
Note

Drilling and Community Consent: How Oil and Gas Boards Can Address the Public Health Threats Posed by Fracking

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INTRODUCTION

In 2013, an international shale gas developer requested a permit to drill an exploratory well near the sleepy town of Belfry, Montana,¹ population 218.² Local citizens' organizations demanded a hearing.³ Ten people spoke against the exploratory well, including a nearby organic farmer, a registered nurse, a goat raiser, and an environmental geologist.⁴ After taking these comments into consideration, the Montana Board of Oil and Gas granted a permit to the company.⁵ In effect, that permit not only entitled the company to drill an exploratory well, but also to proceed with any subsequent well development—including, for ex-

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1. Appellants'/Plaintiffs' Response Brief at 1, Carbon Cty. Res. Council v. Mont. Bd. of Oil & Gas Conservation, 380 P.3d 798 (Mont. 2016) (No. DA 15-0613).

2. U.S. Census Bureau, *Belfry CDP, Montana Population*, AMERICAN FACTFINDER (2010), https://www.factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml (search in the search bar for "Belfry, CDP Montana").

3. Appellee's Answer Brief at 5, Carbon Cty. Res. Council v. Mont. Bd. of Oil & Gas Conservation, 380 P.3d 798 (Mont. 2016) (No. DA 15-0613).

4. *Id.* at 7.

5. *Id.* at 9. The Board included one of the geologist's suggested mitigation measures, requiring the company to adhere to a certain standard for water management ("should hydraulic fracturing be used"), as one of the conditions of receiving the permit. *Id.*

ample, hydraulic fracturing (fracking) and wastewater procedures—without any additional notification to the public.⁶ After that initial hearing, the oil company’s remaining civic obligation was to inform the Board at least forty-eight hours before using any “completion treatment” not mentioned in the permit.⁷

This policy is problematic. Drilling for oil and gas is an inherently risky endeavor, both for those working in the industry and those living nearby.⁸ Fracking and its associated wastewaters have been blamed for causing earthquakes, polluting the air, and polluting ground and surface water.⁹ To frack, petroleum companies shoot a mixture of water and chemicals into the ground.¹⁰ This toxic wastewater comes back up with the gas and must be dealt with one way or another—for example, by storing it in a pit.¹¹ But such a practice does not ensure safety: “[o]ften these pits are unlined. . . . [and] even if they are lined, the liners can tear and contaminate soil and possibly groundwater with toxic chemicals.”¹²

As it turns out, the citizens of Belfry were lucky even to be able to demand a hearing about the exploratory well permit.¹³

6. See Brief of Amicus Curiae Mont. Petroleum Ass’n at 9, *Carbon Cty. Res. Council v. Mont. Bd. of Oil & Gas Conservation*, 380 P.3d 798 (Mont. 2016) (No. DA 15-0613).

7. See *id.* (explaining that when companies fill out permit applications for exploratory wells, they cannot know in advance whether “completion treatments” like hydraulic fracturing, acidizing, or chemical stimulation will be required—which is why the forty-eight-hour rule is helpful).

8. See Ivan Penn, “We Cannot Breathe:” *A Poor Alabama Town Has Lived with the Rotten Egg Stench of Gas for 8 Years*, L.A. TIMES (Oct. 15, 2016), <http://www.latimes.com/projects/la-fi-eight-mile-leak>; Monte Whaley & John Ingold, *Drilling Through Danger*, DENV. POST (Sept. 25, 2016), <http://extras.denverpost.com/oil-gas-deaths> (“In the oil field, there is a kaleidoscope of ways workers can die.”).

9. See K. M. Keranen et al., *Sharp Increase in Central Oklahoma Seismicity Since 2008 Induced by Massive Wastewater Injection*, 345 SCIENCE 448, 448–51 (2014); Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 180–97 (2013); *American Lung Association Gives Sublette County an ‘F’ for Ozone Pollution*, ENVT’L DEF. FUND (Apr. 25, 2013), <https://www.edf.org/news/american-lung-association-gives-sublette-county-‘f’-ozone-pollution>.

10. See *What Is Fracking and Why Is It Controversial?*, BBC (Dec. 16, 2015), <http://www.bbc.com/news/uk-14432401>.

11. See *Hydraulic Fracturing 101*, EARTHWORKS, https://www.earthworksaction.org/issues/detail/hydraulic_fracturing_101 (last visited Oct. 13, 2017).

12. *Id.*

13. For example, citizens in Colorado do not have the option of a public hearing before a drilling operation commences, while those in Texas can request

More often, oil and gas companies are not subject to any formal protest.¹⁴ Instead, they obtain the proper permits from the state agency and proceed with whatever additional phases of drilling seem appropriate for that location, obtaining additional permits if necessary.¹⁵ Nearby property owners cannot act preemptively to, for example, make anticipatory nuisance claims.¹⁶ It is only much later, if actual harm occurs and is documented, that a nearby property owner can file a lawsuit and potentially recover damages.¹⁷

This Note argues that most state oil and gas boards do not provide adequate protections to the public.¹⁸ People living near petroleum drilling operations should be entitled to a greater role in the decision-making process. This is especially true for adjacent property owners, whose land and even personal health could potentially be immediately affected by the proposed drilling activity. Although open meeting laws like those in Montana do allow citizens to voice their concerns, making a statement at a little-publicized hearing is not enough.

Part I of this Note conducts an overview of the drilling process and its associated public health concerns. It then compares the hearing and notice regimes of various state-level oil and gas boards, using Montana and Colorado as case studies. This Part demonstrates that the procedures in those two states provide greater safeguards to the public than most other petroleum-producing states. Part II contends that the oil and gas boards of

a hearing only if they meet the narrow “protested application” requirements. See *infra* Part I.B, Table 1.

14. See, e.g., JAMES T. O'REILLY, *THE LAW OF FRACKING* § 6:5 (Westlaw 2016) (“When the permit is issued, no public notice is required in most states, so the fact of state permission is only made public when the drillers arrive to begin work on the site preparations.”).

15. *Id.*

16. *Id.* § 14:5.

17. See, e.g., EMMETT ENVTL. LAW & POLICY CLINIC, HARVARD LAW SCH., *A LANDOWNER'S GUIDE TO HYDRAULIC FRACTURING 2* (2014), http://blogs.harvard.edu/environmentallawprogram/files/2014/08/ELPC-Fracking-Leasing-Guide-UPDATED-July-2014_booklet-2-page-view.pdf (“[N]o lease can completely prevent harm . . . [R]emember that it is impossible to eliminate all risk, no matter what terms you include in your lease.”) (emphasis omitted). See generally O'REILLY, *supra* note 14, § 14:5 (comparing how juries in different cases have responded to damage claims for nuisance, typically considering loss of market value for property, the cost of repairs, and other general damages for inconvenience, discomfort, or annoyance). Of course, the property owners who decided to lease their land for oil and gas extraction could themselves be harmed.

18. This Note generally refers to such agencies as oil and gas boards, though the agencies also go by other titles, such as commissions or divisions.

most states, as they are currently designed, do not provide adequate protections to the public—particularly to adjacent property owners.

Part III suggests that protections should be strengthened by (1) requiring mandatory public forums for all exploratory wells outside of an existing field; and (2) mandating direct notice of those forums, by mail, to adjacent property owners. Furthermore, oil and gas boards should have at least one member with a background in ecology or wildlife biology, and one member with a background in public health. Finally, each oil and gas board should establish an epidemiological monitoring program to oversee pollution at all drilling fields in their state. These recommendations have drawbacks, including hamstringing the petroleum industry to a greater degree than it has become accustomed. But, they would strengthen the rights of those who must live with the consequences of industrial activity, long after the drilling is done.

I. AN OVERVIEW OF THE DRILLING PROCESS, ITS ASSOCIATED HEALTH THREATS, AND THE AGENCIES THAT GOVERN IT ALL

Oil and natural gas have been called “the engine of the world economy.”¹⁹ Together, they account for over half of humanity’s primary energy supply.²⁰ Some say “our world would almost grind to a halt without oil.”²¹ In 2016, natural gas surpassed coal as the leading fuel for electricity generation in the United States.²² As the industry has grown and made itself indispensable, states have had to contend with how to regulate and monitor its activity. This Part presents an overview of the segment of the

19. Maizar Rahman, Indonesian Governor for OPEC, Speech at the Tenth International Financial and Economic Forum: Oil and Gas: The Engine of the World Economy (Nov. 10, 2004), http://www.opec.org/opec_web/en/900.htm.

20. Ryan Carlyle, *What Are the Top Five Facts Everyone Should Know About Oil Exploration?*, FORBES (Apr. 3, 2013), <http://www.forbes.com/sites/quora/2013/04/03/what-are-the-top-five-facts-everyone-should-know-about-oil-exploration>.

21. David Winder, *The Importance of Oil in Our World Today*, CHRISTIAN SCI. MONITOR (Jan. 31, 1983), <https://www.csmonitor.com/1983/0131/013137.html>.

22. John Wihbey, *Pros and Cons of Fracking: Research Updates*, YALE CLIMATE CONNECTIONS (June 6, 2017), <http://www.yaleclimateconnections.org/2017/06/pros-and-cons-of-fracking-research-updates>.

petroleum industry pertinent to this Note: the extraction of on-shore natural gas on private land in the United States.²³ Fracking, a technique for extracting such natural gas, is now happening in twenty-one states across the nation,²⁴ with others like Alaska²⁵ and Illinois²⁶ likely joining soon. This activity is primarily regulated through state common law and through the enabling acts that charge oil and gas boards with the authority to grant and oversee the permit process.²⁷ Section A gives a brief history of drilling for oil and gas. It discusses the potential public health and environmental hazards associated with the modern petroleum industry. Section B examines the enabling acts of state-level oil and gas boards and compares the ways various states have chosen to design them, focusing primarily on the enhanced protections that Montana and Colorado offer.

A. THE DRILLING PROCESS AND ITS POTENTIAL HAZARDS

The relationship between humans and petroleum spans thousands of years.²⁸ People living in ancient Mesopotamia used petroleum products to coat their floors and light their homes.²⁹ In 1821, the first natural gas well was drilled, followed by a rudimentary form of fracking by the end of that century.³⁰ Only in the 1990s were modern fracking techniques developed.³¹ While

23. Though petroleum and oil are sometimes used interchangeably, this Note refers to petroleum as an umbrella term encompassing both oil and natural gas. See *Glossary*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/tools/glossary/index.cfm?id=P#petro> (last visited Oct. 13, 2017) (“Petroleum: A broadly defined class . . . Included are crude oil, . . . refined products obtained from the processing of crude oil, and natural gas plant liquids.”).

24. See Zahra Hirji & Lisa Song, *Map: The Fracking Boom, State by State*, INSIDE CLIMATE NEWS (Jan. 20, 2015), <https://www.insideclimatenews.org/news/20150120/map-fracking-boom-state-state>.

25. See Alex DeMarban, *Explorer Plans First Test of Fracking Potential in North Slope Shale*, ALASKA DISPATCH NEWS (Apr. 23, 2017), <https://www.adn.com/business-economy/energy/2017/04/23/explorer-plans-first-test-of-oil-potential-in-prudhoe-bay-shale>.

