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# CREATING A LEGAL FRAMEWORK FOR REGULATION OF NATURAL GAS EXTRACTION FROM THE MARCELLUS SHALE FORMATION

LAURA C. REEDER\*

## INTRODUCTION

In February 2009, the Pennsylvania Supreme Court decided a case involving the extent of control Pennsylvania's Salem Township should have over placement of oil and gas well operations within its boundaries.<sup>1</sup> The court's holding reaffirmed state-level authority over oil and gas operations in Pennsylvania.<sup>2</sup> It also contributed to areas of Pennsylvania law and administrative regulation that are coming under increased scrutiny<sup>3</sup> due to the recent emergence of the Marcellus Shale formation as a potentially large player in the natural gas landscape of the United States.<sup>4</sup> Because of the presence of this formation within Pennsylvania's borders, the state is on the verge of becoming a major contributor to the nation's supply of natural gas.<sup>5</sup> However, because the formation crosses state lines,

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<sup>1</sup> See *Range Res. Appalachia, LLC v. Salem Twp.*, 964 A.2d 869, 877 (Pa. 2009) (affirming an order of the Commonwealth Court by holding that the Pennsylvania Oil and Gas Act preempted the local ordinances enacted by Salem Township insofar as they related to oil and gas operations).

<sup>2</sup> See *id.* at 877.

<sup>3</sup> See *IOGA Meets Challenges of 2009 and Plans for 2010*, IOGA NEWS (Indep. Oil & Gas Ass'n of Pa., Wexford, Pa.) Dec. 2009, at 1, available at [http://iogapa.org/files/226\\_December\\_Newsletter\\_2009.pdf](http://iogapa.org/files/226_December_Newsletter_2009.pdf).

<sup>4</sup> Louise S. Durham, *Appalachian Basin's Marcellus—The New Target: Another Shale Making Seismic Waves*, AAPG EXPLORER, Mar. 2008, at 6, available at <http://www.aapg.org/explorer/2008/03mar/03MarExplorer08.pdf>.

<sup>5</sup> *Common Ground Lobby Talk: Marcellus Shale: The Environmental, Economic, and Social Issues* (WPSU television broadcast Oct. 9, 2008), available at <http://wpsu.com/tv/episodes/lobbys-talk> (follow "Marcellus Shale: The Environmental, Economic, and Social Issues" hyperlink) [hereinafter *Common Ground Lobby Talk*] (featuring a roundtable discussion with Gary Falatovich, a Salem Township, Pennsylvania attorney; Tom Murphy, a Cooperative Extension Educator for The Pennsylvania State University Cooperative

parties with interests in the operations surrounding mineral extraction are discovering firsthand the many distinctions that exist among the governmental levels controlling the various aspects of mineral extraction.<sup>6</sup> These parties range from local municipalities to the United States Environmental Protection Agency.<sup>7</sup> The *Range Resources* case illustrates the type of conflict that is occurring at the municipal level.<sup>8</sup> The powers of these parties must be coordinated and streamlined if the resources of the Marcellus Shale play are to be used efficiently from both an environmental and economic standpoint.<sup>9</sup>

The Marcellus Shale formation covers two-thirds of Pennsylvania, as well as parts of various other eastern states, and is causing both excitement and consternation in locations affected by its presence.<sup>10</sup> Until recently, the energy industry has passed over the Marcellus Shale play as a legitimate potential source of natural gas due to the difficulty of extracting gas from formations of its type.<sup>11</sup> Advances in technology have now made extraction more physically and economically viable.<sup>12</sup> With the promise

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Extension, which educates people, communities, and businesses about the impacts of natural gas exploration; Ed Ireland, executive director of the Barnett Shale Energy Education Council; and Margaret Brittingham, a Penn State Professor of Wildlife Resources and a wildlife specialist for the Extension program).

<sup>6</sup> See Marcellus Shale Map, <http://www.marcellusshales.com/marcellusshalemap.html> (last visited Feb. 8, 2010) [hereinafter Marcellus Shale Map] (displaying the location of the Marcellus Shale formation and its distribution across various states in the Northeast and Mid-Atlantic regions); see also MICHELE RODGERS ET AL., PENN STATE COLL. OF AGRIC. SCI., MARCELLUS SHALE: WHAT LOCAL GOVERNMENT OFFICIALS NEED TO KNOW 4, 7–8 (2008), available at <http://downloads.cas.psu.edu/naturalgas/pdf/MarcellusShaleWhatLocalGovernmentOfficialsneedtoknow.pdf>.

<sup>7</sup> See *infra* Part IV.

<sup>8</sup> See *Range Res. Appalachia, LLC v. Salem Twp.*, 964 A.2d 869, 877 (Pa. 2009).

<sup>9</sup> See, e.g., RODGERS ET AL., *supra* note 6, at 19–22 (providing a recommendation for local government officials); LEAGUE OF WOMEN VOTERS OF PA., MARCELLUS SHALE NATURAL GAS EXTRACTION STUDY 2009–2010: STUDY GUIDE V (2009), available at <http://palwv.org/issues/MarcellusShale> (follow “Study Guide V—Regulation and Permitting” hyperlink) (providing a detailed overview of regulation and permitting of Marcellus Shale Drilling).

<sup>10</sup> See *Common Ground Lobby Talk*, *supra* note 5; John L. Kennedy, *Rendell Makes Two Key Appointments; One Controversial*, PA. L. WEEKLY, Vol. 31, No. 34 (Aug. 25, 2008) (providing insight into the sometimes conflicting concerns surrounding the Marcellus Shale: “While [Department of Environmental Protection Secretary] John [Hanger] has been an ardent champion for the environment, . . . [h]e understands that businesses looking to grow and create jobs in Pennsylvania need DEP to be responsive and reasonable in conducting their regulatory duties.”); see also Marcellus Shale Map, *supra* note 6.

<sup>11</sup> John A. Harper, *The Marcellus Shale—An Old “New” Gas Reservoir in Pennsylvania*, PA. GEOLOGY, Spring 2008, at 2, 2–5, available at <http://www.dcnr.state.pa.us/topogeo/pub/pageolmag/pdfs/v38n1.pdf>.

<sup>12</sup> *Id.* at 2.

of increased extraction, however, come difficulties that accompany drilling for the resource.<sup>13</sup> Although the increased viability of the shale as a source of natural gas could provide an economic boost to the regions in which the shale is located, the drilling presents pollution and regulation problems and creates concerns for property owners.<sup>14</sup> These issues must be addressed with an eye to how parties will navigate the maze of laws and regulations that are already in place at all levels of government.<sup>15</sup>

The Marcellus Shale formation is not the first formation of its kind to be used for natural gas extraction.<sup>16</sup> In a similar but smaller formation in Texas, known as the Barnett formation, drilling has progressed to a point that allows lessons learned during that process to be applied to the progress being made in the Marcellus Shale play and similar formations.<sup>17</sup> Technologies and regulations used in Texas may serve as guides in Pennsylvania, as well as in the other states affected by the Marcellus Shale.<sup>18</sup>

There are problems, however, unique to any state, and the Marcellus Shale states will have to start from scratch in areas where the regulations—or solutions that other states have implemented—are not applicable to their specific circumstances.<sup>19</sup> For example, the environmental threats surrounding oil and gas development in Pennsylvania are different in many ways from those that exist in Texas.<sup>20</sup> In Texas, disposal of the wastewater created in the extraction process is often accomplished by injecting the water into deep wells that serve as natural depositories.<sup>21</sup> Such a solution is less feasible in a state like Pennsylvania, which has underlying geological formations that differ from those in Texas.<sup>22</sup> This difference

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<sup>13</sup> See *id.* at 9–12.

<sup>14</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>15</sup> See LEAGUE OF WOMEN VOTERS OF PA., *supra* note 9.

<sup>16</sup> See News Release, Marc Airhart, Jackson School of Geosciences, Barnett Boom Ignites Hunt for Unconventional Gas Resources (Jan. 2007), *available at* <http://www.jsg.utexas.edu/news/feats/2007/barnett.html>; Durham, *supra* note 4, at 6.

<sup>17</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>18</sup> See, e.g., *id.* (Ed Ireland, the executive director of the Barnett Shale Energy Education Council, pointing out that although Texas had many oil and gas regulations in place for almost 100 years when operations in the Barnett Shale formation began, those regulations required alterations to accommodate the specific concerns associated with the new resource); see also Billie Ann Maxwell, Note & Comment, *Texas Tug of War: A Survey of Urban Drilling and the Issues an Operator Will Face*, 4 TEX. J. OIL GAS & ENERGY L. 337, 338 n.2 (2008–2009) (“The success of the Barnett Shale has spurred activity in the Marcellus Shale in Pennsylvania and the Haynesville Shale in Louisiana.”).

<sup>19</sup> *Common Ground Lobby Talk*, *supra* note 5.

