for the location of wells and establish conditions to ensure that the impacts on the land are acceptable.<sup>83</sup> The Environmental Agency protects water resources, ensures proper treatment and disposal of wastes, and regulates airborne emissions.<sup>84</sup> The Health and Safety Executive regulates the safety of all parts of the extraction process.<sup>85</sup>

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trigger NEPA because a SWDA permit is not required. Fish, *supra* note 10, at 228; 42 U.S.C. § 4332.

<sup>76</sup> Fish, *supra* note 10, at 228–29; 42 U.S.C. §§ 4332, 15942 (creating the rebuttable presumption of a Categorical Exclusion for some drilling activities under NEPA).

<sup>77</sup> Fish, *supra* note 10, at 229–30; Sorrell E. Negro, *Fracking Wars: Federal, State and Local Conflicts over the Regulation of Natural Gas Activities*, 35 ZONING AND PLANNING LAW REPORT 1 (Feb. 2012) (discussing how oil and natural gas regulation has traditionally been left to the discretion of the states, but positing a greater future involvement by the EPA).

<sup>78</sup> Fish, *supra* note 10, at 230.

<sup>79</sup> DEP'T FOR CMTYS. AND LOCAL GOV'T, PLANNING PRACTICE GUIDANCE FOR ONSHORE OIL AND GAS 6 (2013), available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/224238/Planning\\_practice\\_guidance\\_for\\_onsshore\\_oil\\_and\\_gas.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224238/Planning_practice_guidance_for_onsshore_oil_and_gas.pdf).

<sup>80</sup> *Id.*

<sup>81</sup> As of April 1, 2015 some of the regulatory functions of the DECC were passed to the Oil and Gas Authority (OGA), a newly formed executive agency of DECC. It is intended that the OGA will eventually be separated from the DECC and will have powers beyond those formerly held by the DECC. See *The New UK Oil and Gas Authority Issues an Urgent Call to Action*, SHERMAN & STERLING LLP (Mar. 10, 2015), <http://www.sherman.com/~media/Files/NewsInsights/Publications/2015/03/The-New-UK-OIL-and-Gas-Authority-Issues-an-Urgent-Call-to-Action-031015.pdf>.

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

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

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

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

In England, the operation of an onshore fracking well requires the issuance of a Petroleum Exploration and Development License (PEDL) by the DECC.<sup>86</sup> The DECC issues licenses through licensing rounds during which companies bid on licenses, generally on a bi-annual basis.<sup>87</sup> However, the licensing rounds do not function strictly as auctions.<sup>88</sup> Licenses can be issued to one company or multiple companies working together, but only one licensee can be named on the license no matter how many companies it represents.<sup>89</sup> A non-listed company can buy the existing PEDL permit, but it must comply with all of the conditions of the permit.<sup>90</sup>

Notably, all companies under the license are jointly and severally liable for the operations.<sup>91</sup> This ensures that in the event of liability stemming from the fracking operations, the injured party will be compensated.<sup>92</sup> The injured party can collect the entire judgment from any of the parties to the license. The paying company can later seek contribution from among the other companies on the license. It is not difficult to imagine how, in the absence of joint and several liability, the multiple companies acting under one license could use dilatory tactics in litigation to mire the plaintiff's case in questions concerning which company caused particular damages.

In England, each license acts as a deed, meaning that the licensee is obligated to observe the conditions of the license even if the licensee is not using the license at the time.<sup>93</sup> This can prevent manipulation of the license system by companies who will, perhaps for reasons of competitive advantage, obtain some licenses but not use them as they were intended. If companies must continuously abide by the license's terms, they have an increased incentive to use the license.

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<sup>86</sup> DEP'T FOR CMTYS. AND LOCAL GOV'T, ONSHORE OIL AND GAS EXPLORATION AND DEVELOPMENT: ROLES OF REGULATORY AGENCIES (2013), available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/139624/Onshore\\_Role\\_of\\_Regulatory\\_Agencies\\_March\\_2013\\_pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/139624/Onshore_Role_of_Regulatory_Agencies_March_2013_pdf).

<sup>87</sup> *Oil and Gas: Licensing Rounds*, DEP'T OF ENERGY AND CLIMATE CHANGE (Jan. 10, 2014), <https://www.gov.uk/oil-and-gas-licensing-rounds>.