26. See *Illinois’ First Fracking Permit Reignites Controversy*, U.S. NEWS (June 26, 2017), <https://www.usnews.com/news/best-states/illinois/articles/2017-06-26/illinois-first-fracking-permit-reignites-controversy>.

27. See LINCOLN L. DAVIES ET AL., ENERGY LAW AND POLICY 231 (2015); O’REILLY, *supra* note 14.

28. See DAVIES ET AL., *supra* note 27, at 115.

29. VACLAV SMIL, ENERGY TRANSITIONS: HISTORY, REQUIREMENTS, PROSPECTS 33 (2010).

30. DAVID E. NEWTON, FRACKING 317–18 (2015).

31. See Stacey Vanek Smith, *How an Engineer’s Desperate Experiment Created Fracking*, NPR (Sept. 27, 2016), <http://www.npr.org/2016/09/27/>

oil dominates the transportation sector, natural gas is key for heating homes and for electricity production.³² This Section first discusses the modern process of extracting petroleum. It then examines the concomitant environmental and human health hazards.

1. Petroleum and the Basic Steps of Petroleum Extraction

Petroleum, which is a material made up of pressurized remains of ancient sea life, is found within shale formations throughout the world.³³ It comes in various forms, including oil and natural gas.³⁴ Oil is found in underground reservoirs—a misnomer since the oil is not pooled like a sea, but is rather trapped as tiny droplets in rocks.³⁵ It is recovered through drilled wells, and then refined to be converted into usable fuels.³⁶ Similar to oil deposits, natural gas migrates underground until it becomes trapped in an area with the proper geologic makeup: porous reservoir rock capped by an impenetrable rock.³⁷ The word fracking refers to the processes that make up this newer phenomenon of high-volume hydraulic fracturing.³⁸ Drillers searching for natural gas use fracking to create fissures in tight underground shale formations with low permeability.³⁹ These fissures allow the gas—otherwise inaccessible—to flow to the surface through the injected pipe.⁴⁰ By the 1990s and 2000s, the innovations of horizontal drilling and high-volume hydraulic fracturing changed the natural gas landscape: (1) companies could drill in places previously inaccessible; and (2) companies realized they

495671385/how-an-engineers-desperate-experiment-created-fracking (explaining the inception of high-volume hydraulic fracturing).

32. See DAVIES ET AL., *supra* note 27, at 118, 125.

33. See Jeffrey J. Brown, *General Characteristics of Shale Plays*, in *THE SHALE ENERGY REVOLUTION: A LAWYER'S GUIDE* 1–2 (Sarah Casey ed., 2015).

34. *Id.*

35. See U.S. DEPT OF ENERGY, *FOSSIL ENERGY STUDY GUIDE: OIL*, 1 (2013), https://energy.gov/sites/prod/files/2013/04/f0/HS_Oil_Studyguide_draft2.pdf.

36. See DAVIES ET AL., *supra* note 27, at 116.

37. See Brown, *supra* note 33, at 2–3.

38. See Hirji & Song, *supra* note 24.

39. See *generally Hydraulic Fracturing 101*, *supra* note 11 (explaining the process of hydraulic fracturing and associated issues). This method is utilized for both oil and natural gas. Brown, *supra* note 33, at 3.

40. JESSICA SMARTT GULLION, *FRACKING THE NEIGHBORHOOD: RELUCTANT ACTIVISTS AND NATURAL GAS DRILLING* 39–40 (2015). For additional information about the process of natural gas extraction, see *id.* at 39–46.

could supplement the chemical mixtures⁴¹ with millions of gallons of water per well,⁴² making the endeavor more cost-effective.⁴³

It is not always easy for petroleum companies to find a reservoir of oil or natural gas that will be cost-effective to drill.⁴⁴ In order for companies to find new production fields, they must engage in exploratory drilling.⁴⁵ A diagnostic fracture injection test, or DFIT, can be used to “test a well’s reservoir pressure before it is productive.”⁴⁶ It is possible to conduct a DFIT using only water, but it is more common to supplement the water with a chemical like potassium chloride.⁴⁷ If the tests indicate that a particular location will not be sufficiently productive, the well will be abandoned.⁴⁸ If the tests indicate that it is worthwhile to prepare the vertical hole for production, then the company will commence the completion process.⁴⁹ Drilling rigs run around the

41. See AM. ENTER. INST., HYDRAULIC FRACTURING: UNLOCKING AMERICA’S NATURAL GAS RESOURCES 8 (2014), http://www.api.org/~media/files/policy/exploration/hydraulic_fracturing_primer.ashx (describing the purpose and common application of ten fracking chemicals, comparing them to laundry detergent and deodorant). *But cf.* Theo Colborn et al., *An Exploratory Study of Air Quality Near Natural Gas Operations*, 20 HUMAN & ECOLOGICAL RISK ASSESSMENT: AN INT’L J. 1, 98 (2014) (listing hazardous chemicals not mentioned in the previous report, including benzene, toluene, ethylbenzene, xylene, and methane).

42. In 2015, the average amount of water used per well was 5.3 million gallons; the total nationwide from January 2011 to January 2016 was 358.4 billion gallons. CERES, AN INVESTOR GUIDE TO HYDRAULIC FRACTURING AND WATER STRESS 7 (2016), https://eplanning.blm.gov/epl-front-office/projects/nepa/68426/102904/125791/CERES_2016_An_Investor_Guide_to_Hydraulic_Fracturing_and_Water_Stress.pdf.

43. See Smith, *supra* note 31 (“The well fracked with water was almost twice as productive as the gel-fracked well—twice as productive and half as expensive.”).

44. See, e.g., Brown, *supra* note 33, at 3 (“Large, economic reservoirs are rare and increasingly hard to find. . . . Drilling [producing wells] is by far the largest expense, running into the tens of millions of dollars per well.”).

45. See Brief of Amicus Curiae Mont. Petroleum Ass’n, *supra* note 6, at 4–5.

46. *Id.* at 5.

47. *Id.* at 7.

48. See Brown, *supra* note 33, at 3 n.2 (“The purpose of an exploratory well is to identify and evaluate potentially productive formations, whereas production wells are optimized to extract petroleum most efficiently.”); see also Brief of Amicus Curiae Mont. Petroleum Ass’n, *supra* note 6, at 22 (describing a well that was abandoned after performing the DFIT).

49. See generally Brown, *supra* note 33, at 8–10 (explaining the completion process in detail).

clock, with operating costs of \$50,000 to \$70,000 a day.⁵⁰ During this step, horizontal wells can be drilled off of the main vertical one⁵¹ and “well completion treatments,” like fracking, acidizing, and other forms of chemical stimulation, can be used.⁵² This production period brings the gas to the surface. But, coming up alongside the gas is “produced water”—an estimated 858 billion gallons each year.⁵³

This produced water, or wastewater, presents its own problems to drilling operators. Such water is contaminated not only with petroleum, but with the chemicals that went into the well during the fracking process, as well as heavy metals from beneath the earth’s surface.⁵⁴ Operators employ various methods to deal with it; the most common are: (1) shooting it back underground into “injection wells”;⁵⁵ (2) putting it in “evaporation ponds”;⁵⁶ or (3) reusing it for additional fracking.⁵⁷ If they choose injection wells, operators must survey the sites carefully to ensure that the pressurized waste does not find its way to the surface again.⁵⁸ They must truck the wastewater from the fracking

50. Mike Hughlett, *North Dakota Oil Industry Shows Signs of a Rebound*, STAR TRIB. (June 3, 2017), <http://www.startribune.com/north-dakota-oil-industry-shows-signs-of-a-rebound/426170091>.

51. *See id.* (“Each of the . . . wells will reach down 2 miles, then veer horizontally for another 2 miles, the signature pattern of shale oil fracking.”).

52. Brief of Amicus Curiae Mont. Petroleum Ass’n, *supra* note 6, at 9.

53. Jonathan Thompson, *Oil Gas and Water Use: The Real Issues*, HIGH COUNTRY NEWS (Feb. 14, 2012), <http://www.hcn.org/blogs/goat/oil-and-gas-water-use-the-real-issues>.

54. *Id.* (“[Produced water] can be naturally tainted by . . . arsenic, a smorgasbord of heavy metals and even radiation.”).

55. For a discussion of this process, see O’REILLY, *supra* note 14, § 6:16 (“An injection well for driller wastes is basically a long vertical pipe with 24/7 diesel pumps pushing downward relentlessly.”).

56. *See* David Hasemyer, *Open Pits Offer Cheap Disposal for Fracking Sludge, but Health Worries Mount*, CTR. FOR PUB. INTEGRITY (Oct. 2, 2014), <https://www.publicintegrity.org/2014/10/02/15826/open-pits-offer-cheap-disposal-fracking-sludge-health-worries-mount> (“A handful of states . . . allow [wastewater] to be stored in open-air pits, called evaporation ponds[,] . . . where it remains until it becomes a gooey sludge the consistency of cake batter. Then it might be spread on open plots of land . . . [o]r it might remain in the pits until they are filled and covered with dirt for permanent storage. Some waste may also be mixed with asphalt and used to pave roads.”).

57. *See id.* (“After as much oil and gas as possible is removed from the water, it’s . . . used to frack new wells.”); Thompson, *supra* note 53 (mentioning that some of the wastewater is recycled and used for irrigation). *But see* O’REILLY, *supra* note 14, § 6:16 (“Because of radium-226 and other radioactive components deep in the shale layer, this liquid waste cannot readily be introduced into any useful on-surface water use.”).

58. *See* O’REILLY, *supra* note 14, § 6:16.

site to the site of the injection well—which may or may not be nearby.⁵⁹ Wastewater spills from trucking accidents can contaminate other water sources.⁶⁰ Operators using evaporation pits must figure out what to do with the toxic sludge that remains in the pits after the liquid has evaporated, which totals roughly 1.2 barrels of solid waste for each foot drilled.⁶¹ Some, though not all, states require that evaporation pits be lined with material to prevent seepage.⁶² If operators wish to reuse the wastewater, they can implement on-site recycling technology.⁶³ This may be cost-effective if the region has few injection wells.⁶⁴ Another reuse alternative is having the wastewater processed at a waste treatment facility which then “dump[s] the ‘clean’ water into a nearby sewer or river.”⁶⁵ Wastewater contains radioactive components.⁶⁶ The treated effluent and other byproducts are less radioactive than before treatment, but they are still radioactive.⁶⁷ Of course, the cheapest and simplest way to get rid of produced water is to dump it on adjacent agricultural land.⁶⁸ The quantity of wastewater can vary widely from one location to another—for

59. Nichola Groom, *Fracking Water’s Dirty Secret—Recycling*, SCI. AM., <https://www.scientificamerican.com/article/analysis-fracking-waters-dirty-secret> (last visited Oct. 13, 2017).

60. See, e.g., Laura Arenschield, *Truck Overturns, Spills Drilling Wastewater That Taints Reservoir*, COLUMBUS DISPATCH (Mar. 9, 2016), <http://www.dispatch.com/content/stories/local/2016/03/09/Fracking-wastewater-shuts-down-reservoir.html>.

61. ICF CONSULTING, OVERVIEW OF EXPLORATION AND PRODUCTION WASTE VOLUMES AND WASTE MANAGEMENT PRACTICES IN THE UNITED STATES 22 (2000), http://www.api.org/~media/files/ehs/environmental_performance/icf-waste-survey-of-eandp-wastes-2000.pdf.

62. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-12-156, ENERGY-WATER NEXUS: INFORMATION ON THE QUANTITY, QUALITY, AND MANAGEMENT OF WATER PRODUCED DURING OIL AND GAS PRODUCTION 28 (2012), <http://www.gao.gov/assets/590/587522.pdf> (noting that Colorado generally does not require lining but Wyoming does).

63. See Groom, *supra* note 59.

64. *Id.* For example, the geology of the Marcellus Shale region in Pennsylvania makes injection wells less feasible there. *Id.* For that reason, the Marcellus Shale region reuses seventy percent of its wastewater. Bill Chameides, *Fracking Water: It’s Just So Hard To Clean*, NAT’L GEOGRAPHIC: THE GREAT ENERGY CHALLENGE (Oct. 4, 2013), <http://energyblog.nationalgeographic.com/2013/10/04/fracking-water-its-just-so-hard-to-clean>.

65. Chameides, *supra* note 64.

66. *Id.*

67. *Id.*

68. Roy L. Hales, *We Are Eating Drilling & Fracking Waste*, THE ECOREPORT (May 13, 2015), <http://thecoreport.com/we-are-eating-drilling-fracking-waste>.

example, wells in parts of Montana produce, on average, sixteen times more water than similar wells in parts of Colorado.⁶⁹

A producing well will be abandoned when it is no longer active enough to be profitable.⁷⁰ In the absence of a strict regulatory regime, companies are often able to leave the wellhead site behind without spending much money on waste site remediation.⁷¹ There is little requirement for companies to develop reclamation plans for the wellhead sites, and even less ability to enforce such plans at either the federal or the state level.⁷² This means that certain aspects of drilling, like the wastewater and its associated sludge, could remain a threat long after the well has been abandoned.⁷³ The following Subsection addresses how this threat affects the health of humans and the environment.

2. Potential Hazards for Human and Environmental Health

As mentioned in the previous Subsection, numerous toxic inputs and byproducts are an inherent part of the fracking process. These byproducts can have a negative impact on the health of various species who happen to be living nearby,⁷⁴ including humans. Oil and gas operations pollute the air with more than nine million tons of methane and other chemicals each year.⁷⁵ This has contributed to an increase in asthma, especially among children and the elderly⁷⁶—which is disturbing, since 650,000

69. See U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 62, at 11.

70. See O'REILLY, *supra* note 14, § 6:16. However, it may not be abandoned forever; new fracking techniques could allow companies to refracture the same wells at a later date. See Amy Dalrymple, *New Technology Could Recover More Oil from Early Bakken Wells*, BISMARCK TRIB. (June 11, 2017) http://bismarcktribune.com/news/state-and-regional/new-technology-could-recover-more-oil-from-early-bakken-wells/article_13e7bb72-0e71-51dc-a503-f71e69f60d40.html.

71. See O'REILLY, *supra* note 14, § 8.1.

72. See *id.* § 15.1.

73. See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 62, at 29 (noting that fish and aquatic species can be harmed when wastewater is not properly treated).

74. For example, greater sage grouse populations have been found to decline fourteen percent each year in densely drilled areas. Matthew Brown, *Researchers: Limits on Drilling Not Enough To Protect Bird*, U.S. NEWS (Oct. 19, 2016), <http://www.usnews.com/news/news/articles/2016-10-19/researchers-limits-on-drilling-not-enough-to-protect-bird>.

75. LESLEY FLEISCHMAN ET AL., CLEAN AIR TASK FORCE, GASPING FOR BREATH: AN ANALYSIS OF THE HEALTH EFFECTS FROM OZONE POLLUTION FROM THE OIL AND GAS INDUSTRY 4 (Aug. 2016), http://www.catf.us/resources/publications/files/Gasping_for_Breath.pdf.

76. *Id.*

school children live within a mile of a production well.⁷⁷ Such pollution might result in hefty fines for the oil producers, but the damage will have already been done.⁷⁸ Additionally, bits of the sand required for fracking can lodge themselves in the lungs of workers and lead to silicosis or cancer.⁷⁹ A recent study found that even the noise from oil and gas operations can be linked to problems with cardiovascular health, like elevated blood pressure and heart disease.⁸⁰

Contaminated wastewater produces its own hazards.⁸¹ The wastewater pumped into underground injection sites can find its way back to surface waters⁸² and contaminate drinking water.⁸³

77. ELIZABETH RIDLINGTON ET AL., *DANGEROUS AND CLOSE: FRACKING PUTS THE NATION'S MOST VULNERABLE PEOPLE AT RISK 4* (2016), https://www.environmentamerica.org/sites/environment/files/reports/EA_dangerous_scrn.pdf ("More than 650,000 kindergarten through twelfth grade children attend school within one mile of a fracked well."). Not all lawmakers are concerned by this proximity. See, e.g., *Colorado Lawmakers Kill Bill on Energy Drilling Near Schools*, U.S. NEWS (Apr. 12, 2017), <https://www.usnews.com/news/best-states/colorado/articles/2017-04-12/colorado-lawmakers-kill-bill-on-energy-drilling-near-schools> ("Urged on by industry and business groups, a Republican-led Senate committee voted along party lines Wednesday to defeat a proposal to extend the required distance between Colorado's school and its oil and gas wells.").

78. See, e.g., *Potentially Steep Pollution Fines for Colorado Oil Producer*, NEWSOK (June 26, 2017), <http://www.newsok.com/potentially-steep-pollution-fines-for-colorado-oil-producer/article/feed/1285424> ("[EPA and Colorado regulators] seek more than \$100,000 a day in fines for problems they say occurred over several years.").

79. See Nell Greenfieldboyce, *Sand from Fracking Could Pose Lung Disease Risk to Workers*, NPR (Mar. 29, 2013), <http://www.npr.org/sections/health-shots/2013/03/29/175042708/Sand-From-Fracking-Operations-Poses-Silicosis-Risk>.

80. See Katie Herzog, *Fracking Causes Noise Pollution That Could Be Harmful to Your Health*, GRIST (Dec. 29, 2016), <http://www.grist.org/briefly/fracking-causes-noise-pollution-that-could-be-harmful-to-your-health> ("Fracking operations can produce everything from a low rumble to loud drilling noises.").

81. See, e.g., Susan Phillips, *Study: Fracking Didn't Impact West Virginia Groundwater, but Wastewater Spills Pollute Streams*, NPR: STATEIMPACT (Apr. 24, 2017), <https://stateimpact.npr.org/pennsylvania/2017/04/24/study-fracking-didnt-impact-west-virginia-groundwater-but-wastewater-spills-pollute-streams> ("[S]pill water associated with fracked wells and their wastewater has an impact on the quality of streams in areas of intense shale gas development.").

82. *Evidence of Unconventional Oil and Gas Wastewater Found in Surface Waters near Underground Injection Site*, U.S. GEOLOGICAL SURV. (May 9, 2016), <http://www.usgs.gov/news/evidence-unconventional-oil-and-gas-wastewater-found-surface-waters-near-underground-injection>.

83. See Coral Davenport, *Reversing Course, EPA Says Fracking Can Contaminate Drinking Water*, N.Y. TIMES (Dec. 13, 2016), <https://www.nytimes.com/2016/12/13/us/reversing-course-epa-says-fracking-can-contaminate-drinking>

The harms do not end there. Evaporation pits “beckon water-loving birds” and kill at least half a million of them each year.⁸⁴ Surface wastewater spills can contaminate not only the soils, but also nearby streams.⁸⁵ Radioactive substances found in the fracking wastewater, like selenium and radium, can linger in the environment for millennia if robust clean-up operations are not implemented.⁸⁶ The same is true for the radioactive substances found in the solid waste of evaporation pits.⁸⁷ Other chemicals, like the BTEX group associated with oil and gas production (benzene, toluene, ethylbenzene, and xylene), are thought to have endocrine-disrupting effects even at low exposure levels.⁸⁸ The endocrine system controls numerous vital systems, and is thus important in every stage of a human’s life.⁸⁹ Equally alarming, the federal government tends to “consider the chemicals safe unless they are proven to be harmful.”⁹⁰ Therefore, chemicals used in fracking are not thoroughly tested for, say, those endocrine-disrupting effects before being widely used on the market.⁹¹

-water.html (“[T]he new report found evidence that fracking has contributed to drinking water contamination in all stages of the process . . .”).

84. Thompson, *supra* note 53.

85. See Sharon Kelly, *Duke Study Finds a “Legacy of Radioactivity,” Contamination from Thousands of Fracking Wastewater Spills*, DESMOG (May 8, 2016), <http://www.desmogblog.com/2016/05/08/duke-university-study-finds-legacy-radioactivity-water-and-soil-contaminated-thousands-fracking-wastewater-spills>.

86. *Id.* (describing surface water contamination by wastewater to be “widespread and persistent, with clear evidence of direct water contamination from fracking” in North Dakota).

87. For example, in 2016 North Dakota found illegal radioactive material in the landfills of three different oil field waste operators. See Lauren Donovan, *Department Tightens Up on Radioactive Waste*, BISMARCK TRIB. (Oct. 19, 2016), http://www.bismarcktribune.com/news/state-and-regional/department-tightens-up-on-radioactive-waste/article_c67b2e5f-b1ea-5a05-8157-665e6f295612.html.

88. See Ashley L. Bolden et al., *New Look at BTEX: Are Ambient Levels a Problem?*, 49 ENVIRON. SCI. & TECH. 5261, 5270 (2015).

89. See *Endocrine Disruption Fact Sheet*, TEDX (Nov. 7, 2011), <https://www.endocrinedisruption.org/assets/media/documents/EDFactSheet11-7-11.pdf> (“[Endocrine disrupting chemicals] have been implicated in neurological diseases, reproductive disorders, thyroid dysfunction, immune and metabolic disorders and more.”).

90. Charles Lewis, *Foreword* to DAN FAGIN & MARIANNE LAVELLE, *TOXIC DECEPTION: HOW THE CHEMICAL INDUSTRY MANIPULATES SCIENCE, BENDS THE LAW, AND ENDANGERS YOUR HEALTH*, at vii, x (1996).

91. See TEDx Talks, *Letter to the President About Chemicals Disrupting Our Bodies: Theo Colborn at TEDxMidAtlantic 2012*, YOUTUBE (April 12, 2011), <https://www.youtube.com/watch?v=2r2Rx8VRq48> (“Chemicals are now in wide use that were never tested using assays that can detect disturbances in the womb that eventually lead to diseases that might not appear until puberty or even later in life Our laws have let this happen.”).

Meanwhile, spills can occur at as many as sixteen percent of the fracked wells each year.⁹²

While the detrimental effects on environmental and human health can be insidious, the seismic activity associated with wastewater injections has been more obvious.⁹³ For example, Oklahoma experienced only nine earthquakes between 2004 and 2008—just before the fracking boom began.⁹⁴ In 2015 alone, it experienced nearly 900 earthquakes.⁹⁵ Although most of those earthquakes are too small to cause property damage, some are stronger.⁹⁶ A homeowner in Oklahoma received twelve stitches after her stone fireplace collapsed in an earthquake.⁹⁷ Other Oklahomans filed a class action lawsuit for property damage and devaluation.⁹⁸

Other industry-related accidents might be fluky, but they could still be fatal for nearby property owners. In the spring of 2017, a home exploded in Colorado, killing two people and critically injuring a third.⁹⁹ Though fracking did not directly cause the explosion, oil and gas activity did: “odorless gas seeping from a cut-off underground pipeline,” a pipeline that had not been shut off or capped, entered the home and “found an ignition

92. Matt McGrath, *Thousands of Spills at US Oil and Gas Fracking Sites*, BBC (Feb. 21, 2017), <http://www.bbc.com/news/science-environment-39032748>.