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

<sup>21</sup> *Id.*

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

makes wastewater disposal in Pennsylvania a more pressing concern.<sup>23</sup> In addition, the nuances of a particular state's laws and regulations create a legal structure that lawmakers must take into account when any type of new regulation or legislation is considered.<sup>24</sup>

This note provides examples of some of the problems that have arisen, or may soon arise, in conjunction with the increased interest that energy companies are showing in the Marcellus Shale formation.<sup>25</sup> The note focuses on Pennsylvania laws and regulations as examples when discussing problems at the state and local levels, but it proposes a solution that would involve the cooperation of all of the Marcellus Shale states.<sup>26</sup>

Part I of the note provides an overview of the technological innovations that have led to the viability of shale formations like the Marcellus as sources of natural gas. Part II presents examples of concerns that property owners may have in connection with increased development by oil and gas companies. Part III discusses the extent of the pollution that may result from that development. Part IV of the note provides perspective on the number of laws and regulations that currently affect extraction of mineral resources in the state of Pennsylvania and also discusses some of the laws and regulations that affect multiple Marcellus Shale states. Finally, Part V of the note discusses the problems that arise out of the complicated nature of the legal and regulatory system surrounding extraction of mineral resources in Pennsylvania and the other Marcellus Shale states. It also proposes the establishment of a centralized interstate body, devoted solely to addressing all aspects of the development associated with the Marcellus Shale formation.

Extraction of natural gas from the Marcellus Shale formation could become an economic boon for the states in which it is located.<sup>27</sup> In order for extraction of natural gas from the formation to be both economically efficient and environmentally sound, however, concerned parties must work together to establish an overarching environmental regulatory plan that takes into consideration all aspects of extraction.<sup>28</sup> These parties could also create a model framework that strikes a balance between protecting the interests of the states, the region, and the nation, and ensuring that the many regulations are not so stringent that they prohibit developers

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

<sup>24</sup> See RODGERS ET AL., *supra* note 6, at 7–8.

<sup>25</sup> Durham, *supra* note 4, at 10.

<sup>26</sup> See Marcellus Shale Map, *supra* note 6.

<sup>27</sup> Harper, *supra* note 11, at 5.

<sup>28</sup> See, e.g., RODGERS ET AL., *supra* note 6, at 19–22 (discussing the importance of collaboration at the local government level).

from profitably extracting the natural gas.<sup>29</sup> The framework should take into consideration, and be influenced by, the concerns addressed by current laws and regulations at all levels of government,<sup>30</sup> and refine current legal provisions so that they complement, rather than hinder, each other. The framework should also acknowledge those areas of regulation best left to lower levels of government.<sup>31</sup> Establishing a body of policymakers at an interstate level would minimize the negative impacts of natural gas extraction and provide a starting point from which efficient regulatory, environmental, and educational programs may flow.

#### I. TECHNOLOGICAL INNOVATIONS IN NATURAL GAS EXTRACTION

Recent improvements in technology have allowed growth in the field of natural gas extraction from alternative sources such as the Marcellus Shale,<sup>32</sup> and continued improvements will likely lead to even better extraction options in the future. The two main innovations that have led to this growth are horizontal drilling and hydraulic fracturing.<sup>33</sup>

Horizontal drilling is not a particularly recent innovation.<sup>34</sup> Rather, improvements in technology have recently rendered the technique more cost-efficient.<sup>35</sup> To implement horizontal drilling, drillers bore a vertical hole until it reaches a few hundred feet above the depth of the targeted formation.<sup>36</sup> After that, the drillers direct the progress of the drill bit in an arc shape until it drills on a horizontal plane.<sup>37</sup>

Horizontal drilling is advantageous for the purposes of extracting natural gas from shale formations like the Marcellus for several reasons.<sup>38</sup>

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<sup>29</sup> See, e.g., Press Release, Cathy Landry, Am. Petroleum Inst., New Study Finds Sharp Drop in Production with Additional Federal Hydraulic Fracturing Regulations (June 9, 2009), available at [http://www.api.org/Newsroom/study\\_finds\\_drop.cfm](http://www.api.org/Newsroom/study_finds_drop.cfm) (discussing the potential harm of regulations).

<sup>30</sup> See LEAGUE OF WOMEN VOTERS OF PA., *supra* note 9.

<sup>31</sup> See Landry, *supra* note 29 (discussing the harm of over-regulation at the federal level).

<sup>32</sup> Harper, *supra* note 11, at 2.

<sup>33</sup> *Id.* at 10.

<sup>34</sup> See *id.* (stating that a horizontal well was first drilled in Texas in 1929).

<sup>35</sup> See, e.g., Louise S. Durham, *Barnett Shale a Stimulating Play*, AAPG EXPLORER, Feb. 2006, at 12, 12–13, available at <http://www.aapg.org/explorer/2006/02feb/02february06.pdf> (observing that Mitchell Energy was behind the transformation of horizontal drilling from a technology that was too costly to be economically feasible to a technology that opened up new possibilities for profitable natural gas plays, and that these innovations occurred in association with development of the Barnett Shale formation).

<sup>36</sup> Harper, *supra* note 11, at 10.

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

<sup>38</sup> See *id.* at 10–12.

First, horizontal drilling increases penetration into the reservoirs because the natural gas exists in horizontal planes.<sup>39</sup> In addition, horizontal drilling enables the drill to access more fractures.<sup>40</sup> Finally, and most importantly from a land use perspective, horizontal drilling enables extraction of natural gas from beneath areas, such as cities, where drilling rigs typically cannot be assembled.<sup>41</sup>

Recent innovations in a method of oil and natural gas recovery known as hydraulic fracturing, or "fracing," comprise the second factor that has made natural gas extraction from shale plays economically feasible.<sup>42</sup> Hydraulic fracturing involves injecting large quantities of liquid into the bore holes of wells in order to increase their productivity.<sup>43</sup> Traditional hydraulic fracturing has been used in Pennsylvania since the mid-twentieth century.<sup>44</sup> This type of fracturing is accomplished by pumping fluids like water or kerosene, along with sand or a similar granular substance, into the targeted geological formation at high pressure.<sup>45</sup> The purpose of the technique is to increase surface area in the formation in order to facilitate better flow of natural gas from the formation into the well bore.<sup>46</sup> Hydraulic fracturing increases surface area within the formation in several ways.<sup>47</sup> First, the high pressure at which the fluid and granular material is injected into the formation creates new cracks in the rock.<sup>48</sup> Second, the injection makes the structure of the targeted area of the formation more porous and permeable.<sup>49</sup> Third, the granular material helps hold open the fractures formed by the process.<sup>50</sup>

In spite of the fact that the purpose of traditional hydraulic fracturing was to increase well productivity, shale formations like the Marcellus

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<sup>39</sup> See *id.* at 10–11 (stating that horizontal drilling increases penetration into the reservoir from potentially less than 50 feet to more than 3,000 feet).

<sup>40</sup> *Id.* at 11.

<sup>41</sup> *Id.* In addition to allowing access to typically inaccessible areas, horizontal drilling often leaves a smaller surface footprint. Durham, *supra* note 4, at 13 (stating that "[h]orizontal technology offers the advantage of drilling multiple wellbores off a single pad, thus leaving a small footprint and enabling access to targets significantly removed from permitted drilling locations.").

<sup>42</sup> See Harper, *supra* note 11, at 10.

<sup>43</sup> *Id.*

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

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

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

<sup>47</sup> See *id.*

<sup>48</sup> Harper, *supra* note 11, at 10.

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

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

were typically resistant to the technique due to their low permeabilities.<sup>51</sup> The problems associated with low permeability were remedied during the 1990s by the developers of Texas's Barnett Shale formation, who implemented a method known as slick-water fracturing.<sup>52</sup> Although slick-water fracturing is substantially similar to traditional fracturing in its process, its difference arises from the use of sand and copious amounts of fresh water treated with either gel or another friction-reducing substance.<sup>53</sup> The method's unique fracturing material maximizes the length and minimizes the height of the fractures it creates, making extraction of natural gas from shale formations more efficient.<sup>54</sup>

The contributions of these new technologies have made extraction of natural gas from the Marcellus Shale formation more economical.<sup>55</sup> But, with the creation of new extraction potential comes concerns with both property rights and the environmental impact.<sup>56</sup> The next two sections of this note discuss the issues that arise in those areas: issues that must be taken into consideration in order to develop a legal framework that solves the problems associated with increased drilling activity in the Marcellus Shale play.

## II. CONCERNS RAISED BY PROPERTY OWNERS IN CONNECTION WITH INCREASED DEVELOPMENT BY OIL AND GAS COMPANIES

When new developments occur in an industry that requires use of natural resources, land use concerns inevitably arise.<sup>57</sup> These concerns affect the way in which private property owners view their land and the way local government will make decisions about the best use of that land.<sup>58</sup> Changes in land use require scrutiny of the systems in a given region for the leasing of mineral rights and other related property rights, and a determination of whether those systems should be altered to better serve the needs of all parties involved with the use of the new resource.<sup>59</sup>

As the oil and gas industry increases its interest in the Marcellus Shale formation, property owners will face new decisions.<sup>60</sup> Tom Murphy,

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

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

<sup>53</sup> *Id.*

<sup>54</sup> Harper, *supra* note 11, at 10.

<sup>55</sup> *Id.* at 2.

<sup>56</sup> See RODGERS ET AL., *supra* note 6, at 3.