<sup>88</sup> *Id.*

<sup>89</sup> *Oil and Gas: Petroleum Licensing Guidance*, *supra* note 57.

<sup>90</sup> DEP'T FOR CMTYS. AND LOCAL GOV'T, *supra* note 86.

<sup>91</sup> Phillip Mace et al., *Oil and Gas Regulation in the UK: Overview*, PRACTICAL LAW, MULTI-JURISDICTIONAL GUIDE 2014: ENERGY AND NATURAL RESOURCES (2014), available at [http://uk.practicallaw.com/1-523-9996?q=\\*&qp=&qo=&qe=](http://uk.practicallaw.com/1-523-9996?q=*&qp=&qo=&qe=).

<sup>92</sup> *Joint and Several Liability*, CORNELL UNIV. LEGAL INFO. INST., [http://www.law.cornell.edu/wex/joint\\_and\\_several\\_liability](http://www.law.cornell.edu/wex/joint_and_several_liability) (last visited Dec. 29, 2013).

<sup>93</sup> DEP'T FOR CMTYS. AND LOCAL GOV'T, *supra* note 86.

Once a license is obtained, the licensee must make annual payments based on the number of square kilometers covered by the license.<sup>94</sup> Because the DECC is concerned about licensees squatting on unused pieces of land, the lease is designed to encourage licensees to surrender unused land.<sup>95</sup> Companies will not want to sit on land if they must pay fees on the land without obtaining any benefit.

*B. The Dissemination of Information in England and the United States*

Prior to opening a round for issuing permits, the DECC must conduct a Strategic Environmental Assessment (SEA), which is similar to the requirements of NEPA in the United States.<sup>96</sup> The SEA is conducted at this early stage to ensure that environmental issues are addressed at a formative stage of the permitting process.<sup>97</sup> Like the NEPA process, the SEA requires that the DECC allow for public notice and comment.<sup>98</sup> Specifically, the SEA requires that the DECC consult with “stakeholders,” including the general public, local governments, government agencies, and experts in the field.<sup>99</sup>

The SEA requirement provides an opportunity for both government and public awareness of the costs and benefits of fracking. This currently is lacking in the U.S. due to the NEPA exemption. Moreover, the creation of a “stakeholders” group directly addresses issues of inadequate information among the landowning public by specifically targeting the general public as an important group that must be involved in the SEA process.<sup>100</sup>

*C. The Power of Well-Informed Local Planning Authorities in England*

Before beginning drilling in England, it is necessary to obtain permission from the Local Planning Authority (LPA).<sup>101</sup> The LPA serves to make decisions about land use within its community.<sup>102</sup> In order to help LPAs reach decisions about fracking, the English government has promulgated a

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

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

<sup>96</sup> FRIENDS OF THE EARTH, FREQUENTLY ASKED QUESTIONS: REGULATORY REQUIREMENTS OF UNCONVENTIONAL OIL AND GAS EXPLORATION 2 (2013), [http://www.foe.co.uk/sites/default/files/downloads/fracking\\_faqs.pdf](http://www.foe.co.uk/sites/default/files/downloads/fracking_faqs.pdf).

<sup>97</sup> *Id.*

<sup>98</sup> DEP’T FOR CMTYS. AND LOCAL GOV’T, *supra* note 79.

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

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

<sup>101</sup> DEP’T FOR CMTYS. AND LOCAL GOV’T, *supra* note 86.

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

set of guidelines to apprise LPAs of the relevant concerns.<sup>103</sup> The guidelines are thorough, yet not mired by technical language, so that community councils and members of the public may understand them.<sup>104</sup> In this way, the British government arms LPAs to come to the bargaining table with much better information than is common among communities in the U.S.

In England, the LPA will decide whether or not an Environmental Impact Assessment (EIA) is necessary by consulting with the Environment Agency, which is a statutory consultee. An EIA is necessary if deep drilling is taking place, the site is one hectare or larger, or the activities are likely to have significant environmental impacts.<sup>105</sup> The third trigger for the EIA is similar to the trigger for an Environmental Impact Statement under NEPA in the U.S.; however, as previously mentioned, fracking is exempt from NEPA.