93. In places where fracking wastewater is injected into the ground (as opposed to being dumped in an “evaporation pit”), there tends to be an increase in earthquakes. See James Conca, *Thanks to Fracking, Earthquake Hazards in Parts of Oklahoma Now Comparable to California*, FORBES (Sept. 7, 2016), <http://www.forbes.com/sites/jamesconca/2016/09/07/the-connection-between-earthquakes-and-fracking>; see also Kathiann M. Kowalski, *While Cause Remains Unclear, Earthquake Prompts New Look at Ohio Fracking*, MIDWEST ENERGY NEWS (Apr. 7, 2017), <http://www.midwestenergynews.com/2017/04/07/while-cause-remains-unclear-earthquake-prompts-new-look-at-ohio-fracking> (describing a recent earthquake in Ohio within five miles of oil and gas extraction wells, with wastewater injection wells farther away).

94. David Wethe, *Oil, Earthquakes and the Rush To Save Oklahoma*, BLOOMBERG NEWS (Nov. 14, 2016), <https://www.bloomberg.com/news/articles/2016-11-14/rare-oil-patch-hot-spot-emerges-in-america-s-earthquake-capital>.

95. Anna Kuchment, *Drilling-Induced Earthquakes May Endanger Millions in 2016, USGS Says*, PBS NEWSHOUR (Mar. 28, 2016), <http://www.pbs.org/newshour/updates/drilling-induced-earthquakes-may-endanger-millions-in-2016-usgs-says>.

96. *Id.*

97. *Id.*

98. See *Residents File Class-Action Suit over Man-Made Earthquakes*, NEWSOK (Nov. 18, 2016), <http://www.newsok.com/article/5527594>.

99. Aldo Svaldi, *After Fatal House Explosion, Anadarko Petroleum To Shut Down 3,000 Wells in Northeastern Colorado*, DENV. POST (Apr. 26, 2017), <http://www.denverpost.com/2017/04/26/anadarko-petroleum-shut-down-3000-wells-after-house-explosion>.

source.”¹⁰⁰ The incident appears to be an anomaly.¹⁰¹ Still, it suggests that older, vertical wells can pose a threat to public health whether they are in active use or not.¹⁰²

This litany of threats to human and environmental health prompts several questions: What can local community members do when a petroleum operator wants to drill nearby? To what extent can and should concerned citizens be involved in the permitting process? Who is charged with making the ultimate decision whether or not to allow drilling near a particular community? Are public health officials consulted? Section B addresses these questions.

B. A COMPARISON OF STATE-LEVEL OIL AND GAS BOARDS

Decisions surrounding the permitting of drilling for onshore petroleum on private land primarily fall under the jurisdiction of states and tribes, rather than the federal government.¹⁰³ In turn, these states charge their relevant state-level agencies with all management decisions. The procedures governing each state’s oil and gas board will vary depending on its enabling act. The size of the board, its composition, and the requirements for hearing and notice all vary widely from state to state. This Section compares the approaches taken by ten petroleum-producing states.¹⁰⁴ Montana and Colorado are useful case studies: the former has an unusually robust hearing and notice regime, while

100. Bruce Finley, *Deadly Firestone Explosion Caused by Odorless Gas Leaking from Cut Gas Flow Pipeline*, DENV. POST (May 2, 2017), <http://www.denverpost.com/2017/05/02/firestone-explosion-cause-cut-gas-line>.

101. Bruce Finley, *Severed Gas Line Is Blamed for Fatal Explosion; Colorado Orders Thousands of Wells, Miles of Pipeline Inspected*, DENV. POST (May 2, 2017), <http://www.denverpost.com/2017/05/02/firestone-explosion-oil-wells-pipelines-inspected> (“In our experience, what has taken place here is highly unusual and required a confluence of a number of different events to come to pass . . .”).

102. See Christopher N. Osher & Bruce Finley, *Oil and Gas Industry Pipeline Problems Are Well-Established. Why Did It Take a Fatal Explosion To Spur Action?*, DENV. POST (May 7, 2017), <http://www.denverpost.com/2017/05/07/firestone-explosion-raises-questions-pipeline-risks> (“Broken underground pipelines carrying oil or gas from wells to tanks and to other equipment in the field are the leading cause of hazardous oil and gas industry leaks . . .”).

103. See *Natural Gas Extraction – Hydraulic Fracturing*, EPA, <https://www.epa.gov/hydraulicfracturing> (last visited Oct. 13, 2017).

104. For a map of fracked wells across the United States, see, *Competition for Water in US Shale Energy Development*, CERES (2016), <http://alpha.blueraster.io/ceres/www/index.html> (depicting the parts of the United States affected by petroleum development, as well as the regional differences in water stress).

the latter includes a much wider variety of specialists as voting board members.¹⁰⁵ Because these procedures help keep the public informed and, arguably, safer, the two states stand out among their peers who have no such procedures in place.¹⁰⁶

First, this Section briefly assesses the state-level administrative laws that govern oil and gas boards, including the general parameters of the hearing and notice requirements in Montana and Colorado. Next, it examines the oil and gas boards of Montana and Colorado in depth, comparing how the two states have approached the question of representation in the agencies, and to what extent the agencies include the public in the permit process. Lastly, this Section compares the procedures in Montana and Colorado to those of eight other states, all of which have chosen to regulate petroleum extraction differently.

1. An Introduction to State-Level Agencies

Congress passed the Administrative Procedure Act (APA) in 1946¹⁰⁷ as a response to the proliferation of federal agencies during President Roosevelt's New Deal.¹⁰⁸ The APA governs the rulemaking process of federal agencies and programs.¹⁰⁹ Because the agencies use regulations to compel behavior in certain sectors, they possess the power to set "wide-ranging policies."¹¹⁰ The APA also addresses the judicial review available to individuals who are adversely affected by agency actions and the issuance of permits.¹¹¹ To bolster the transparency of agency decisions, Congress passed the Government in the Sunshine Act in 1976.¹¹² The Act declares that it is "the policy of the United

105. See generally *infra* Part I.B.2 (assessing in depth the oil and gas boards of Montana and Colorado).

106. See *infra* Table 1.

107. Administrative Procedure Act, 5 U.S.C. §§ 551–559, 701–706 (2012).

108. See *Administrative Procedure Act*, CTR. FOR EFFECTIVE GOV'T, <http://www.foreffectivegov.org/node/226> (last visited Oct. 13, 2017).

109. *Id.*

110. *Id.* But cf. Rui J. P. De Figueiredo, Jr. & Richard G. Vanden Bergh, *The Political Economy of State-Level Administrative Procedure Acts*, 47 J.L. & ECON. 569, 571 (2004) ("Despite the claim that APAs have a material effect on policy outcomes, scant empirical evidence demonstrates this.").

111. *Summary of the Administrative Procedure Act*, EPA, <https://www.epa.gov/laws-regulations/summary-administrative-procedure-act> (last visited Oct. 13, 2017).

112. Government in the Sunshine Act, 5 U.S.C. § 552b.

States that the public is entitled to the fullest practicable information regarding the decision making processes of the Federal Government.”¹¹³

Over the course of forty years, all states enacted their own administrative laws regarding hearing and notice, both in the form of state-level APAs and as sunshine laws.¹¹⁴ The purposes of the state-level APAs tend to be similar to the federal version: (1) to “give notice to the public of governmental action and to provide for public participation in that action”; (2) to “establish general uniformity and due process safeguards in agency rule-making”; and (3) to establish “judicial review of agency rules and final agency decisions.”¹¹⁵ Hearing and notice are important components of democratic systems.¹¹⁶ They function as a safeguard against unjustified deprivation—particularly the significant deprivation of property.¹¹⁷ Notice is considered “[a]n elementary and fundamental requirement of due process” to let interested parties know about a relevant action and “afford them an opportunity to present their objections.”¹¹⁸ Notice must be provided in a way that allows all affected property owners to have actual notice.¹¹⁹ Hearings are necessary because “[p]arties whose rights are to be affected are entitled to be heard.”¹²⁰

Beyond these generalities, the rights of citizens to participate in agency decisions can be different from one state to the next. For example, the Montana open meeting law specifies a “liberal construction,” stating that “[t]he people of the state do not wish to abdicate their sovereignty to the agencies which

113. *Id.* § 2.

114. See Sarah Klaper, *The Eye-Roll Heard 'Round the World: Protecting Citizens' Free Speech and Petition Rights in Accessing Local Government*, 10 CARDOZO PUB. L., POLY, & ETHICS J. 299, 317 n.166 (2012).

115. MONT. CODE ANN. § 2-4-101(2)(a)–(c) (2015).

116. See *id.* § 2-4-601(1) (“[A]ll parties must be afforded an opportunity for hearing after reasonable notice.”); see also COLO. REV. STAT. § 24-4-103(4)(a)–(a.5) (2016) (requiring an “opportunity” to be heard).

117. See, e.g., *Fritz v. Bd. of Trs.*, 252 N.E.2d 567, 572 (Ind. 1969) (“Fairness and justice require that [plaintiff] should be given notice . . . to reasonably apprise him of the fact that he and his property are involved [in an assessment] and that he be given an opportunity to resist the attempt of the public authorities to enforce their will to take his property without an opportunity to be heard.”).

118. *Mullane v. Cent. Hanover Bank & Tr. Co.*, 339 U.S. 306, 314 (1950).

119. See, e.g., *Meadowbrook Manor, Inc. v. City of St. Louis Park*, 104 N.W.2d 540, 545 (Minn. 1960) (“[M]ailed notice of special assessment hearings would satisfy due process because such notice is reasonably calculated to inform the taxpayer of the assessment hearing.”).

120. *Baldwin v. Hale*, 68 U.S. (1 Wall.) 223, 233 (1863).

serve them.”¹²¹ Montana law requires posted notice only if the issue is “of significant interest to the public,” but that phrase has not been defined.¹²²

Similarly, Colorado courts interpret that state’s open meeting laws broadly.¹²³ Its statute states that “the formation of public policy is public business and may not be conducted in secret.”¹²⁴ Notice of meetings in Colorado must be “full and timely.”¹²⁵ “[F]ull and timely notice” is not defined,¹²⁶ but has been interpreted as a flexible standard that balances the competing interests of public participation and the agency’s ability to conduct business.¹²⁷

Like Montana and Colorado, all of the oil and gas boards discussed in this Note are governed by: (1) their respective state’s APA; (2) their respective state’s open meeting (or sunshine) laws; (3) the enabling act that sprang the agency into being; and (4) any additional regulations that the agency has adopted through its rulemaking procedures.¹²⁸ With those considerations in mind, the following Subsection embarks on an in-depth comparison of the oil and gas agencies of Montana and Colorado.