<sup>57</sup> See *id.*

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

<sup>59</sup> See *id.*

<sup>60</sup> See Durham, *supra* note 4, at 10.



who, in addition to being an Extension Educator, serves as a program leader for Penn State's Cooperative Extension program, pointed out during the Marcellus Shale Common Ground Lobby Talk that property owners are encountering rapid increases in the prices paid for mineral leases.<sup>61</sup> The uncertainty bred by such factors can lead to owners committing to leases that may not be in their best interests.<sup>62</sup> Property owners in the Barnett Shale region of Texas encountered this problem when they entered into mineral lease agreements with oil and gas companies.<sup>63</sup> Many of the property owners presented with initial lease agreements had no way of determining whether they were getting a good deal or whether the oil and gas companies were taking advantage of them.<sup>64</sup> Prices offered for leases began at levels as low as \$300 per lot for a signing bonus plus royalties of 12.5% to 18.5%,<sup>65</sup> but eventually increased to \$18,250 per acre plus royalties of as much as 27.5% or higher.<sup>66</sup> These types of pricing increases are already evident in the Marcellus Shale region,<sup>67</sup> and property owners who signed the initial lease agreements are finding themselves facing similar informational disadvantages as those encountered by the owners in the Barnett Shale region.<sup>68</sup>

J. Zach Burt cites increased public education and city drilling ordinances that provide adequate protection to citizens as two necessities that have become apparent as a result of the lessons learned during the early days of drilling in the Barnett shale play.<sup>69</sup> The government must

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<sup>61</sup> See *Common Ground Lobby Talk*, *supra* note 5 (stating that in the southwestern region of Pennsylvania, mineral lease rates that were originally \$150 to \$250 skyrocketed to \$3,000 to \$3,500 a few months later).

<sup>62</sup> See J. Zach Burt, Note & Comment, *Playing the "Wild Card" in the High-Stakes Game of Urban Drilling: Unconscionability in the Early Barnett Shale Gas Leases*, 15 TEX. WESLEYAN L. REV. 1, 2–4 (2008) (explaining that residents in the Barnett Shale region of Texas were presented with lease offers before they had any knowledge about such leases and before they could make informed decisions on whether signing particular leases would be beneficial or detrimental).

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

<sup>64</sup> *Id.* For example, the property owners who signed early leases were unaware of the possibility of negotiating with the oil companies and could not even turn to the local government for answers because city officials were as new to the process as the residents. *Id.* at 2–3.

<sup>65</sup> *Id.* at 3.

<sup>66</sup> *Id.* at 4.

<sup>67</sup> See Harper, *supra* note 11, at 5.

<sup>68</sup> See *Testimony on Marcellus Shale Exploration Issues: Presented to the Senate Majority Policy Committee*, 3 (Pa. Nov. 18, 2008) (statement of Douglas E. Hill, Exec. Dir., County Comm'r Ass'n of Pa.), available at <http://www.pacounties.org/SiteCollectionDocuments/MarcellusTestimonySRPolicy1108.pdf>; see also Burt, *supra* note 62, at 3–4.

<sup>69</sup> Burt, *supra* note 62, at 27–28.

educate the public to ensure that property owners have a clear understanding of their rights in relation to oil and gas leases.<sup>70</sup> But, the government must also see that the increase in information is useful from a practical standpoint in that it ensures that proper laws and regulations are in place to protect the owners from exploitation by the drilling companies. If there are areas where certain governments are dropping the ball, companies may seek out those jurisdictions.<sup>71</sup>

As local governments seek to provide protection for property owners, the limitations placed on their powers become apparent.<sup>72</sup> These limitations differ by location and can create considerable obstacles for municipalities that seek to keep the activities of oil and gas companies in check.<sup>73</sup> For example, the *Range Resources* case and another Supreme Court of Pennsylvania case, *Huntley & Huntley, Inc. v. Borough Council of the Borough of Oakmont*,<sup>74</sup> recently made explicit the Pennsylvania Supreme Court's interpretation of those limitations.<sup>75</sup>

In *Range Resources*, Salem Township enacted an ordinance aimed at regulating land development and surface uses that accompany drilling for oil and gas.<sup>76</sup> After several oil and gas companies brought an action, the trial court held that the Pennsylvania Oil and Gas Act preempted the

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<sup>70</sup> See PENN STATE EXTENSION, THE PENNSYLVANIA STATE UNIVERSITY, NATURAL GAS EXPLORATION: A LANDOWNER'S GUIDE TO LEASING LAND IN PENNSYLVANIA (2008), available at [http://agsci.psu.edu/spotlight/gasprimer08\\_web.pdf](http://agsci.psu.edu/spotlight/gasprimer08_web.pdf) (providing land owners with information on their rights in connection with mineral leases). Pennsylvania has begun the process of educating property owners with websites, guides such as this one, and events, such as information sessions with individuals who possess knowledge about the processes involved in signing an oil and gas lease and about the process involved in drilling for natural gas in general. See, e.g., Press Release, The Pennsylvania State University, Penn College, Cooperative Extension Announce Marcellus Shale Center (Oct. 22, 2008), <http://live.psu.edu/story/35477>.

<sup>71</sup> See *Toxic Coal Ash Piling Up in Ponds in 32 States*, THE CHARLESTON GAZETTE, Jan. 9, 2009, <http://wvgazette.com?News/MiningtheMountains/200901090215> ("Without federal guidelines, regulations of the ash ponds vary by state. Most lack liners and have no monitors to ensure that ash and its contents don't seep into underground aquifers.").

<sup>72</sup> See Walter A. Bunt, Jr., et al., *Commonwealth Court Invalidates Local Ordinances That Attempt to Regulate Oil and Gas Development*, IOGA NEWS (Indep. Oil & Gas Ass'n of Pa., Wexford, Pa.), July–Aug. 2007, at 1, available at [http://iogapa.org/files/208julaug\\_07.pdf](http://iogapa.org/files/208julaug_07.pdf).

<sup>73</sup> See *id.* at 2.

<sup>74</sup> 964 A.2d 855 (Pa. 2009).

<sup>75</sup> See Blaine A. Lucas, PA Supreme Court Rules on Permissible Local Land Use Regulation of Natural Gas Well Drilling Activity, Local Gov't Acad., <http://www.lgalyceum.org/lgalyceum/2009/04/pa-supreme-court-rules-on-scope-of-permissible-local-land-use.html> (Apr. 22, 2009).

<sup>76</sup> *Range Res. Appalachia, LLC v. Salem Twp.*, 964 A.2d 869, 870 (Pa. 2009).

regulations the township had enacted.<sup>77</sup> The trial court pointed out that many of the township's regulations mirrored regulations that the Oil and Gas Act already established.<sup>78</sup> The Pennsylvania Supreme Court eventually affirmed the holdings of both the trial court and the Commonwealth Court.<sup>79</sup> In its case opinion, the Court discussed the importance of a uniform state-level regulatory scheme for oil and gas drilling, a factor that both the involved oil and gas companies and the Pennsylvania Department of Environmental Protection ("PDEP") put forth as an important consideration.<sup>80</sup> The PDEP pointed out, however, that the policy goal of promoting uniformity should not lead to the ousting of all forms of municipal regulation of oil and gas operations.<sup>81</sup>

The *Huntley* case addressed the extent to which municipalities should be allowed to set standards associated with drilling in their jurisdictions.<sup>82</sup> According to the Supreme Court of Pennsylvania's decision in *Huntley*, zoning ordinances should be viewed separately from the types of regulations that the Oil and Gas Act would definitively preempt.<sup>83</sup> The court held that "absent further legislative guidance, Section 602's [of the Oil and Gas Act] reference to 'features of oil and gas well operations regulated by this act' pertains to technical aspects of well functioning and matters ancillary thereto (such as registration, bonding, and well site restoration), rather than the well's location."<sup>84</sup> In other words, municipalities are not stripped of their ability to dictate where certain types of land uses may occur within their jurisdictions, even if further regulation of those uses is preempted by state law.<sup>85</sup> In addition, the court noted that the policy interests accompanying development of oil and gas resources and land use are not so similar that they serve only one function.<sup>86</sup> Borrowing language from the Supreme Court of Colorado, it asserted:

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<sup>77</sup> *Id.* at 871.

<sup>78</sup> *Id.* For example, the court pointed to the Oil and Gas Act's regulation of water supply protection, safety devices, and well plugging. *Id.* Salem Township's ordinance addressed concerns like these as well—providing regulations that focused on construction, design, and locations associated with drilling, creating standards to meet in connection with use of water resources, and imposing requirements for both accessing drill sites and restoring them after extraction is complete. *Id.*

<sup>79</sup> *Id.* at 877.

<sup>80</sup> *Id.* at 874–75.

<sup>81</sup> *Id.* at 874.

<sup>82</sup> *Huntley & Huntley, Inc. v. Borough Council of the Borough of Oakmont*, 964 A.2d 855, 863 (Pa. 2009).

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

<sup>84</sup> *Id.* at 864.

<sup>85</sup> *See id.*

<sup>86</sup> *Id.* at 865–66.