Because federal and state regulation of fracking is limited in the U.S., American landowners have an elevated role as gatekeepers deciding where fracking will occur. Individual landowners in America may lease the rights to oil and natural gas extraction from below their surface property, and, therefore, play a significant role in fracking's proliferation.<sup>106</sup> American landowners unwilling to lease their rights can effectively block fracking to the extent that they control the surface from which a particular shale deposit can be drilled.<sup>107</sup>

While local governments in the U.S. can intervene to place limitations on fracking, their approval is not required. At this time, the vast majority of local governments in the U.S. have not responded to community concerns

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<sup>103</sup> DEP'T FOR CMTYS. AND LOCAL GOV'T, *supra* note 79.

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

<sup>105</sup> FRIENDS OF THE EARTH, *supra* note 96.

<sup>106</sup> *But see Landowners Who Leased Land for Fracking See Dreams of Riches Fading*, TIMES HERALD-RECORD (Feb. 26, 2013, 7:09 AM), <http://www.recordonline.com/apps/pbcs.dll/article?AID=/20130226/NEWS90/130229808/-1/NEWS58> (discussing the fear of New York landowners in regard to missing their opportunity to profit from fracking while the State considers whether or not to allow fracking; also detailing that, for some landowners, fracking presents a way to save their land from the effects of difficult economic times that have had a significant impact on rural and poorer communities); Karen Dewitt, *Landowners Plan Suit Over Fracking Delays*, NORTH COUNTRY PUBLIC RADIO (Nov. 18, 2013), <http://www.northeastpublicradio.org/news/story/23271/20131118/landowners-plan-suit-over-fracking-delays> (discussing the plans of New York landowners to sue so that they profit from fracking leases).

<sup>107</sup> *Greenpeace Urges UK Landowners to Unite in Opposing Fracking*, REUTERS (Oct. 14, 2013, 1:08 PM), <http://uk.reuters.com/article/2013/10/14/britain-shale-greenpeace-idUKL6N0I41IP20131014>; Helen Pidd, *Fracking Faces Challenge from Lancashire Farmer and Greenpeace*, THE GUARDIAN (Oct. 14, 2013, 1:00 PM), <http://www.theguardian.com/environment/2013/oct/14/fracking-lancashire-dairy-farmer-challenge> (both discussing Greenpeace's attempts to mount a legal challenge to fracking through landowners refusing to grant ancillary rights, including surface leases, to fracking companies).

raised by fracking. Because the participation of only a few landowners can impose considerable costs on an entire community, the failure of local government involvement is an important aspect of the fracking boom in the U.S. Local government inaction is likely due to a multitude of factors. One probable reason is that local governments may conclude that addressing an issue of national importance is not within the scope of their function. Another potential source of inaction is that local governments may not want to limit landowners' ability to lease their property, as such limitations may be perceived as unwarranted intrusions into property rights.

*D. The Prospect of Increased Bargaining Power*

Greenpeace is currently working with English landowners to establish a legal case that fracking companies lack the right to lay pipe or drill horizontally under the property of landowners without their permission.<sup>108</sup> Currently, fracking companies can obtain a court order to purchase the required ancillary rights under compulsory purchase legislation.<sup>109</sup> However, Greenpeace argues that a common law right exists which prevents the compulsory purchases.<sup>110</sup> In Greenpeace's view, without landowner permission, the fracking operators would be trespassing.<sup>111</sup> Much of Greenpeace's argument stems from a 2010 case in which the U.K.'s highest court held that a company trespassed on multimillionaire Egyptian businessman Mohamed Al-Fayed's estate by laying underground pipes without his permission.<sup>112</sup> According to Greenpeace, the case establishes a landowner's right to refuse to extend ancillary rights such as those needed for underground piping—and horizontal drilling—to fracking operators.<sup>113</sup>

If Greenpeace is successful in its legal challenge it will likely be a substantial blow to the future viability of fracking in England. Because fracking relies heavily on horizontal drilling, creating a coalition of neighboring landowners who assert their right to prevent trespasses would severely limit the effectiveness of fracking, perhaps making it unprofitable. The Greenpeace campaign to encourage landowners to say no to fracking seems to be having some success. And, at least in early news reports, landowners such as farmers have joined the campaign because they realize

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<sup>108</sup> Pidd, *supra* note 107.