2. A Comparison of Oil and Gas Agencies in Montana and Colorado

As discussed in the previous Subsection, the agencies charged with overseeing the onshore drilling permits for petroleum companies are state-level oil and gas boards. These can vary considerably from one state to the next, largely depending on how each state’s legislature has chosen to structure and empower the agency. This Subsection will contrast the approaches that Montana and Colorado have taken.

121. MONT. CODE ANN. § 2-3-201.

122. *Id.* § 2-3-103(1)(a).

123. Intermountain Rural Elec. Ass’n v. Colo. Pub. Utils. Comm’n, 298 P.3d 1027, 1029 (Colo. App. 2012).

124. COLO. REV. STAT. § 24-6-401 (2016).

125. *Id.* § 24-6-402(2)(c).

126. *Id.*

127. *Town of Marble v. Darien*, 181 P.3d 1148, 1152 (Colo. 2008) (en banc).

128. *See* CTR. FOR EFFECTIVE GOV’T, *supra* note 108 (“The main requirements for informal rulemaking are: [p]ublication of a ‘Notice of Proposed Rule-making’ . . . [o]pportunity for public participation by submission of written comments; [c]onsideration of the agency of the public comments . . . and [p]ublication of a final rule not less than 30 days before its effective date . . .”).

a. *Montana*

The Montana Board of Oil and Gas Conservation (the Board) has seven members.¹²⁹ Three need to be from the oil and gas industry, with at least three years of experience in petroleum production.¹³⁰ Two must be unaffiliated with the industry, but be “landowners residing in oil or gas producing counties”—one who owns the property’s mineral rights, and the other who does not.¹³¹ One member must be an attorney.¹³² The Governor appoints four of the seven members at the time she takes office and appoints the others two years later, all for four-year terms.¹³³

The Board is primarily concerned with preventing waste of petroleum resources and conserving such resources “by encouraging maximum efficient recovery” of them.¹³⁴ It also “seeks to prevent oil and gas operations from harming nearby land or underground resources.”¹³⁵ The Board oversees the permitting of not just exploratory and production wells, but also of injection and disposal wells.¹³⁶ A separate division performs a technical review of a company’s injection well proposal to ensure that underground sources of drinking water will not be at risk.¹³⁷ This step includes a “public notice and hearing process.”¹³⁸ The Board can then issue or deny the permit, or issue the permit with certain modifications.¹³⁹ The jurisdiction of the Board extends everywhere in Montana other than tribal lands.¹⁴⁰

Across the state there have been 4000 to 7000 wells fracked in 132 different fields.¹⁴¹ The Board requires that petroleum drillers give public notice whenever an operator wishes to drill a

129. MONT. CODE ANN. § 2-15-3303(2) (2015).

130. *Id.*

131. *Id.*

132. *Montana Board of Oil & Gas Conservation*, MONT. BD. OF OIL & GAS, <http://www.bogc.dnrc.mt.gov/Boardsummaries.asp> (last visited Oct. 13, 2017).

133. *Id.*

134. *Id.*

135. *Id.*

136. *Id.*

137. *Id.*

138. *Id.*

139. *Id.*

140. *Id.*

141. Holly K. Michels, *Companies Don’t Have To Disclose Fracking Chemicals, but Lawsuit Wants To Change That*, BILLINGS GAZETTE (Apr. 10, 2017), http://www.billingsgazette.com/news/government-and-politics/fracking-suit-on-hold-as-legislature-considers-change-to-disclosure/article_4cebbbedf-8cda-53cc-ab4a-f2879fcc5051.html.

well outside of the existing fields.¹⁴² In line with Montana's general notice requirements, the applicant must publish a newspaper posting in Helena and the affected local county.¹⁴³ A public hearing will be held if: (1) any interested person demands an opportunity to be heard; (2) the Board members think that the applicant is not in substantial compliance with Montana's drilling rules; or (3) the drilling operations require further environmental review.¹⁴⁴ At the hearing, the Board can grant or deny the permit, or can choose to impose other conditions it considers appropriate.¹⁴⁵

These structural and procedural aspects of Montana's Board share some overlap with Colorado's Oil and Gas Conservation Commission. However, in important respects, the two states diverge: Colorado's Commission includes members who specialize in public and environmental health, and it provides an optional public forum instead of hearings. Colorado's approach is considered next.

b. Colorado

The Colorado Oil and Gas Conservation Commission (the Commission) oversees the vast petroleum activity within Colorado's borders.¹⁴⁶ It has nine members: seven appointed by the Governor, along with the Executive Director of the Department of Natural Resources and the Executive Director of the Department of Public Health and Environment.¹⁴⁷ The two executive directors are *ex officio* voting members.¹⁴⁸ Two members need to be from west of the continental divide; three must have "substantial experience" in the petroleum industry; one must be a local government official; one needs "formal training or substantial experience in environmental or wildlife protection" and another in "soil conservation or reclamation"; and one should be "actively engaged in agricultural production."¹⁴⁹ Of the seven appointed

142. MONT. ADMIN. R. 36.22.601(1) (2017).

143. *Id.* at 36.22.601(1)(a).

144. *Id.* at 36.22.601(4)(a)–(c).

145. *Id.* at 36.22.601(5)(a)–(b).

146. For a map of all the wells in Colorado as of April 2017, including those that are active, abandoned, or injection wells, see Kevin Hamm, *Here's a Map of Every Oil and Gas Well in the State of Colorado*, DENV. POST (May 1, 2017), <http://www.denverpost.com/2017/05/01/oil-gas-wells-colorado-map>.

147. COLO. REV. STAT. § 34-60-104(2)(a)(I) (2016).

148. *Id.*

149. *Id.*

members, no more than four can be from the same political party.¹⁵⁰

The Commission's purpose is to foster "the responsible development of Colorado's oil and gas natural resources in a manner consistent with the protection of public health, safety, and welfare, including the environment and wildlife resources."¹⁵¹ The Commission must protect these public and private interests while not wasting Colorado's petroleum resources.¹⁵² It also is required to recognize that the state's wildlife and environment "are to be protected, preserved, enhanced, and managed for the use, benefit, and enjoyment of the people of this state."¹⁵³

To ensure that public and environmental health are not impaired, Colorado includes an additional level of oversight in the permit process. Local governments can appoint a designee to consult with the permit applicant and Commission Director about the proposed permit to drill.¹⁵⁴ They can also ask the Colorado Department of Public Health and Environment to assess the proposal.¹⁵⁵ Colorado Parks and Wildlife must also be consulted by the Commission in certain circumstances when permits are granted or modified.¹⁵⁶ Any person can also file a request to be automatically notified by mail about any proceeding that will take place in front of the Commission.¹⁵⁷

When a hearing occurs, the Commission must publish a newspaper posting in Denver and the local county in which the affected land is situated.¹⁵⁸ Notice of a hearing must also be mailed directly to the last known mailing address of the person to be given notice or personally served.¹⁵⁹ Notice is given to the

150. *Id.*

151. COLO. OIL & GAS CONSERVATION COMM'N, <http://cogcc.state.co.us/#/home> (last visited Oct. 13, 2017). The Colorado Court of Appeals recently decided that "the clear language" of the Commission's enabling legislation does not support the typical balancing test of industry interests against public health. Rather, it is a mandate that oil and gas exploration in Colorado "be regulated subject to the protection of public health . . . including protection of the environment and wildlife resources." *Martinez v. Colo. Oil & Gas Comm'n*, No. 16CA0564, 2017 WL 1089556, at *7 (Colo. App. Mar. 23, 2017).

152. COLO. REV. STAT. § 34-60-102(1)(a)(II).

153. *Id.* § 34-60-102(1)(a)(IV). *See also* Colorado Habitat Stewardship Act of 2007, *id.* § 34-60-128.

154. 2 COLO. CODE REGS. § 404-1:306.b(1) (2017).

155. *Id.* § 404-1:306.b(2).

156. *Id.* § 404-1:306.c.

157. COLO. REV. STAT. § 34-60-108(5).

158. *Id.* § 34-60-108(4).

159. *Id.*

appropriate parties at least thirty-five days in advance and is paid for by the applicant.¹⁶⁰ Who is considered an appropriate party depends on the particular application; for example, notice of applications affecting other drilling units must be served on the owners of those units.¹⁶¹

In addition to the limited use of hearings, an application that would result in too much well density can trigger a local public forum.¹⁶² Notice of local public forums is mailed to all of “the surface owners within the application area” at least twenty-one days before the forum date.¹⁶³ It is also posted in local newspapers fourteen days before the forum date.¹⁶⁴ The purpose of such forums is to make sure the proposed plan to increase well density will not endanger “public health, safety, and welfare, including the environment and wildlife resources.”¹⁶⁵ The ultimate result of the public forum is a report that the Commission uses in its consideration of the application.¹⁶⁶

3. How Other States Design and Empower Their Oil and Gas Boards

The previous Subsection presented a detailed view of how Montana and Colorado designed and empowered their respective oil and gas boards. This Subsection assesses those agencies throughout the country. How do other states approach the notice and hearing requirements surrounding drilling permits? Who must be represented in their agencies? These questions are addressed by briefly considering the oil and gas boards of eight additional states with petroleum reserves: Arkansas, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas, and Wyoming.¹⁶⁷ These states were chosen for geographical diversity and for diversity in their approach to the permit process.¹⁶⁸

160. 2 COLO. CODE REGS. § 404-1:507(a).

161. *See id.* § 404-1:507(b).

162. *See id.* § 404-1:508(b)(2) (specifying that a public forum could be convened on a motion from the Commission, the Director, the Local Government Designee, the applicant, or upon request from a citizen of the county to be affected by the application).

163. *Id.* § 404-1:508(d)(1)–(2).

164. *Id.* § 404-1:508(d)(4).

165. *Id.* § 404-1:508(f)(1); *see also id.* § 404-1:508(g) (requiring that forum participants be allowed to make statements relating to “public health, safety, and welfare”).

166. *Id.* § 404-1:508(h).

167. For an overview of the differences, see Table 1.

168. For a comparison of how much natural gas these states produce, see *Natural Gas Gross Withdrawals and Production*, U.S. ENERGY INFO. ADMIN.,

Table 1: Comparison of Oil and Gas Agencies in Ten States¹⁶⁹

	Notice to Surface Owners for New Exploratory Well Permits	Notice to Public for New Exploratory Well Permits	Public Hearing for New Exploratory Well Permits	Notice to Public for Wastewater Injection Permits	Number of Board or Commission Members	Requirement for Public Health or Environmental Member
Arkansas	Y	N	N	Y	9	N
Colorado	Y	To Nearby Landowners or Upon Request	N	Y	9	Y
Montana	Y	Y	Upon Request	N	7	N
New York	Y	N	N	Y	N/A	N
North Dakota	Y	To Nearby Landowners	N	Y	3	N
Ohio	Y	To Nearby Landowners in Urban Areas	N	N	5	N
Oklahoma	Y	N	N	Y	3	N
Pennsylvania	Y	To Nearby Landowners	N	Y	N/A	N
Texas	Y	N	N	Y	3	N
Wyoming	Y	N	N	N	5	N

Arkansas's nine commissioners are appointed by the Governor, "at least a majority of whom shall be experienced in the development, production, or transportation of oil or gas."¹⁷⁰ Arkansas requires public notice in a local newspaper for proposed injection wells,¹⁷¹ but only requires notice by certified mail to surface owners for proposed exploratory wells.¹⁷² New York similarly requires notice by certified mail to "any landowner whose surface rights will be affected by drilling operations" as well as

https://www.eia.gov/dnav/ng/ng_prod_sum_dc_NUS_mmc_m.htm (last visited Oct. 13, 2017).