The state's interest in oil and gas development is centered primarily on the efficient production and utilization of the natural resources in the state. A county's interest in land-use control . . . is one of orderly development and use of land in a manner consistent with local demographic and environmental concerns.<sup>87</sup>

This distinction provides a ready example of the types of conflicts that abound in connection with a resource that affects a multitude of parties and various levels of government.<sup>88</sup> It also demonstrates the importance of delegating regulatory duties to the governmental levels that are best equipped to deal with them.<sup>89</sup> In situations involving the concerns of property owners, local governments are better positioned to determine both the needs of those owners and the land uses that best suit specific areas of a community.<sup>90</sup>

The concerns that owners have about their land may also extend beyond the boundaries of their own properties. Property values are affected by the practices that are occurring on the surrounding land, and property owners, therefore, have legitimate reasons to closely monitor any activity that could affect the value of their properties.<sup>91</sup> Part of these concerns stems from zoning considerations such as those just discussed. Property owners will likely be averse to nearby drilling operations if they foresee a decrease in land value as a result. Other potential concerns may include conditions that affect the present enjoyment of their land, such as noise pollution from the various drilling processes, which can become a nuisance to owners of nearby properties.<sup>92</sup> Some of those concerns also involve environmental considerations, which may immediately affect individual property owners,<sup>93</sup> or may have long-term implications for entire communities

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<sup>87</sup> *Id.* at 865 (quoting Board of County Comm'rs of La Plata County v. Bowen/Edwards Assocs., Inc., 830 P.2d 1045, 1057 (Colo. 1992)).

<sup>88</sup> *See Huntley*, 964 A.2d at 865.

<sup>89</sup> *See id.*

<sup>90</sup> *See id.*

<sup>91</sup> *See, e.g.,* Marice Richter, *Fort Worth Man Sues Chesapeake Over Gas Drilling Noise*, DALLASNEWS.COM, Sept. 11, 2008, [http://www.dallasnews.com/sharedcontent/dws/news/localnews/stories/DN-noisesuit\\_11met.ART0.Central.Edition1.26eac3a.html](http://www.dallasnews.com/sharedcontent/dws/news/localnews/stories/DN-noisesuit_11met.ART0.Central.Edition1.26eac3a.html) (quoting a property owner who stated that "[w]e know our property values have been destroyed" by nearby drilling activity).

<sup>92</sup> *See, e.g., id.* (discussing a Fort Worth area resident who sued the Chesapeake Energy Corporation as a result of the noise accompanying drilling that was occurring near his home).

<sup>93</sup> *See Natural-Gas Drilling Pollutes Water, Pa. Farmer Says*, 30 No. 9 ANDREWS ENVTL. LITIG. REP. 6, Nov. 25, 2009.

or regions.<sup>94</sup> The next section discusses some of those potential environmental concerns.

### III. ENVIRONMENTAL CONCERNS ASSOCIATED WITH EXTRACTION

Issues associated with the extraction of natural gas from the Marcellus Shale formation include concerns ranging from forest fragmentation to the effects that well rigs may have on the state's scenic views and ecotourism.<sup>95</sup> The most prominent environmental issues, however, accompany the drilling process itself.<sup>96</sup> This section discusses those concerns, which consist of the effects that drilling in the formation may have on groundwater and the problems connected with the wastewater created during fracing.

Many of the environmental consequences of horizontal drilling and fracing in this region of the country are currently unknown, due to the fact that the industry has only recently begun to use these techniques in earnest.<sup>97</sup> All involved parties, therefore, are exercising more caution than usual as they move forward.<sup>98</sup> One example of the type of problem that may arise as drilling increases in the Marcellus Shale region is the potential for groundwater pollution.<sup>99</sup> An EPA study conducted in 2004 found that hydraulic fracturing of coalbed methane wells posed a minimal threat to

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<sup>94</sup> See, e.g., *id.* (discussing permanent damage to a tomato farm).

<sup>95</sup> *Common Ground Lobby Talk*, *supra* note 5.

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

<sup>97</sup> See Harper, *supra* note 11, at 10.

<sup>98</sup> See, e.g., Laura Legere, *Nearly a Year After a Water Well Explosion, Dimock Twp. Residents Thirst for Gas-Well Fix*, SCRANTON TIMES TRIB., Jan. 22, 2009, available at <http://static.istockanalyst.com/article/viewistocknews/articleid/2974461#>. An investigation began in Dimock Township, Pennsylvania, after an explosion occurred above the water well of a township resident. *Id.* Following the explosion, the DEP, a Cabot Oil and Gas representative, and the fire department investigated homes to see if methane was present. *Id.* The investigation did not reveal any gas in the houses, but it did reveal gas vapor in the well casings of six wells. *Id.* Residents became concerned about the state of their well water after discovering that if they shook and uncapped a bottle of the water, they could light the resulting gas vapors, creating a brief flame. *Id.* Cabot Oil and Gas subsequently provided these residents with temporary water supplies. *Id.* The Cabot Oil and Gas representative's comments exemplify the approach that parties are taking when it comes to feeling out the potential environmental hazards that come along with extracting natural gas from the Marcellus Shale: "Cabot is not ruling out the possibility that its activities could have caused or contributed to the presence of gas in the water supply." Legere, *supra*. Until the many effects of this type of drilling become clear, parties must take care to consider all of the potential environmental impacts that any new drilling activity could create.

<sup>99</sup> See *id.*

groundwater.<sup>100</sup> Although the fracturing of these wells differs in that it involves extraction from coalbeds rather than shale plays, the technique and potential for pollution are substantially similar.<sup>101</sup> Nevertheless, the EPA ensured that it would be able to reevaluate the potential environmental hazards of hydraulic fracturing in the future by retaining its right to conduct studies at a later time.<sup>102</sup> In addition, in 2003, the EPA entered into a Memorandum of Agreement with three companies performing hydraulic fracturing of coalbed methane wells, providing that they would voluntarily stop using diesel fuel in fracturing fluids.<sup>103</sup> With the possibility of a dramatic increase in fracturing looming on the horizon, the EPA may find that another study will be necessary in the near future.<sup>104</sup> The possibility also exists that groundwater could be polluted by the drilling operations in a manner not directly associated with the fracturing fluid.<sup>105</sup>

Although the potential for the fracturing fluid to pollute nearby groundwater sources may seem like the most intuitive concern associated with

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<sup>100</sup> U.S. Environmental Protection Agency, Hydraulic Fracturing, [http://www.epa.gov/OGWDW/uic/wells\\_hydrofrac.html#national](http://www.epa.gov/OGWDW/uic/wells_hydrofrac.html#national) (last visited Feb. 16, 2010) (stating that “the injection of hydraulic fracturing fluids by CBM wells posed little or no threat to USDWs and additional studies were not justified.”).

<sup>101</sup> See U.S. ENVIRONMENTAL PROTECTION AGENCY, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS 3-4 to 3-10 (2004) available at [http://www.epa.gov/ogwdw000/uic/wells\\_coalbedmethanestudy.html](http://www.epa.gov/ogwdw000/uic/wells_coalbedmethanestudy.html) (follow “Chapter 3—Characteristics” hyperlink).

<sup>102</sup> U.S. Environmental Protection Agency, Hydraulic Fracturing, *supra* note 100. For an argument that the EPA should now initiate a more inclusive study on the environmental and health effects of hydraulic fracturing than the abbreviated 2004 study, see Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 179 (2009).

In sum, the EPA report is not a rigorous scientific analysis of the specific impacts of fracturing on human health or the environment . . . . As such, it provides inadequate data and analysis to determine potential impacts on human health and specifically, whether the risks are sufficiently low to merit exemption from the Safe Drinking Water Act.

*Id.*

<sup>103</sup> See Memorandum of Agreement Between the United States Environmental Protection Agency and BJ Services Company, Halliburton Energy Services, Inc., and Schlumberger Technology Corporation: Elimination of Diesel Fuel in Hydraulic Fracturing Fluids Injected into Underground Sources of Drinking Water During Hydraulic Fracturing of Coalbed Methane Wells (Dec. 12, 2003), available at [http://www.epa.gov/ogwdw000/uic/pdfs/moa\\_uic\\_hyd-fract.pdf](http://www.epa.gov/ogwdw000/uic/pdfs/moa_uic_hyd-fract.pdf). But see Wiseman, *supra* note 102, at 189 (pointing out that, although such a memorandum is a step in the right direction, the EPA cannot enforce it, and it is not a stand-alone solution).

<sup>104</sup> See Wiseman, *supra* note 102, at 193 (arguing that now is the time to conduct such a study).