<sup>109</sup> *Id.*

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

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

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

<sup>113</sup> *Id.*

that possible environmental degradation connected with fracking could mean the loss of their livelihoods.<sup>114</sup>

*E. Landowners and Localities as Gatekeepers*

The American system is plagued by informational asymmetries that create strong disincentives for landowners to resist leasing their mineral rights to fracking companies. A landowner generally has severely limited information when deciding whether or not to lease his mineral rights. Therefore, even if the landowner is a rational actor, he may arrive at the wrong decision under standard economic theory.<sup>115</sup> Moreover, the landowner may feel pressured by the drilling company, which can state that the offer to lease will expire soon and never be open again or that, because of the Rule of Capture, if the landowner refuses, his neighbors will profit off of his failure to use his mineral rights.<sup>116</sup>

In England, landowners do not stand to profit from fracking as much as their U.S. counterparts. Because the Crown retains all oil and natural gas mineral rights, landowners cannot obtain leases for the rights to the natural gas below their property.<sup>117</sup> As a result, English landowners do not have the same gatekeeping role U.S. landowners.<sup>118</sup> Instead, they can only benefit from leasing surface access to their land.<sup>119</sup>

However, the costs of surface leasing may be more apparent to the landowner before executing the lease. The apparentness of the impact on the enjoyment of the landowner's property may encourage landowners to negotiate with a more accurate forecast of the minimum value the lessee must pay to overcome the lessor's true costs.

The news coverage and public attention given to fracking has likely made landowners more aware of the physical properties of a drilling operation, or at least more motivated to obtain additional information before executing a

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<sup>114</sup> *Id.*

<sup>115</sup> Fish, *supra* note 10, at 234.

<sup>116</sup> *Id.* at 248–50.

<sup>117</sup> *Legislation & Policy: Mineral Ownership, supra* note 59.

<sup>118</sup> DEP'T OF ENERGY & CLIMATE CHANGE, FRACKING UK SHALE: PLANNING PERMISSION AND COMMUNITIES 4–5 (2014), available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/283832/Planning\\_v3.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283832/Planning_v3.pdf).

<sup>119</sup> Richardson, *supra* note 10, at 10; DEP'T OF ENERGY & CLIMATE CHANGE, ONSHORE OIL AND GAS EXPLORATION IN THE UK: REGULATION AND BEST PRACTICE 10 (2013), available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/265988/Onshore\\_UK\\_oil\\_and\\_gas\\_exploration\\_England\\_Dec13\\_contents.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265988/Onshore_UK_oil_and_gas_exploration_England_Dec13_contents.pdf).

lease agreement.<sup>120</sup> Furthermore, because population density is greater on average in England, individual landowners are likely to have less land than those in America.<sup>121</sup> As a practical matter, it stands to reason that the English landowner and his or her neighbors may be more sensitive to the possible disturbance caused by a drilling rig and the accompanying surface activity. The landowner must decide if he or she wishes to allow the constant physical presence of a drilling rig and heavy machinery, as opposed to simply allowing the capture of subsurface resources, which can be done without establishing a surface operation on the landowner's property. Horizontal drilling allows the drilling rig to reach a relatively wide area of subterranean resources from a more limited surface position.

Additionally, in England, community councils can decide to prohibit fracking.<sup>122</sup> Because of the more limited space in England, the noise and vibrations associated with the standard operations of a fracking rig will be more readily apparent to neighbors and communities. By contrast, in the U.S., the physical presence of a drilling rig may not be noticeable to neighbors, but the environmental consequences have the potential to harm the entire community should they occur. If informed of these disturbances, communities will have an opportunity to decide whether or not to permit them. Additionally, they can consider the possibility and magnitude of potential environmental consequences to determine whether the benefit is worth the potential risk. This process is likely to result in decisions that are more beneficial to the community by essentially forcing a communal cost-benefit analysis.

Unlike American communities, which are hesitant to stand between landowners and potential leases, English communities must decide the fracking question before any landowner can begin to profit from fracking.