169. For the citations supporting the entries in this table, refer to Appendix following this Note.

170. ARK. CODE ANN. § 15-71-102(a)–(b) (2017).

171. ARK. OIL & GAS COMM'N, GENERAL RULES AND REGULATIONS, RULE H-1 CLASS II DISPOSAL AND CLASS II COMMERCIAL DISPOSAL WELL PERMIT APPLICATION PROCEDURES 198 (2017), <http://www.aogc.state.ar.us/rules/rulesregs.pdf>.

172. ARK. CODE ANN. § 15-72-203(b). "After written notice of the operator's intent to begin shale operations is given under this subsection, an operator is not required to give any other notice to begin, conduct, or complete shale operations on the surface owner's property." *Id.* § 15-72-203(c)(4).

“to any local government affected of [sic] the location of the drilling site.”¹⁷³ Despite having access to the petroleum reserves within the Marcellus Shale formation, New York banned fracking in 2015.¹⁷⁴ Its Division of Mineral Resources, within the Department of Environmental Conservation, still oversees permit requests for oil and gas wells not implementing the high-volume fracking techniques.¹⁷⁵ The civil servants who oversee these permit requests likely have backgrounds in petroleum or geology.¹⁷⁶

Like New York, Pennsylvania handles its permit requests through its Department of Environmental Protection, rather than an appointed board.¹⁷⁷ It allows landowners or any “affected person suffering pollution or diminution of a water supply as a result of drilling” to request that the Department conduct an investigation.¹⁷⁸ The Department publishes a notice when it issues or amends a general water quality management permit,¹⁷⁹ but does not publish any notice for a general drilling permit.¹⁸⁰ As for its fracking wastewater, Pennsylvania prefers to send it to Ohio’s injection wells, rather than operate its own injection wells.¹⁸¹

173. N.Y. ENVTL. CONSERV. LAW § 23-0305 (McKinney 2017).

174. See *New York and Fracking*, EARTHJUSTICE, <http://www.earthjustice.org/features/new-york-and-fracking> (last visited Oct. 13, 2017); see also N.Y. DEP’T OF ENV. CONSERVATION, FINAL SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM 42 (2015), http://www.dec.ny.gov/docs/materials_minerals_pdf/findingstatevhf62015.pdf (“[T]here are no feasible or prudent alternatives that would adequately avoid or minimize adverse environmental impacts and that address the scientific uncertainties and risks to public health from [high-volume hydraulic fracturing].”).

175. See *Division of Mineral Resources*, N.Y. DEP’T OF ENVTL. CONSERVATION, <http://www.dec.ny.gov/about/636.html> (last visited Oct. 13, 2017).

176. See Email from Thomas E. Noll, Director, Bureau of Oil & Gas Permitting & Mgmt., N.Y. Div. of Mineral Res., to author (Mar. 17, 2017, 09:35 CDT) (on file with author).

177. See *Office of Oil and Gas Management*, PENN. DEP’T OF ENVTL. PROT., <http://www.dep.pa.gov/business/energy/oilandgasprograms/oilandgasgmt/Pages/default.aspx> (last visited Oct. 13, 2017).

178. 25 PA. CODE § 78.51(b) (2017).

179. *Id.* § 91.27(b)(1).

180. See *id.* §§ 78.11–.15.

181. See Kathiann M. Kowalski, *Fracking Wastewater Is Big Business in Ohio*, MIDWEST ENERGY NEWS (July 18, 2014), <http://www.midwestenergynews.com/2014/07/18/fracking-wastewater-is-big-business-in-ohio> (“[Ohio] now has more than 200 active injection wells for oil and gas waste In contrast, only seven injection wells were active in neighboring Pennsylvania, which sends millions of gallons of its fracked wells’ wastewater to Ohio.”). Pennsylvania also recycles its flowback water and operates a few injection wells within its borders. See Marie Cusick, *Pennsylvania OKs New Injection Wells for Oil and Gas*

The five members of Ohio's Oil and Gas Commission are appointed by the Governor.¹⁸² One must represent "a major petroleum company"; one must represent "the public"; one must represent "independent petroleum operators"; one must be "experienced in oil and gas law"; and one must be "experienced in geology or petroleum engineering."¹⁸³ No more than three can be of the same political party.¹⁸⁴ When drilling a well "within an urbanized area," applicants must provide notice to property owners within 500 feet of the potential well,¹⁸⁵ who in turn must notify each residence within that property.¹⁸⁶ Drilling lease proposals do not mandate a public hearing.¹⁸⁷ However, proposals to drill in "urbanized area[s]" do trigger a public meeting for which those same nearby property owners receive notice.¹⁸⁸

North Dakota's Industrial Commission includes the Governor, the Attorney General, and the Agriculture Commissioner.¹⁸⁹ Among other things, this Commission oversees and regulates the oil and gas industry in North Dakota.¹⁹⁰ Permits are conducted through a subsidiary body, the Oil and Gas Division,¹⁹¹ whose director is appointed by the Commission.¹⁹² North Dakota requires that an exploration permit applicant provide a copy of the relevant statutes to both the surface owner and to landowners within a half mile of the proposed exploration area.¹⁹³

Oklahoma's drilling operations are overseen by the elected three-member Oklahoma Corporation Commission, who also oversee public utilities, trucking, and railroad crossings.¹⁹⁴ The Oklahoma Constitution specifies that none of the Commission members shall have any interests in various transportation and

Wastewater, NPR: STATEIMPACT (Mar. 27, 2017), <https://stateimpact.npr.org/pennsylvania/2017/03/27/pennsylvania-oks-new-injection-wells-for-oil-and-gas-wastewater>.

182. OHIO REV. CODE § 1509.35(A) (2017).

183. *Id.*

184. *Id.*

185. *Id.* § 1509.06(A)(9).

186. *Id.* § 1509.60.

187. *See id.* § 1509.06.

188. *Id.* § 1509.61(A).

189. N.D. CENT. CODE § 54-17-02 (2017).

190. *Id.* § 38-08-04.

191. *Id.* § 38-08.1-04.1(3).

192. *See North Dakota Industrial Commission*, N.D. STATE GOV'T, <http://www.nd.gov/ndic/ic-about.htm> (last visited Oct. 13, 2017).

193. N.D. CENT. CODE § 38-08.1-04.1(4).

194. *See Oklahoma Corporation Commission History*, OKLA. CORP. COMM'N, <http://www.occeweb.com/Comm/commissionhist.htm> (last visited Oct. 13, 2017).

communication companies, but does not include the oil and gas industry.¹⁹⁵ It is also permissible for Commissioners to accept personal financial contributions from the oil and gas industry.¹⁹⁶ Oklahoma requires notice to the public: (1) when drilling operators request an injection well permit;¹⁹⁷ and (2) when drilling operators submit a remediation proposal for a particular site.¹⁹⁸

Texas parallels Oklahoma in its Railroad Commission (the entity in charge of oil and natural gas in that state): three elected members make up the Commission.¹⁹⁹ Wyoming, on the other hand, parallels North Dakota by having its governor as a member of the Oil and Gas Conservation Commission.²⁰⁰ The Director of the Office of State Lands and Investments and the State Geologist also each serve as members, along with two “additional members from the public at large . . . qualified to serve the oil and gas industry of this state,” who are appointed by the Governor.²⁰¹

Ultimately, the decision-making structure surrounding whether to issue a drilling permit can vary greatly from state to state. Part I presented an overview of the inherent complications when balancing petroleum production and its waste products with the interests of adjacent property owners and community members. The state-level agencies in charge of permitting and other regulatory decisions must tread carefully between representing the health concerns of local community members and between encouraging the business interests of their state. The next Part addresses this problem.

195. OKLA. CONST. art. IX, § 16.

196. One recently elected member of the Commission received nearly \$80,000 in donations within a two-month period of his election to help pay off his campaign loan—donations “mostly from donors in the oil and gas industry.” See Nolan Clay, *New Oklahoma Corporation Commissioner Collects Enough To Pay Off \$200,000 Campaign Loan*, NEWSOK (May 2, 2015), <http://www.newsok.com/article/5415674>.

197. OKLA. ADMIN. CODE § 165:10-5-5(d)–(e) (2016).

198. *Id.* § 165:10-10-10. Depending on the interest such notice generates, a public meeting may follow. *Id.*

199. See *Commissioners*, R.R. COMM’N OF TEX., <http://www.rrc.state.tx.us/about-us/commissioners> (last visited Oct. 13, 2017).

200. WYO. STAT. ANN. § 30-5-103(a) (2017).

201. *Id.*

II. THE CURRENT HEARING AND NOTICE REGIME DOES NOT ADEQUATELY PROTECT COMMUNITIES NEAR DRILLING OPERATIONS

The states surveyed in Part I attempted to design oil and gas boards in a way that serves both of the competing interests discussed above—some states more successfully than others. Montana’s Board and Colorado’s Commission stand out for offering more safeguards to the public, both procedurally (through a hearing and notice regime) or structurally (by mandating a more diverse board) than other states. But even in those two states, the oil and gas boards can fall short of adequately protecting the interests of communities near drilling operations. Part II of this Note assesses these shortcomings.

First, this Part considers the longstanding tension between the petroleum industry’s interest in efficiency and the public’s interest in health and safety. It then discusses the approaches Montana, Colorado, and other states have taken to ameliorate this tension. Finally, this Part considers the implications of the makeup of oil and gas boards—that is, (1) how many members should be represented in such agencies; (2) the necessary characteristics of those members; and (3) whether those members are elected or appointed.

A. THE TENSION BETWEEN THE PETROLEUM INDUSTRY’S INTEREST IN EFFICIENCY AND THE PUBLIC’S INTEREST IN HEALTH AND SAFETY

Like most business ventures, the petroleum industry does not want a regulatory regime that would likely result in delay and excessive costs.²⁰² The rationale tends to be: if there are uncalculated delays and excessive costs, then general uncertainty will inhibit the number of wells that can be drilled; this will lessen that company’s impact in a given state; and that will in turn hurt that state’s tax revenue, its employment, and its schools.²⁰³ In other words, it is thought to be in the best interest of a state’s citizens for the companies to drill without excessive public hearing and notice requirements—or much involvement from the public at all. The result is a “regulatory vacuum” within the oil and gas industry.²⁰⁴

202. See Brief of Amicus Curiae Mont. Petroleum Ass’n, *supra* note 6, at 3.

203. *Id.* at 5.