<sup>105</sup> See, e.g., Legere, *supra* note 98.

hydraulic fracturing, the main environmental concern arising from the extraction of natural gas from the Marcellus Shale formation is connected to the amount of wastewater that fracing generates.<sup>106</sup> This wastewater, a salty fluid known as brine, can contain hydrocarbons and metals, and may even contain a small amount of radioactive material.<sup>107</sup> After the fracing process is finished, developers must dispose of the wastewater.<sup>108</sup> In places like Texas, this wastewater can be injected back into the ground because there are natural, deep saltwater depositories with limestone caps in the region.<sup>109</sup> In the Marcellus Shale states, however, this solution may not be a feasible option.<sup>110</sup> The water could be transported to other states, but such transportation would be very costly.<sup>111</sup> The best readily available option, at least for the state of Pennsylvania, would be to treat the wastewater at in-state facilities.<sup>112</sup>

There are currently five facilities in Pennsylvania that are equipped to treat wastewater.<sup>113</sup> Hydraulic fracturing, however, creates vast amounts of this pollutant.<sup>114</sup> Fracing for one horizontal well could use as many as several million gallons of water,<sup>115</sup> leading to an equally large amount of wastewater after the process is complete. Five facilities will not be enough to meet the treatment demands of this considerable quantity of wastewater.<sup>116</sup>

The other Marcellus Shale states must also confront the problem of how to dispose of the wastewater accompanying fracing, and the ways in which one state deals with the problem will affect surrounding states as well. For example, West Virginia has been addressing the excess volume of wastewater that is created by the fracing process.<sup>117</sup> According to an article in *The State Journal*, West Virginia's wastewater treatment plants

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<sup>106</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>107</sup> *Id.* (explaining that the brine is ten times saltier than ocean water when it flows out of the well bore); *see also* PowerPoint: Gas Well Drilling and Development: Marcellus Shale, Susquehanna River Basin Commission, Commission Meeting (June 12, 2008), *available at* <http://www.srb.com/whatsnew/docs/MarcellusShaleandGasWellDrillingPowerpoint061208.pdf>.

<sup>108</sup> *Common Ground Lobby Talk*, *supra* note 5.

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

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

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

<sup>112</sup> *See id.*

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

<sup>114</sup> *See* Harper, *supra* note 11, at 10–12.

<sup>115</sup> *Id.* at 11–12.

<sup>116</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>117</sup> *See* Pam Kasey, *Gas Well Drilling Brine Challenges Water Treatment Plants*, *THE STATE J.*, Dec. 15, 2008, <http://www.statejournal.com/story.cfm?func=viewstory&storyid=48477>.

dilute the brine and discharge it into nearby rivers.<sup>118</sup> This practice is becoming problematic as the quantities of brine that need treatment increase.<sup>119</sup>

In one region of West Virginia, the increased amount of diluted brine flowing into the Monongahela River caused the river to exceed the standard set out for the permissible amount of total dissolved solids (“TDSs”) present in the water.<sup>120</sup> The state in which these standards were exceeded, however, was Pennsylvania.<sup>121</sup> Dilution causes “the management of brine [to] become[], at high volumes, a watershed-level issue.”<sup>122</sup> The nature of the waste product is such that the place at which it is disposed will not be the only location affected.<sup>123</sup> In short, if waste treatment facilities are dumping brine—even diluted brine—into local rivers, the effects of that dumping will accumulate and spread.<sup>124</sup> If the quantities of brine spike as extraction from the Marcellus Shale formation becomes an increasingly feasible endeavor, a problem that is currently localized and relatively harmless could become a major environmental concern.<sup>125</sup>

A solution that could prove beneficial in the future for states affected by the Marcellus Shale play involves recycling some portion of the wastewater generated by fracing.<sup>126</sup> This solution is employed by Devon Energy Corporation, a company connected with natural gas extraction from the Barnett Shale in Texas.<sup>127</sup> Devon Energy was recently commended for its method of treating the drilling-related wastewater.<sup>128</sup> The company partnered with a water treatment technology manufacturer in order to use mobile heated distillation units to recover and recycle the brine.<sup>129</sup> Through this process, Devon was able to recover and recycle approximately 24% of the total amount of water—3.5 million gallons in total—used during

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<sup>118</sup> *Id.*

<sup>119</sup> *Id.*

<sup>120</sup> *Id.*

<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

<sup>123</sup> See Kasey, *Gas Well Drilling*, *supra* note 117.

<sup>124</sup> See *id.*

<sup>125</sup> See Wiseman, *supra* note 102, at 116 (asserting that the potential exists for the negative environmental effects of fracing to overwhelm jurisdictions’ regulatory controls, some of which are limited).

<sup>126</sup> See John-Laurent Tronche, *Devon Energy Awarded for Barnett Shale Water Treatment*, FT. WORTH BUS. PRESS, Nov. 17, 2008, <http://www.fwbusinesspress.com/display.php?id=8912>.

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

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

<sup>129</sup> *Id.*



fracing.<sup>130</sup> If the Marcellus Shale play becomes lucrative enough to allow energy companies to invest in this type of technology, it could decrease both the burden on wastewater treatment plants and the overall environmental impact of natural gas extraction.<sup>131</sup>

Managing the pollution effects of brine becomes even more complicated when concerned parties must take resources other than water into account. An example of the interconnectedness and complexity in this context occurred in relation to pollution of the Monongahela River. On October 10, 2008, a Pennsylvania power station owned by Allegheny Energy failed to comply with its air emissions permit.<sup>132</sup> The violation was a result of the cooling water withdrawn from the Monongahela River.<sup>133</sup> The water contained TDSs originating from the diluted brine.<sup>134</sup> The Pennsylvania Department of Environmental Protection's solution was to request that the United States Army Corps of Engineers allow more water to flow from West Virginian dams upriver, thus lowering the concentration of TDSs present in the river.<sup>135</sup> The PDEP's plan was thwarted, however, by a drought watch.<sup>136</sup>

With this type of interconnectedness comes the necessity that environmental agencies from various states cooperate with each other and with regional and national regulatory bodies. The problem then becomes one of successfully coordinating a state-regulated source of pollution, such as drilling for natural gas, with its accompanying environmental effects, which must be approached from a more regional and interstate stance in order to be comprehensive and efficient.<sup>137</sup>

The task of determining how best to solve the problem of treating brine falls to the Pennsylvania Department of Environmental Protection, and other state environmental departments, as well as to the various River Basin Commissions that have a presence in the Marcellus Shale

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<sup>130</sup> *Id.*

<sup>131</sup> *Cf.* Kasey, *Gas Well Drilling*, *supra* note 117 (discussing the problems increased amounts of brine cause for wastewater treatment plants and, at sufficient quantities, for watersheds).

<sup>132</sup> Pam Kasey, *State Needs to Plan for Gas Well Drilling Brine*, *THE STATE J.*, Nov. 20, 2008, <http://www.statejournal.com/story.cfm?func=viewstory&storyid=47274>.

<sup>133</sup> *Id.*

<sup>134</sup> *Id.* (pointing out that although TDSs are not hazardous to human health, if concentration levels rise above the water quality standard—500 milligrams per liter in Pennsylvania—the pollutants can affect both the functioning of industrial equipment and the palatability of drinking water).

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

<sup>136</sup> *Id.*

<sup>137</sup> *See Common Ground Lobby Talk*, *supra* note 5.

states.<sup>138</sup> These regulatory bodies will have to find solutions to these problems and the other environmental concerns while also keeping in mind the fact that regulation of the environmental impacts of drilling in the Marcellus Shale formation is only one part of a multifaceted task that encompasses meeting the concerns of property owners, the individual states, and the oil and gas companies.<sup>139</sup>

#### IV. LAWS AND REGULATIONS GOVERNING EXTRACTION OF NATURAL GAS IN PENNSYLVANIA

There are many laws and regulations that affect oil and gas operations at all levels of government, and this wide range of authority can lead to inefficiency and confusion when a company seeks to capitalize on a new source of natural gas such as the Marcellus Shale formation. This section of the note highlights, as an example, some of the laws and regulations that affect extraction of natural gas in the state of Pennsylvania, and points out the complications that can arise when the mandates of different governing bodies, including mandates that extend across state borders, conflict with or hinder one another.<sup>140</sup>

The primary law that oil and gas well developers must look to when they decide to drill in Pennsylvania is the Oil and Gas Act.<sup>141</sup> The Act sets out the requirements those operators must meet before they begin extracting mineral resources.<sup>142</sup> The main requirement is obtaining a permit,<sup>143</sup>

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<sup>138</sup> *Id.*

<sup>139</sup> *Id.* The participants in the round-table discussion stressed the need for minimizing the impact of drilling operations by centralizing the decision-making processes that occur in connection with the gas wells. *Id.*

<sup>140</sup> Although Part IV focuses primarily on laws and regulations from the state or regional level down, it should be noted that there are also federal regulations—overseen by the United States Environmental Protection Agency—that could potentially affect drilling for oil and natural gas in Pennsylvania and the other Marcellus Shale states. *See, e.g.*, Federal Pollution Control Act (“Clean Water Act”), 33 U.S.C. § 1251 (2006). *See also* Wiseman, *supra* note 102, at 116–17 (asserting that Congress should not have exempted, in connection with its Energy Policy Act of 2005, the fracking process from the Safe Drinking Water Act). Any regulations or laws created at other levels of government must obviously conform with EPA regulations, but, because the EPA regulations apply nationwide, they do not have the potential to create the same types of complications and confusion for developers and other parties as regulations promulgated at lower levels.

<sup>141</sup> Oil and Gas Act, 58 PA. STAT. ANN. § 601.101 (1996).