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<sup>120</sup> See generally Erik Hoffner, *Drill Next Door: Here's What it Looks Like When Fracking Moves In*, GRIST (Aug. 28, 2013, 1:41 PM), <http://grist.org/climate-energy/the-fracking-rig-next-door-photos/> (showing pictures and describing the presence of a fracking rig next to a subdivision in Frederick, Colorado); George Monbiot, *What is Behind This Fracking Mania? Unbridled Machismo*, THE GUARDIAN (Aug. 19, 2013, 14:30 EDT), <http://www.theguardian.com/commentisfree/2013/aug/19/david-cameron-fracking-mania-machismo> (comparing the noise, dust, constant truck movements, and bright gas flares of a drilling rig to the reduced intrusiveness of wind turbines); Kate Ravilious, *Art Installation Brings You Face to Face with Fracking*, NEW SCIENTIST (July 18, 2013, 16:46 EDT), <http://www.newscientist.com/article/dn23889-art-installation-brings-you-face-to-face-with-fracking.html#.UmdslWQr6Rg> (reporting on an art exhibit in Liverpool, England that is a small-scale replica of a fracking rig intended to show the sounds, bright flames, and possible tremors produced).

<sup>121</sup> *Population Density (Population Per Square Kilometer)*, KAISER FAMILY FOUNDATION (2012), <http://kff.org/global-indicator/population-density/> (last visited Oct. 20, 2014).

<sup>122</sup> *Legislation & Policy: Mineral Ownership*, *supra* note 59.

English community planning laws currently require companies wishing to engage in fracking in a community to publish their application in newspapers and on the local authority's website.<sup>123</sup> Moreover, the publication must include information as to how local residents can submit their responses to the application.<sup>124</sup> This system apprises residents of the community's ability to decisively determine the future of fracking locally and provides an opportunity for those who feel strongly to speak out.

However, there are some reasons that may justify reasonable doubt as to whether or not the differences in information availability and incentives make an impact. Taking note of the American fracking boom, English fracking operations may attempt to approximate the American arrangement of incentives to promote fracking. For instance, possibly realizing that it needed to sweeten the deal for English communities, the British Government has announced a plan for community benefits that could allow for payment of up to £100,000 to communities that allow fracking.<sup>125</sup>

Perhaps communities will feel pressure to allow fracking before neighboring communities cash in on the opportunity.<sup>126</sup> The wide reach of horizontal drilling means that a company establishing drilling rigs in a relatively small physical area can still exploit a wide expanse of subterranean resources. However, this will of course depend on the precise range at which a single fracking operation can extract the resource and the proximity of communities to one another. At least on its face, it would seem that communities might not feel the same fear of missing out on the opportunity that is experienced by individual landowners leasing mineral rights in America.

Further, while English landowners do not face the pressures of choosing to lease mineral rights, leasing only surface rights may not be all that different. If a company puts its drilling rig on a neighbor's land, it may be able to extract the gas under a substantial number of properties.<sup>127</sup> It could amount to a "snooze and lose" principle. However, when only land access

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<sup>123</sup> DEP'T OF ENERGY & CLIMATE CHANGE, *supra* note 118, at 5.

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

<sup>125</sup> Terry Macalister, *Cuadrilla Announces Major Fracking Expansion in UK*, THE GUARDIAN (July 5, 2013, 13:14 EDT), <http://www.theguardian.com/environment/2013/jul/05/cuadrilla-fracking-expansion>.

<sup>126</sup> *Landowners who Leased Land for Fracking See Dreams of Riches Fading*, *supra* note 106; Dewitt, *supra* note 106; Fish, *supra* note 10, at 250.

<sup>127</sup> See Jan Goodey, *The UK's Anti Fracking Movement is Growing*, ECOLOGIST (Aug. 1, 2013), [http://www.theecologist.org/News/news\\_analysis/2016997/the\\_uk\\_anti\\_fracking\\_movement\\_is\\_growing.html](http://www.theecologist.org/News/news_analysis/2016997/the_uk_anti_fracking_movement_is_growing.html) (calculating that a well spacing of four per square mile would mean thirty-two wells in the parish of Balcombe and up to 300 wells within five miles).

leases are at stake, the potential payoff from the company may be significantly smaller<sup>128</sup> and the costs of having a drilling rig on one's property can more easily be perceived in contrast to just the costs of leasing one's subterranean rights. The costs associated with leasing only subterranean rights are primarily the risks of potential environmental degradation such as groundwater contamination.<sup>129</sup> As a result, these costs only become apparent to the potential lessors in a community when the environmental degradation occurs, despite the fact that each additional lease may come with the cost of an increased likelihood of those events.<sup>130</sup> And, when the environmental degradation occurs, the cost is often born equally by all persons in the affected locality regardless of whether they leased their own land for fracking.