204. See, e.g., Whaley & Ingold, *supra* note 8.

When an interested group wants to minimize the dangers of fracking, they sometimes limit “fracking” to the initial steps of drilling, and ignore wastewater issues.²⁰⁵ The evidence linking public health problems and the first step of fracking is sparse.²⁰⁶ If that were the only safety concern associated with drilling, then perhaps the industry would be right to argue for less oversight. However, the documented public health danger lies not only in the first step of fracking, but also in the related air pollution, in the specks of fracking sand lodging themselves in workers’ lungs, and in the millions of gallons of associated wastewaters.²⁰⁷ The danger lies in the endocrine-disrupting chemicals found in the wastewater that were never thoroughly tested before being widely used by the industry.²⁰⁸ It lies in the pressing possibility that another wastewater-induced earthquake will rattle someone’s Oklahoma house, damaging the property and perhaps hurting those inside.²⁰⁹ It lies in the fact that someone near a drilling operation must endure regular ozone alerts to know whether it is safe to be outside that day²¹⁰ or perhaps always wear an oxygen mask outside, just to err on the side of caution.²¹¹

205. Seamus McGraw, *Is Fracking Safe? The Ten Most Controversial Claims About Natural Gas Drilling*, POPULAR MECHANICS (May 1, 2016), <http://www.popularmechanics.com/science/energy/g161/top-10-myths-about-natural-gas-drilling-6386593> (stating that it is unlikely that the fluids injected during the initial high-volume fracking would migrate into groundwater, without mentioning the potential for wastewater spills during a subsequent step of the process).

206. See, e.g., *Induced Earthquakes: Myths and Misconceptions*, U.S. GEOLOGICAL SURV., <https://earthquake.usgs.gov/research/induced/myths.php> (last visited Oct. 13, 2017) (“Fracking is NOT causing most of the induced earthquakes. Wastewater disposal is the primary cause of the recent increase in earthquakes in the central United States.”). *But cf. Fracking*, FOOD & WATER WATCH, <https://www.foodandwaterwatch.org/problems/fracking> (last visited Oct. 13, 2017) (“The entire fracking process—from drilling a well to dealing with the resulting toxic waste—endangers our water and the health of our communities.”).

207. See *supra* text accompanying notes 75–85.

208. See *supra* text accompanying notes 88–91.

209. See *supra* text accompanying notes 93–98.

210. See Ann Chambers Noble, *The Jonah Field and Pinedale Anticline: A Natural-Gas Success Story*, WYOHISTORY.ORG, <http://www.wyohistory.org/encyclopedia/jonah-field-and-pinedale-anticline-natural-gas-success-story> (last visited Oct. 13, 2017) (“Air pollution is now a way of life. . . . High ozone levels can be particularly dangerous to people with compromised immune systems and respiratory problems.”).

211. See Abraham Lustgarten & Nicholas Kusnetz, *Science Lags as Health Problems Emerge near Gas Fields*, PROPUBLICA (Sept. 16, 2011), <https://www.propublica.org/article/science-lags-as-health-problems-emerge-near-gas-fields> (“I took to wearing a respirator and swim goggles outside to tend to my animals.”).

It lies in the nerve damage and in the loss of the ability to taste and smell.²¹²

The industry's response to such allegations tends to be one of diminishment or obfuscation. Because many protesters also mistakenly associate the first step of fracking with the subsequent health dangers, the industry can respond by marshalling evidence that this step played no role.²¹³ A common focal point for both sides tends to be whether fracking has or has not contaminated drinking water.²¹⁴ This is an important question, especially after the Environmental Protection Agency's recent reversal on the question.²¹⁵ But, that debate can be an unfortunate diversion from holding the industry responsible for the broader health and safety hazards that its drilling practices have been proven to cause.

Another common counterargument to fracking's harms tends to focus on its ability to help the United States achieve energy independence.²¹⁶ The United States can "leverage its abundant natural gas reserves as a transitional bridge" to renewable energy, which makes sense since everyone "want[s] the most bang for their buck."²¹⁷ And, besides, fracking advocates argue, since there are very real "environmental and health benefits of natural gas over other fossil fuels,"²¹⁸ the United States ought to incentivize oil and gas operators to drill as much as possible. Such arguments are likely similarly put forth by members

212. *Id.*

213. See Brief of Amicus Curiae Mont. Petroleum Ass'n, *supra* note 6, at 21 ("[T]here have been several highly-publicized cases involving allegations that fracing [sic] was responsible for well contamination or other environmental harm. . . . Even the most publicized allegations, however, have proven greatly exaggerated or false under further scrutiny.").

214. See *id.* at 22.

215. Davenport, *supra* note 83 (reporting that the EPA has found evidence that fracking does contribute to drinking water contamination).

216. See Merrill & Schizer, *supra* note 9, at 157–64.

217. Barry Stevens, *The Benefits of Shale Gas Far Outweigh the Negatives of Fracking*, OILPRICE.COM (Dec. 27, 2011), <http://www.oilprice.com/Energy/Natural-Gas/The-Benefits-Of-Shale-Gas-Far-Outweigh-The-Negatives-Of-Fracking.html>. For example, the city of Duluth, Minnesota, is converting a downtown steam plant from coal to natural gas, and later to "utilize other energy sources to heat the water, including solar and biomass." Dan Kraker, *Duluth Launches Coal-Cutting Energy Pilot*, MPRNEWS (Apr. 12, 2017), <https://www.mprnews.org/story/2017/04/12/duluth-launches-coalcutting-energy-pilot>.

218. See Stevens, *supra* note 217.

of oil and gas boards who favor deregulating the petroleum industry.²¹⁹ The trouble is, such a focal point tends to brush away negative environmental and public health effects as necessary compromises—compromises borne by communities who had no say in whether the tradeoff was worth it or not.

As extensions of state governments, oil and gas agencies exist to serve in the interest of the public. When drilling on private lands, the petroleum industry is bound by the rules and procedures of the state-level oil and gas agencies.²²⁰ Those agencies should act as guardians, carefully balancing the state's interest in the economic benefits of drilling with the state's interest in the health and well-being of its citizenry and environment. Too often, such agencies embrace the myopic efficiency arguments of the petroleum industry, rather than the long-term health and safety arguments posed by numerous non-industry parties. Hearing and notice procedures can help increase transparency and hold the industry accountable for its policies.

B. A COMPARISON OF THE HEARING AND NOTICE REGIMES SURROUNDING THE OIL AND GAS INDUSTRY IN MONTANA AND COLORADO

Despite the documented connection between these public health and safety problems and the petroleum industry, citizens have few avenues to prevent fracking-related harm before it occurs.²²¹ A common tactic in recent years has been the assertion of local control through ordinances: a county, say, will vote to ban fracking within its borders.²²² These ordinances are often struck down in subsequent litigation on the grounds that state

219. See, e.g., *Commissioner Wayne Christian*, R.R. COMM'N TEX., <http://www.rrc.state.tx.us/about-us/commissioners/christian> (last visited Oct. 13, 2017) (“During his time in the Texas House, Christian . . . accumulated a strong record of standing for free markets and against burdensome regulations.”); see also *Chairman Christi Craddick*, R.R. COMM'N OF TEX., <http://www.rrc.state.tx.us/about-us/commissioners/craddick> (last visited Oct. 13, 2017) (“Craddick has pushed to maximize the effectiveness and efficiency of an energy industry that is driving the state's unparalleled economic success.”).

220. See *supra* text accompanying notes 107–28.

221. See *supra* notes 16–17 and accompanying text.

222. See, e.g., Paul Rogers, *Fracking Ban: Environmentalists Declare Victory on Monterey Measure Z*, MERCURY NEWS (Nov. 9, 2016), <http://www.mercurynews.com/2016/11/09/fracking-ban-environmentalists-declare-victory-on-monterey-measure-z> (describing a county that recently voted to ban fracking within its limits).

law has already preempted them.²²³ Similarly, counties cannot veto an oil and gas board's decision to locate a petroleum waste treating plant within their borders.²²⁴

Another route for communities could be to sue their state when the oil and gas boards allegedly fail to adequately protect their interests.²²⁵ Or they could sue the oil companies.²²⁶ But, litigation is time-consuming and costly.²²⁷ Meanwhile, the harm has often already been inflicted.

Given the absence of strong mechanisms for local control over fracking, perhaps the procedures of the state-level oil and gas agencies can help. If such agencies adopt stronger notice and comment regimes, then the public could have the opportunity to be involved in permitting decisions before harm to environmental and human health occurs. This Section addresses the benefits and drawbacks of the hearing and notice regimes governing the oil and gas agencies of Montana and Colorado, comparing them to their counterparts nationwide. The Section then considers

223. See, e.g., *Swepi, LP v. Mora County*, 81 F. Supp. 3d 1075, 1146 (D.N.M. 2015) (“The Ordinance conflicts . . . with state law by prohibiting activities that state law permits: the production and extraction of oil and gas.”); Billy Corriher & Sean Wright, *Ohio Supreme Court Says Towns Aren't Allowed To Ban Fracking*, THINKPROGRESS (Feb. 19, 2015), <https://www.thinkprogress.org/ohio-supreme-court-says-towns-arent-allowed-to-ban-fracking> (“[T]he state’s high court ruled that Ohio has ‘sole and exclusive’ authority over oil and gas production, determining that the Ohio Constitution does not permit a local community to ban drilling approved by the state Department of Natural Resources.”); Michael Wines, *Colorado Court Strikes Down Local Bans on Fracking*, N.Y. TIMES (May 2, 2016), <https://www.nytimes.com/2016/05/03/us/colorado-court-strikes-down-local-bans-on-fracking.html> (“[T]he court said a moratorium in Fort Collins and a ban in Longmont were invalid because state law pre-empted them.”).

224. See, e.g., *Justices Say ND County Cannot Veto Site of Treating Facility*, U.S. NEWS (Mar. 7, 2017), <https://www.usnews.com/news/best-states/north-dakota/articles/2017-03-07/justices-say-nd-county-cannot-veto-site-of-treating-facility> (“[T]he sole authority for [such] zoning rests with the commission, which regulates energy development in the state.”).

225. See Danika Worthington, *Neighborhood Group Sues State for Failing To Enforce Regulations over Oil and Gas*, DENV. POST (Nov. 18, 2016), <http://www.denverpost.com/2016/11/18/neighborhood-sues-colorado-oil-and-gas>.

226. See, e.g., *Pawnee Nation Sues Oklahoma Oil Companies in Tribal Court Over Earthquake Damage*, N.Y. TIMES (Mar. 4, 2017), <https://www.nytimes.com/2017/03/04/us/pawnee-nation-oklahoma-oil-earthquake-lawsuit.html> (“The oil and gas industry has been the target of significant litigation over the years.”).

227. Along with the fact that such suits can be hard to win. See Ron Todt, *\$4.24M Verdict in Pennsylvania Drilling Lawsuit Tossed*, U.S. NEWS (Apr. 1, 2017), <https://www.usnews.com/news/best-states/pennsylvania/articles/2017-04-01/424m-verdict-in-pennsylvania-drilling-lawsuit-tossed> (finding conflicting evidence for whether fracking caused water contamination).

whether those states' procedures adequately protect the interests of the communities and property owners living near drilling operations.

1. Strengths and Weaknesses of the Hearing and Notice Regime of the Montana Board of Oil and Gas Conservation

The Montana approach has uniquely strong hearing and notice elements; of the ten states surveyed, no other state holds public hearings before deciding whether to grant a permit.²²⁸ A few states post a public notice after receiving a request for a wastewater injection permit.²²⁹ In Oklahoma, if a protest against an injection well is received within fifteen days, then the matter will be heard in front of an administrative law judge.²³⁰ In Arkansas, protesters have even more power against injection wells: "If an objection is received the application shall be deemed denied."²³¹ However, the Texas Commission specifies that only an "affected person" is entitled to a protest hearing for an injection well, defining such a person as someone "who has suffered or will suffer actual injury or economic damage other than as a member of the general public."²³² While these states do manage to include the public in the decision-making process for injection well permits (which are the likely cause of the increased seismic activity), they do not have Montana's protections to include local communities in the initial drilling permit decision.