<sup>142</sup> *Id.*

<sup>143</sup> *Id.* § 601.201. Section 201 provides specific instructions to permit applicants, including information about having a plat prepared by an engineer or surveyor, information about

without which drilling cannot begin.<sup>144</sup> Applicants must go through many steps before they receive their permits,<sup>145</sup> and the time these steps take can become crucial to the development of an economically feasible well, especially when considered in conjunction with the other requirements the drillers must meet.<sup>146</sup>

In addition to compliance with the Oil and Gas Act, there are many other procedures with which drillers must comply. The PDEP plays a large role in the regulation of oil and gas extraction.<sup>147</sup> More specifically, the Bureau of Oil and Gas Management, a PDEP program, deals with many of the concerns that must be addressed when oil and gas companies seek to drill in the state.<sup>148</sup> According to the Bureau's website, the program "develops policy and programs for the regulation of oil and gas development and production pursuant to the Oil and Gas Act, the Coal and Gas Resource Coordination Act, and the Oil and Gas Conservation Law."<sup>149</sup> Some of the Bureau's other functions include oversight of permit and inspection programs and contributions to state standards and regulations.<sup>150</sup> The Bureau's website provides a glimpse of the hoops through which parties wishing to drill must jump before beginning their projects.<sup>151</sup>

There are also other state-level laws that may affect the actions of the oil and gas companies.<sup>152</sup> The Clean Streams Law, for instance, gives the PDEP authority to control water pollution in the state.<sup>153</sup> The

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providing the angles and directions of wells that are not being drilled in a completely vertical fashion, and information about providing notice to surface owners and obtaining their approval. *Id.*

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

<sup>145</sup> *See id.*

<sup>146</sup> *See* Pa. Dep't of Env'tl. Protection, Laws & Regulations, <http://www.dep.state.pa.us/dep/deputate/minres/oilgas/laws&regulations.htm> (last visited Feb. 18, 2010).

<sup>147</sup> *See* Pa. Dep't of Env'tl. Protection, Oil & Gas, [http://www.depweb.state.pa.us/portal/server.pt/community/oil\\_gas/6003](http://www.depweb.state.pa.us/portal/server.pt/community/oil_gas/6003) (last visited Feb. 18, 2010).

<sup>148</sup> *See* Pa. Dep't of Env'tl. Protection, Bureau of Oil and Gas Mgmt., <http://www.dep.state.pa.us/dep/deputate/minres/oilgas/oilgas.htm> (last visited Feb. 18, 2010).

<sup>149</sup> *Id.*

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

<sup>151</sup> *See* Pa. Dep't of Env'tl. Protection, Marcellus Shale, [http://www.dep.state.pa.us/dep/deputate/minres/oilgas/new\\_forms/marcellus/marcellus.htm](http://www.dep.state.pa.us/dep/deputate/minres/oilgas/new_forms/marcellus/marcellus.htm) (last visited Feb. 18, 2010).

<sup>152</sup> *See, e.g.,* Clean Streams Law, 35 PA. STAT. ANN. §§ 691.1–691.1001 (2003); BUREAU OF OIL AND GAS MANAGEMENT, OIL AND GAS OPERATORS MANUAL, ch. 2 (2001), *available at* <http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-8295> (follow "Chapter 2—Compliance Responsibility" hyperlink) (providing information for oil and gas companies about the many laws and regulations with which they must comply in order to drill in the state of Pennsylvania).

<sup>153</sup> Clean Streams Law, 35 PA. STAT. ANN. § 691.5 (2003).

law sets standards for the discharge of industrial wastes and requires that permits be obtained for any waste that will flow into Pennsylvania's water systems.<sup>154</sup> The companies must also be aware of the presence of state lands and its effect on the ability to drill in those areas.<sup>155</sup>

Interstate commissions also have a say in the regulations to which drillers must adhere.<sup>156</sup> As the nature of drilling in the Marcellus Shale formation requires large quantities of water, the river basin commissions covering various regions in Pennsylvania play a role in establishing the requirements that drillers must meet.<sup>157</sup> For example, bodies like the Susquehanna River Basin Commission monitor the treatment of polluted water, and some of the commissions have the ability to enforce their own regulations.<sup>158</sup> The fact that these commissions are interstate bodies adds to the complicated nature of the regulatory system governing oil and gas extraction. The commissions are focused on maintaining the environmental health of a given river basin, regardless of the state borders the basin crosses.<sup>159</sup> The concerns and goals of the commissions, therefore, may not always coincide perfectly with the requirements of a particular state.<sup>160</sup> However, the nature of the resource makes interstate cooperation a desirable goal.

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<sup>154</sup> *Id.* § 691.307.

<sup>155</sup> BUREAU OF OIL AND GAS MANAGEMENT, *supra* note 152, at 6–9.

<sup>156</sup> *See, e.g.*, Delaware River Basin Commission, Natural Gas Drilling in the Delaware River Basin, <http://www.state.nj.us/drbc/naturalgas.htm> (last visited Feb. 18, 2010).

<sup>157</sup> The water basin-related commissions that have a presence in the state of Pennsylvania are the Susquehanna River Basin Commission, the Delaware River Basin Commission, the Ohio River Basin Water Sanitary Commission, the Interstate Commission on the Potomac River Basin, and the Great Lakes Commission. PENN STATE COLLEGE OF AGRICULTURAL SCIENCES, MARCELLUS EDUCATION FACT SHEET 3–6 (2009), *available at* <http://resources.cas.psu.edu/WaterResources/pdfs/marcelluswater.pdf>.

<sup>158</sup> *See* Susquehanna River Basin Comm'n, Susquehanna River Basin Compact, art. 3, May 1972, *available at* [http://www.srbc.net/about/srbc\\_compact.pdf](http://www.srbc.net/about/srbc_compact.pdf). It should be noted that not all of these commissions possess regulatory powers. *Compare* K.C. Flynn, *After Watt: Loss of River Basin Commissions Forces a Look at Alternatives*, 54 J. WATER POLLUTION CONTROL FED'N 6, 7 (1982) (explaining that the Interstate Commission on the Potomac River Basin does not have regulatory power), *with* Susquehanna River Basin Comm'n, Regulation of Projects, <http://www.srbc.net/programs/regulations.htm> (last visited Feb. 18, 2010) (providing information regarding the Susquehanna River Basin Commission's various regulations).

<sup>159</sup> *See, e.g.*, Susquehanna River Basin Comm'n, Executive Director's Message, <http://www.srbc.net/about/edmessage.htm> (last visited Feb. 18, 2010) ("Our boundaries are determined by the Susquehanna River and its many tributaries that form the 27,510 square mile drainage area, not by political boundaries.").

<sup>160</sup> *See id.*

Municipalities comprise yet another level of government with which drillers must contend.<sup>161</sup> These governing bodies contribute to the control of much of the zoning and land use concerns associated with natural gas extraction.<sup>162</sup> However, the municipalities have no control over regulations of the oil and gas operations themselves.<sup>163</sup> It is this lack of control that has recently caused Pennsylvania townships to become involved in litigation, such as the *Range Resources* and *Huntley* cases.<sup>164</sup>

During the Common Ground Lobby Talk roundtable discussion, Gary Falatovich, the attorney representing Salem Township, explained the reservations and desires of the township going into the *Range Resources* case.<sup>165</sup> Salem Township feared that if wells were placed—accompanied by the access roads and gas lines necessary to maintain the wells and transport the gas to other locations—the placement could prevent development of the land on which those changes were made even after the wells had been capped.<sup>166</sup> The township hoped the Pennsylvania Supreme Court would rule that municipalities could preclude oil and gas wells from being constructed in residential zoning districts.<sup>167</sup>

This conflict reveals the crossroads between one of a municipality's primary functions—zoning and land use control—and one of its problematic limitations—a minimal ability to regulate practices that have effects on a local level but are governed by state, not municipal, law.<sup>168</sup> The only way by which a municipality may be able to control the actions of gas and oil companies, at least in Pennsylvania, may be by enacting ordinances that restrict their operations to certain zoning districts.<sup>169</sup> The *Range Resources* case did not completely eliminate the power of municipalities to control what types of land use occur within their jurisdictions, but it did make

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<sup>161</sup> There are around 2,400 municipalities in Pennsylvania. *Common Ground Lobby Talk*, *supra* note 5.

<sup>162</sup> *Id.*

<sup>163</sup> *Id.*; see also *Range Res. Appalachia, LLC v. Salem Twp.*, 964 A.2d 869, 877 (Pa. 2009).

<sup>164</sup> See *Range Resources*, 964 A.2d at 869; *Huntley & Huntley, Inc. v. Borough Council of the Borough of Oakmont*, 964 A.2d 855 (Pa. 2009).

<sup>165</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>166</sup> *Id.*

<sup>167</sup> *Id.* As explained in Part II, the Pennsylvania Supreme Court did hold that municipalities can still control where wells are placed through the use of zoning ordinances. *Huntley*, 964 A.2d at 865–66. In the *Range Resources* case, however, the court ultimately held that the Salem Township ordinances were preempted by the Pennsylvania Oil and Gas Act, because they constituted more than mere zoning ordinances. *Range Resources*, 964 A.2d at 877.