In addition to being less obvious than the disturbance costs of surface leases, the costs of subsurface extraction leases are more evenly spread across communities. Assuming that each additional lease increases the risk factor for groundwater contamination, tremors, or other environmental costs, the cost of each additional lease is dispersed among the local public in the form of the increased likelihood of detrimental events occurring. Combining all of the risk factors, the cost may be high for each lease, but the cost as perceived by a single lessor is seemingly insignificant. The actual increased risk factors for each additional lease are difficult to calculate with only limited information. Furthermore, English landowners have less to gain. The potential benefits for English landowners will likely be smaller because landowners may not profit from a share in the productivity of the well as is common with American mineral rights leases.

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<sup>128</sup> Payoffs are likely to be smaller, because the English landowner has no legal right in the natural gas being extracted. By contrast, American mineral rights leases can pay in the form of percentages of the natural gas or petroleum produced. A land lease, by contrast, is likely to be based only on a rent paid for the surface use without an interest in the extraction.

<sup>129</sup> *But see* N.C. DEP'T OF JUSTICE, AG'S OFFICE ISSUES CONSUMER PROTECTION REPORT ON FRACKING (May 5, 2012), available at <http://www.ncdoj.gov/News-and-Alerts/News-Releases-and-Advisories/Press-Releases/AG%E2%80%99s-Office-issues-consumer-protection-report-on-f.aspx> (discussing the potential problems that can arise with mortgages, refinancing, and purchasing real estate due to subterranean leases for fracking).

<sup>130</sup> Bill Dedman & Karen Weintraub, *Disputes Over Environmental Impact of 'Fracking' Obscure its Future*, NBC NEWS (Apr. 8, 2013, 10:10 AM), <http://www.cnbc.com/id/100623670> (discussing the debate over the connection between fracking and environmental harms through stories about persons harmed in communities near fracking operations); *see* Ian Urbina, *Deadliest Danger Isn't at the Rig but on the Road*, N.Y. TIMES (May 14, 2012), <http://www.nytimes.com/2012/05/15/us/for-oil-workers-deadliest-danger-is-driving.html> (discussing the indirect costs of booming oil and natural gas costs, namely the high number of traffic deaths involving industry workers).

It is reasonable to speculate that the experience with hydraulic fracturing in the U.S. and the efforts of anti-fracking activists in England have heightened English awareness about the controversy surrounding fracking. This in turn could cause potential English lessors to seek more information about fracking and, thereby, reduce the informational asymmetries that exist in the negotiation of American leases.

#### V. CONCLUSION

As England and other nations consider the possibilities of using hydraulic fracturing to extract previously unreachable fossil fuels, they inevitably look to the experience of the U.S., where the use of hydraulic fracturing has undergone a rapid expansion. However, as some commentators have noted, the practice's proliferation may not be attributable solely to significant net benefits from the addition of each well.<sup>131</sup> Instead, the expansion of fracking in America may be due, in large part, to a general lack of regulation that often makes individual landowners and communities poorly equipped gatekeepers.

Because there is little direct federal regulation applicable to fracking, U.S. states are left to regulate individually. While the approaches taken by states have varied, substantive regulations have often been deficient. When state regulations are inadequate, landowners are left to make the final decision as to whether fracking will be permitted in an area. Yet, because federal and state regulations fail to disseminate information about fracking from companies to the general public, American landowners often negotiate as potential lessors who are grossly uninformed about the costs of fracking.

This problem is compounded by the American system of mineral rights ownership. The Rule of Capture can be used by fracking companies to hurry landowners to a decision, preventing them from taking the time to obtain additional information.<sup>132</sup> Landowners fear that if they do not sell their mineral rights quickly, their neighbors will capitalize on fracking and the unleased land will no longer have value. Further, in a broader sense, the fracking companies are highly sophisticated actors who can employ experts in various fields to ensure that they know precisely what they are bargaining for. As a result the companies consistently wield disproportionate bargaining power.