<sup>168</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>169</sup> See, e.g., *Huntley*, 964 A.2d at 863, 865–66.

clear that such power has definite limits.<sup>170</sup> One consideration during the creation of any type of centralized regulatory body for the governance of drilling in the Marcellus Shale formation, therefore, must be the extent to which the municipalities will be able to control the oil and gas operations that take place within their jurisdictional limits.<sup>171</sup> This control will depend largely on the laws that have been enacted in a given state, including laws providing municipalities with specific regulatory powers and laws that preempt regulation on a local level.<sup>172</sup>

There are also national-level interest groups that may influence the policies created by Congress and by the lower levels of government.<sup>173</sup> Groups like the Interstate Oil and Gas Compact Commission (“IOGCC”), for example, serve to promote beneficial policies across the country.<sup>174</sup> The IOGCC seeks to bring together concerned parties such as oil and gas regulators, environmentalists, industry members, and governors of member states, so that they can form committees and collaborate on finding solutions to the problems that arise in conjunction with utilizing oil and gas resources.<sup>175</sup> The IOGCC also seeks to present to Congress a united front of state governors in order to advocate for the most beneficial use of oil and gas resources and the most effective regulations.<sup>176</sup> The governors of all of the states affected by development of the Marcellus Shale play are members of the IOGCC.<sup>177</sup>

In short, there are mandates from many agencies and states, as well as desires of various interest groups, that must be considered or complied

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<sup>170</sup> Range Res. Appalachia, LLC v. Salem Twp., 964 A.2d 869, 877 (Pa. 2009).

<sup>171</sup> One possible solution to this problem would be to follow the example of the response used by local governments in Texas in order to regulate Barnett Shale drilling in their jurisdictions, provided that a given state’s laws allow it. *Common Ground Lobby Talk*, *supra* note 5. Many cities in Texas affected by the drilling adopted extensive drilling and gas ordinances that laid out regulations for everything from setback distances and landscape regulations to noise levels. *Id.*

<sup>172</sup> *See id.*

<sup>173</sup> *See, e.g.*, Interstate Oil & Gas Compact Comm’n, About Us, <http://www.iogcc.state.ok.us/about-us> (last visited Feb. 18, 2010).

<sup>174</sup> *See id.*

<sup>175</sup> Interstate Oil & Gas Compact Comm’n, What We Do, <http://www.iogcc.state.ok.us/what-we-do> (last visited Feb. 18, 2010).

<sup>176</sup> About the Interstate Oil and Gas Compact Commission, *supra* note 173.

<sup>177</sup> *See* Interstate Oil & Gas Compact Comm’n, Member States, <http://www.iogcc.state.ok.us/member-states> (last visited Feb. 18, 2010). The governors of Pennsylvania, New York, West Virginia, and Ohio are all members of the IOGCC. *Id.*; Marcellus Shale Map, *supra* note 6. Note, however, that because the IOGCC is not region-specific, it would address broader issues than those that concern the Marcellus Shale states in relation to the use of that specific natural gas play.

with throughout the process of drilling for, and extracting, natural gas. Ensuring compliance with these requirements takes time and money, as well as knowledge of the regulations. Mindfulness of the desires of interest groups is also necessary to ensure that any new policy or innovation is not hampered by strong opposition.<sup>178</sup> The creation of a centralized system for distribution of information and for regulation of the specific compliance requirements associated with horizontal drilling, hydraulic fracturing, and collecting natural gas from the Marcellus Shale formation would prevent oil and gas companies from becoming discouraged by the many potential roadblocks around which they must navigate before production begins. A centralized system would also alleviate the concerns that environmentalists and other parties, such as local municipalities, may have about whether the regulations put in place to protect their interests would simply be overlooked in order to facilitate quicker start times for the companies.

V. STREAMLINING THE REGULATORY SYSTEMS AFFECTING  
EXTRACTION OF NATURAL GAS FROM THE MARCELLUS SHALE  
FORMATION

In some ways, the process of coordinating efforts and streamlining regulations in order to better facilitate the development of the Marcellus Shale resource has already begun.<sup>179</sup> Parties connected in any way to the effects development will have in the state of Pennsylvania, for example, are beginning to examine ways of efficiently managing both gas resources and other resources affected by gas extraction.<sup>180</sup> Tom Murphy, one of the program leaders for Penn State's Cooperative Extension program, educates Pennsylvanians on the impacts that can be caused by natural gas

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<sup>178</sup> See, e.g., *Testimony on Marcellus Shale Exploration Issues: Presented to the Senate Majority Policy Committee*, 3 (Pa. Nov. 18, 2008) (statement of Douglas E. Hill, Exec. Dir., County Comm'r Ass'n of Pa.), available at <http://www.pacounties.org/SiteCollectionDocuments/MarcellusTestimonySRPolicy1108.pdf> (expressing local government concerns regarding property rights, quality of life, and the environment).

<sup>179</sup> See, e.g., *Marcellus Shale*, *supra* note 151 (providing information about the Marcellus Shale, including answers to frequently asked questions, links to educational sites, and resources for companies seeking to begin the process of drilling in the formation).

<sup>180</sup> See, e.g., Press Release, Department of Environmental Protection, Department of Environmental Protection Secretary McGinty Says Natural Gas Exploration, Extraction Will Not Come at Natural Resources' Expense (June 13, 2008), available at [http://www.portal.state.pa.us/portal/server.pt/community/search\\_articles/14292](http://www.portal.state.pa.us/portal/server.pt/community/search_articles/14292) ("This activity can be a tremendous economic boon for our state's citizens and industries. . . . However, developing our energy resources cannot come at the expenses of our environmental resources. . . .").

exploration.<sup>181</sup> During the Marcellus Shale Common Ground Lobby Talk, Murphy pointed out that the process of issuing permits has been holding up the ability of gas and oil companies to move forward with development.<sup>182</sup> Murphy also noted that municipalities do not have the ability to tax gas rights in the same way they may tax rights such as those accompanying coal.<sup>183</sup> For taxes to be collected on natural gas extracted from land in Pennsylvania, a requirement would have to be instituted at the state level.<sup>184</sup>

Although Pennsylvania still faces many challenges before it successfully addresses all the conflicting concerns associated with the Marcellus Shale formation, the state has made more progress in its efforts to accommodate the needs of the oil and gas industry than other states affected by the shale play.<sup>185</sup> Development in New York, for example, has been stalled by government hold-ups.<sup>186</sup> Locating available manpower to deal with reviewing permit applications and other tasks associated with new resources is a problem for any state. Dealing with these and other issues that arise during the development of new resources is what separates successful management from failure and missed opportunity.<sup>187</sup> For example, Pennsylvania is adding thirty-seven new PDEP employees to its payroll to deal solely with Marcellus Shale procedures such as issuing drilling permits to oil and gas companies and creating and enforcing new regulations.<sup>188</sup> These new positions were funded by increased permit fees.<sup>189</sup> Pennsylvania's focus, therefore, is ensuring ease of access to the Marcellus Shale play for the oil and gas industry.<sup>190</sup> New York, on the other hand, has placed permit issuance at a virtual standstill as it updates its regulations dealing with drilling.<sup>191</sup>

The different approaches of these two states exemplify the warring interests that exist at the core of every law and regulation enacted by a Marcellus Shale state, as well as every granted or denied permit. Parties

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<sup>181</sup> *Common Ground Lobby Talk*, *supra* note 5.

<sup>182</sup> *Id.*

<sup>183</sup> *Id.*

<sup>184</sup> *Id.*

<sup>185</sup> See Tom Wilber, *New York Understaffed to Handle Gas Rush*, ITHACA J., Mar. 10, 2008, available at <http://www.pressconnects.com/article/20090301/NEWS01/112040015/-1/news11/New+York+understaffed+to+manage+gas+rush>.

<sup>186</sup> *Id.*

<sup>187</sup> See *id.*

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

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

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

<sup>191</sup> Wilber, *supra* note 185.



with an interest in this resource must decide how much weight to give environmental issues and how much weight to give the promise of economic benefits.<sup>192</sup> Programs that consolidate the laws and regulations surrounding natural gas extraction will be necessary for both profitable extraction of the resource and successful maintenance of competing interests. States, however, must be careful not to eliminate safeguards that are in place or should be implemented at the different levels of government. For example, Falatovich, the Salem Township attorney, explained what types of local regulations are desirable from the standpoint of a municipality.<sup>193</sup> He emphasized the desire to have enough local control over surface development to enable municipalities to lessen the environmental and property impacts that drilling operations have on a given region.<sup>194</sup>

The recent Pennsylvania Supreme court rulings, discussed in Parts II and IV, demonstrate the court's approach to dividing authority between two levels of government.<sup>195</sup> The standards set at different levels of government should not be eliminated. They should, however, be overseen by one program with enough manpower to monitor all of the laws and regulations and keep oil and gas companies both informed about requirements that must be met and satisfied with the speed at which competing interests are weighed and a drilling permit is issued or denied. The creation of such a program could help lessen pressure on states to eliminate regulatory safeguards in order to keep industry interested.<sup>196</sup>

Coordinating the various interests associated with extraction of natural gas from the Marcellus Shale play is complicated, as it involves reconciling the laws and regulations of various states dealing with oil and gas resources, as well as even more localized zoning laws, with environmental mandates and regulations that typically develop on a regional or national scale.<sup>197</sup> The decision must be made as to what changes are necessary to streamline the processes involved in developing the Marcellus Shale play. That decision becomes even more complicated because of the state borders crossed by the Marcellus formation.<sup>198</sup> Unlike the more localized Barnett Shale play in northern Texas, the potentially developable

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<sup>192</sup> *See id.*

<sup>193</sup> *Common Ground Lobby Talk*, *supra* note 5.