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<sup>131</sup> Fish, *supra* note 10, at 241–45; Richardson, *supra* note 10.

<sup>132</sup> Fish, *supra* note 10, at 248–50.

The current English regulatory scheme and system of mineral rights are better equipped to address the problems made evident by the experience in America. First, because landowners do not have rights to the oil and natural gas below their property, they are not relied on as gatekeepers to the same extent as American landowners. While they can lease the surface rights to operate a drilling rig on their property, these leases have a lower payoff than mineral rights leases and the costs are more apparent to the average landowner as the operation of any type of heavy machinery on one's property has obvious costs. Thus, when an English landowner negotiates a surface lease he likely has an adequate idea of the potential costs and can better pursue an efficient lease.

Even more important than England's restrictive mineral rights are the regulations pertaining to fracking in England. As this Note has demonstrated, those regulations are currently superior to those in the U.S., in part because of the public notice and comment requirement that accompanies the issuance of permits for hydraulic fracturing. The DECC's Strategic Environmental Assessment is required early on in the licensing process, creating an opportunity for public comment before the process has had an opportunity to gain the type of momentum that could outweigh environmental concerns.

Interdisciplinary theories of law and economics and behavioral analysis suggest that the law should be viewed as a vehicle through which lawmakers affect the choices of individual actors in a society. The laws and regulations created to address any issue will inevitably create incentives or disincentives and mold behavior. Viewed through this lens, it is apparent that the laws pertaining to fracking in England and the U.S. will influence the prevalence of fracking in the future in ways that are not always understood by economic actors, particularly landowners and regulators in each country.

Thus, when any country is considering hydraulic fracturing as a means of obtaining fossil fuels, the inevitable comparison to the U.S. should be made with caution. The assumption that fracking will inevitably take off in any country based on the U.S. experience may not be warranted. The pre-existing laws and property rules in any country strongly influence the expansion of the practice. On one extreme, the law can vest nearly all the power in landowners or, alternatively, can remove landowner choice entirely. However, this is not to say that countries in which current laws and property rules present a bar to the expansion of fracking are operating under an inefficient allocation of resources. The truth could, in fact, be the opposite. Unfortunately, not enough is known about the connections between environmental harms and fracking.

Landowners who are considering leases related to fracking need to be aware of the possible costs: environmental threats, human health threats, and the loss in value and enjoyment of property. The basic rational actor model holds that the individual will bargain efficiently, given no transaction costs and sufficient information. If all transactions in a market fit the assumptions of the rational actor model, then the market will allocate resources efficiently. Therefore, laws and regulations that serves to better inform the landowning public lead to more efficient transactions. Inherent informational asymmetries between a highly sophisticated business and an average landowner can lead to significant imbalances in bargaining power. Because such imbalances can lead to the landowner undervaluing of his own rights, it is likely that the landowner's self-interest should not be expected to serve as a proxy for the common good. Ultimately, the sum of transactions that rely on inadequate information may lead to an inefficient allocation of land leases.

Finally, it should be noted that to the extent that reports of the debate surrounding fracking in America permeate the media in foreign nations considering fracking, the landowning public abroad might be better informed as a result. Reports of economic booms or environmental disasters may equally capture the attention of foreign onlookers. Moreover, foreign newspapers and news media are likely to relay the stories in nations where fracking is being considered. To the extent that negative reports spread to other nations, the public at large is more likely to seek out additional information. This additional information will, in theory, provide for more rational bargaining.

From a theoretical microeconomic perspective, the likely failure of fracking to expand in England may signal that English regulation has effectively corrected market failures that persist under the regulatory scheme currently in place in the U.S. Compared to the regulatory scheme in the United States, the current English regulatory scheme is better designed to serve landowners and localities in bargaining with companies pursuing fracking. Increasing the information available in such bargaining, along with the maintenance of clearly defined property rights will ultimately contribute to efficient bargaining in the context of fracking. These improvements will benefit society by making resource extraction decisions more accurately reflect actual costs and benefits.