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

<sup>195</sup> *See supra* Parts II, IV.

<sup>196</sup> *See, e.g.*, Wilber, *supra* note 185 (discussing the concern that such pressure could lead to rubber-stamping permit applications to expedite the development process).

<sup>197</sup> *See, e.g.*, National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 (2006); Susquehanna River Basin Commission, 18 C.F.R. §§ 801, 806–08 (2008).

<sup>198</sup> *See* Marcellus Shale Map, *supra* note 6.

areas of the Marcellus Shale play extend across at least four Northeastern and Mid-Atlantic states.<sup>199</sup> Coordination of at least some elements of development across these states will be crucial if all four states hope to benefit economically from that development while still finding the best means of extracting the resource and preserving the environment.

In order to maximize the potential of this resource, encourage the industry's attempts to develop the resource, and simultaneously minimize any negative environmental effects, Congress and every state containing potentially developable areas of the Marcellus Shale formation should facilitate the formation of a Marcellus Shale Compact and Commission. This interstate commission, in conjunction with an authority-granting compact, would be the starting point for streamlining crucial aspects of the development process of the play.

In order to determine the practical implications of forming such a commission, it is helpful to take another interstate commission as an example. The Susquehanna River Basin Commission ("SRBC") is useful for this purpose in that it involves a natural resource with some of the same border-crossing characteristics as those of the Marcellus Shale play, and it is a commission that affects a geographic region of the country similar to the region that would be affected by a Marcellus Shale Compact Commission.<sup>200</sup>

The provisions outlining the SRBC's ability to promulgate regulations appear in 18 C.F.R. §§ 801, 806–08 (2008). The SRBC's authority derives from the Susquehanna River Basin Compact, which "provides broad authority for the Commission to carry out basinwide planning programs and projects, and to take independent action as it determines essential to fulfill its statutory regional governmental role."<sup>201</sup> A similar compact would be necessary to establish the authority of the Marcellus Shale Compact Commission. Following the provision laying out the SRBC's authority under the compact is a list of the SRBC's objectives:

1. Develop cooperative and coordinated Federal, State, local, and private water and related natural resources planning within the basin,
2. Formulate, adopt, effectuate, and keep current a comprehensive plan and a water resources program for the immediate and long-range use and development of the water resources of the basin,

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<sup>199</sup> *See id.*

<sup>200</sup> *See* Susquehanna River Basin Comm'n, Overview, <http://www.srbc.net/about/geninfo.htm> (last visited Feb. 18, 2010) (describing the Susquehanna River's geography, the Compact, and the Commission).

<sup>201</sup> 18 C.F.R. § 801.0(b) (2008).

3. Provide for orderly collection and evaluation of data, and for the continuing promotion and conduct of appropriate research relating to water resources problems,
4. Establish priorities for planning, financing subject to applicable laws, development and use of projects and facilities essential to effectively meet identified water resource needs,
5. And to maintain these resources in a viable state.<sup>202</sup>

These objectives are geared toward the SRBC's specific purposes, but they provide insight into goals necessary for any interstate commission. These goals include coordinating the various levels of government and organizing the processes that must be conducted in relation to the particular subject of the commission.<sup>203</sup> Finally, the SRBC's general policies reflect a desire for cooperation among the same types of parties playing a role in the development of the Marcellus Shale formation.<sup>204</sup> This goal is implicit in the SRBC's "multiobjective approach recognizing national economy, regional development and environmental quality in planning for the use and development of the water resources of the basin."<sup>205</sup> In the case of a Marcellus Shale Compact Commission, the multi-objective approach would also need to take into account the concerns of private property owners.

The proposal of a Marcellus Shale Compact Commission should not be viewed as a movement to usurp the state's traditional role as regulator of the land and resources within its borders. Rather, the Commission would remove some of the pressure from individual states as far as development of environmental standards is concerned, and would provide a forum for states to come together to compare and contrast the effectiveness of the various regulations and laws in place. Creation of the Commission would ease the tension between environmental and economic concerns by placing the former in the hands of the Commission and leaving the latter to the states. States would no longer need to decide between focusing on environmental regulations and accommodating industry later, or opening themselves up to industry development first and regulating natural resources later.<sup>206</sup> With environmental standards already in place, states would be

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<sup>202</sup> *Id.* § 801.0(c).

<sup>203</sup> *See id.*

<sup>204</sup> *See id.*

<sup>205</sup> *Id.* § 801.0(d).

<sup>206</sup> *See* Wilber, *supra* note 185.

free to focus on the most profitable uses of their resources within that established environmental framework. In addition, an interstate commission could help to ease the manpower burden on each state by spreading the burden across an entire region. Finally, it could serve to open lines of communication among other interstate commissions, such as the water basin commissions, that have interests in the laws and regulations accompanying development of the Marcellus Shale play and already have a say in the requirements surrounding some aspects of the drilling process.<sup>207</sup>

States would still be free to regulate land use and issue drilling permits as they see fit. Requiring states to meet regionally uniform environmental standards and submit relevant laws and regulations to the Commission, however, would allow the Commission to examine lower level practices and formulate a model rule structure that commission members deem the most environmentally and economically sound way of balancing competing interests. States could then adopt that structure on an optional basis. If the structure proves efficient, then states will have an incentive to adopt it in order to maximize the competitiveness of their drill sites in the eyes of the oil and gas industry.

Wiseman, in her article addressing what she considers a troublesome lack of fracing regulations, comments that “drilling companies’ objections to more regulation, whether at the federal or state level, are understandable. The oil and gas industry is already heavily regulated, and national companies wrestle with numerous state regulations, many of which are inconsistent.”<sup>208</sup> In spite of adding an additional governing body to the already crowded mix, however, submission of state regulations and laws to such a Commission would lessen the oil and gas industry’s burden of complying with myriad state standards that may not immediately be apparent to outsiders. The Marcellus Shale Compact Commission would serve as both a rule maker and an information distributor, and would aid in the transformation of the Marcellus Shale play from a promising resource into a proven asset in the domestic energy landscape.

## CONCLUSION

In order for natural gas extraction from the Marcellus Shale play to be successful from the perspective of all involved parties, the requirements of those parties must be coordinated in a way that allows for economically beneficial and environmentally sound performance of all aspects

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<sup>207</sup> See *supra* notes 156–60 and accompanying text (discussing the river basin commissions).

<sup>208</sup> Wiseman, *supra* note 102, at 187.

of the extraction process—from initial site identification through treatment of the waste, and even through the final disassembly of the well.<sup>209</sup> The parties involved in natural gas extraction are well aware of the barriers with which they are confronted as they try to maximize the benefits of this natural resource.<sup>210</sup> In testimony before the Pennsylvania House Environmental Resource and Energy Committee on Marcellus Shale Development, Louis D'Amico, the Executive Director of the Independent Oil and Gas Association, pointed out some of the obstacles that stand in the way of realizing the full potential of the Marcellus Shale play.<sup>211</sup> D'Amico emphasized that cooperation among legislators, industry members, and various other regulatory bodies would be imperative to successfully develop the play.<sup>212</sup>

Formation of an interstate commission created solely to deal with issues arising from development of the natural gas resources contained in the Marcellus Shale formation would ensure that the problems faced by all involved parties would be solved in a holistic manner, rather than in a piecemeal manner by multiple levels of government. The Commission would, of course, still have to coordinate its efforts with those various governmental bodies, and would leave to the states and municipalities the tasks that they are in the best position to undertake. That coordination, however, would occur with less uncertainty and more efficiency than is currently available, from the perspectives of both the industry and those parties concerned with property rights and environmental pitfalls.

In a time when development of domestic alternative energy resources, encouragement of activities that could prove to be economic stimuli, and promotion of environmental protection are crucial issues, the importance of maximizing the potential of a resource like the Marcellus Shale play could not be greater. If the Marcellus Shale states recognize the need for cooperation, rather than becoming mired down in a tangle of conflicting regulations and the demands of competing interests, they could become the custodians of an important new source of domestic energy.

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<sup>209</sup> See Wiseman, *supra* note 102, at 116, 188 (pointing out that some states, including Pennsylvania, already have comprehensive drilling regulations in place, but others have much work left to do).

<sup>210</sup> See, e.g., *Testimony on the Marcellus Shale Before the Pennsylvania Environmental Resource and Energy Comm. on Marcellus Shale Development*, 88–96 (2008) (statement of Louis D. D'Amico, Executive Director, Independent Oil and Gas Association of Pennsylvania), available at [http://www.legis.state.pa.us/cfdocs/legis/TR/transcripts/2008\\_0195T.pdf](http://www.legis.state.pa.us/cfdocs/legis/TR/transcripts/2008_0195T.pdf).

<sup>211</sup> See *id.* at 90–96.

<sup>212</sup> *Id.* at 91–92.