Along with its unusually robust hearing procedures, it is similarly unusual that Montana requires petroleum drillers to give public notice whenever the operator wishes to drill a well outside of existing fields.²³³ Perhaps this is because notice is generally required in Montana when the issue "is of significant interest to the public."²³⁴ This strong hearing and notice regime bolsters the Board's goal of minimizing the harm that the oil and

228. *See supra* Table 1.

229. *Id.*

230. OKLA. ADMIN. CODE § 165:10-5-15(b)(4) (2016).

231. *See* ARK. OIL & GAS COMM'N, *supra* note 171.

232. *Protested Applications*, R.R. COMM'N OF TEX., <http://www.rrc.state.tx.us/oil-gas/publications-and-notices/manuals/injectiondisposal-well-manual/summary-of-standards-and-procedures/protested-applications> (last visited Oct. 13, 2017).

233. *See* Brief of Amicus Curiae Mont. Petroleum Ass'n, *supra* note 6, at 3; *see also* MONT. ADMIN. R. 36.22.601(1) (2017).

234. MONT. CODE ANN. § 2-3-103(1)(a) (2016).

gas operations can cause to nearby land and underground resources.²³⁵ It errs on the side of ensuring the public's right to information unless that information infringes on the right to *individual* privacy.²³⁶

What is troubling with the Montana approach is the parameters of its notice requirements.²³⁷ Having a strong hearing regime does not do much good if no one knows that they should demand one. Montana's requirement to publish notice of a new well in the local newspaper and in Helena's newspaper will notify some citizens.²³⁸ But it is likely that numerous other citizens, including possibly adjacent landowners, will receive no notice of the new well until it is being constructed. This can be contrasted with the notice requirements many states enact for alerting certain individuals to imminent drilling activity: notice by certified mail.²³⁹

If the adjacent landowners never receive notice, it could take time for them to learn of a new well's existence—for example, a cattleman with a sprawling ranch may not use portions of his grazing land regularly. By the time he finds out that a well is being operated near his land, he might not have been able to take accurate baseline measurements of his water quality. Such data is important if a landowner later wants to file a nuisance lawsuit backed with proper evidentiary support. While the Montana hearing requirements are strong, the notice requirements do not ensure that parties who could be adversely affected by the drilling will receive any advanced notice at all.

2. Strengths and Weaknesses of the Hearing and Notice Regime of the Colorado Oil and Gas Commission

The Colorado approach has many strengths. First, it includes a unique automatic notification tool: individuals may sign up to receive notice by mail about matters to be addressed in upcoming Commission meetings.²⁴⁰ This is much simpler than in Montana, where interested parties must carefully scan the

235. See *Montana Board of Oil & Gas Conservation*, *supra* note 132.

236. See *Flesh v. Bd. of Trs.*, 786 P.2d 4, 9 (Mont. 1990) (“The public's right to know is not absolute but must be balanced against the competing right to individual privacy.”).

237. See *supra* text accompanying notes 121–22, 142–43.

238. See *supra* note 143 and accompanying text.

239. See ARK. CODE ANN. § 15-72-203 (2017) (requiring notice by mail to surface owners); OHIO REV. CODE ANN. § 1509.06(A)(9) (2016) (requiring notice by mail to urban landowners within 500 feet of the surface location of the well).

240. See *supra* text accompanying note 157.

Helena newspaper each day.²⁴¹ It appears to be a unique feature among the states surveyed. The drawback of this tool is that many potentially affected parties likely will not know that they could have signed up for automatic notifications.

The Commission's general notice rule is also strong: when a person must be given notice, that notice must be mailed to them directly.²⁴² This means that when an operator applies to "chang[e] certain well location setbacks" or applies for "involuntary pooling," certain parties—usually other oil and gas operators—need to be notified directly.²⁴³ The Commission also requires similar notice to be given to the local government designee, the Colorado Department of Public Health and Environment, and Colorado Parks and Wildlife (when certain applications are filed).²⁴⁴

This section of Colorado statute lacks any mention of direct notice to adjacent property owners who are not affiliated with the petroleum industry. Perhaps the local government designee is thought to suffice, since the issues listed (like involuntary pooling) mostly affect other operators and not the public at large. However, there is no parallel statute listing specific circumstances under which members of the public are entitled to notice—not even for injection wells, as is required in Arkansas, Oklahoma, and Texas.²⁴⁵

The one instance when surface owners in Colorado do receive direct notice is when an operator files an application for increased well density. This triggers the option of a public forum.²⁴⁶ The ability to request a public forum can be contrasted with the ability to request a hearing in front of the Commission, as Montana statute permits.²⁴⁷ The benefits to Colorado's public forum approach are clear. First, it is administratively simpler. The local community is granted the opportunity to comment on the deviation from standard well density, but the Commission itself does not have to spend its time overseeing these proceedings (it receives a report and a record of them).²⁴⁸ Second, the parties likely to be affected by the decision are notified about the

241. *See supra* text accompanying notes 142–43.

242. COLO. REV. STAT. § 34-60-108(4) (2016).

243. COLO. CODE REGS. § 404-1:507(b) (2016).

244. *Id.* § 404-1:507(e).

245. *See supra* Table 1.

246. *See supra* text accompanying notes 162–66.

247. *See supra* text accompanying notes 144–45.

248. *See supra* text accompanying note 166.

public forum by personal mail three weeks in advance, with an additional notice posted in local newspapers two weeks in advance.²⁴⁹ Third, not only are local citizens properly notified, but they also do not have to travel very far to participate in the permit process. Holding public forums in the affected communities might increase turnout and foster a more meaningful discussion of an operator's application.

Despite these strengths, Colorado's approach has its drawbacks. The public forum option is only available when an operator applies to increase well density beyond what is statutorily permissible.²⁵⁰ The implicit presumption is that Colorado's restrictions on well density ensure safety—that is, if operators abide by the current restrictions, they will pose no significant health or safety threats to the public. But, the existence of even one drilling unit can lead to wastewater spills or air pollution that affect the health of nearby communities. Communities in Colorado are not involved in the initial question—whether or not to allow the drilling unit at all.

C. THE POTENTIAL IMPLICATIONS OF WHO IS A MEMBER OF STATE-LEVEL OIL AND GAS AGENCIES AND WHO IS NOT

Regardless of how local community members feel about a new drilling unit, the decision of whether to grant a permit ultimately rests with the individual members of the state-level oil and gas agencies. While they often take the public's perspective into consideration in the form of hearings or public forums, it is the agency's vote, not any public vote, that determines whether an operator may proceed with a particular aspect of the drilling process. For this reason, the perspectives and priorities of those individual members can greatly affect how the oil and gas agencies approach permit requests.

This Section will compare how Montana, Colorado, and the other states surveyed have designed and empowered their oil and gas agencies. It first discusses why the required attributes of the individual members are important, as well as raising the concern that these attributes could lead to regulatory capture by the petroleum industry. This Section then briefly assesses the relative merits of appointing or electing board members, as well as the relative merits of having a smaller or a larger board.

249. See *supra* text accompanying notes 163–64.

250. See *supra* text accompanying note 162.

1. Who Has a Vote, Who Does Not, and Why It Might Matter

Montana's statute emphasizes a balance between members who have been affiliated with the petroleum industry (at least three members) and those who are unaffiliated landowners (at least two members).²⁵¹ The remaining two members are unspecified, though one of the seven members must be an attorney.²⁵² Conceivably, the remaining two members could also have connections to the petroleum industry. All seven members are appointed in two batches by the Governor with no restrictions on political party affiliations. This statutory setup means that, for the last two years of a governor's term, the Board could be a fully partisan entity dominated by individuals who have been affiliated with the petroleum industry. By not requiring any members who specialize in public or environmental health, the Board could inadvertently minimize such perspectives in the same way that the industry itself tends to dismiss health concerns.

By contrast, Colorado's statutory requirements create a Commission that ensures a broader set of viewpoints.²⁵³ The executive directors of the Department of Natural Resources and the Department of Public Health and Environment—both of whom have a vote—sit alongside the seven members appointed by the Governor.²⁵⁴ Although three of the elected members must be affiliated with the petroleum industry, there must also be members with “substantial experience” in both wildlife protection and soil conservation.²⁵⁵ Those members are in addition to the two ex officio executive directors. Colorado also avoids a fully partisan Commission by requiring that no more than four of the appointed members be of the same party.²⁵⁶

251. See *supra* text accompanying notes 129–33.

252. *Id.*

253. See *supra* text accompanying notes 147–50.

254. *Id.*

255. *Id.* The “substantial environmental or wildlife protection experience” member could be an environmental lawyer rather than a scientist. See *Colorado Oil & Gas Conservation Commissioners*, COLO. OIL & GAS CONSERVATION COMM’N, <http://cogcc.state.co.us/about.html#/commissioners> (last visited Oct. 13, 2017) (showing that the current member in this position is an environmental lawyer). Similarly, Colorado's requirement for a member with “substantial soil conservation experience” is currently filled by someone with degrees in geology. *Id.*

256. See *Colorado Oil & Gas Conservation Commissioners*, *supra* note 255.

Colorado is unique among the states surveyed: no other state requires any specific representation for public health, natural resources, soil conservation, or wildlife protection.²⁵⁷ Ohio comes closest by requiring that one of its five members represent “the public.”²⁵⁸ By contrast, Arkansas only requires that “at least” a majority of its nine members have some kind of experience with oil and gas.²⁵⁹ North Dakota does not require any oil and gas experience for its three ex officio Commission members, but amends this potential deficit by using a subsidiary body to make permit decisions.²⁶⁰ Wyoming also has a Commission that includes three ex officio members, but requires that its two appointed members be “qualified to serve the oil and gas industry of the state.”²⁶¹

Compared to the other states surveyed, the statutory requirements of Colorado’s Commission result in an agency that must assess oil and gas permit decisions in a more holistic manner. Local communities and environmental organizations could perhaps pitch their concerns to the Commission without feeling like it was a procedural protest. By giving public health and the environment a seat within the agency, Colorado’s approach likely diminishes threats to health and safety before they occur. It also lessens the likelihood of regulatory capture.

Regulatory capture occurs when a government agency becomes, in effect, controlled by the industry that it was supposed to be regulating.²⁶² On the one hand, it is clearly important that some members who sit on oil and gas boards have a familiarity with oil and gas production. On the other hand, by focusing exclusively on members with experience in the petroleum industry, states run the risk of creating agencies that, in the words of the Wyoming statute, “serve the oil and gas industry” rather than the public.²⁶³ The potential for regulatory capture is most acute in a state like Arkansas, where the entire nine-person commission could come from (or plan to go to) the petroleum industry.²⁶⁴

257. See *supra* Table 1.

258. OHIO REV. CODE ANN. § 1509.35(a) (2016).

259. ARK. CODE ANN. § 15-71-102(b) (2017).

260. N.D. CENT. CODE ANN. §§ 38-08.1-04.1(3), 54-17-01 (2017).

261. WYO. STAT. ANN. § 30-5-103(a) (2017).

262. See *Regulatory Capture*, INVESTOPEDIA, <http://www.investopedia.com/terms/r/regulatory-capture.asp> (last visited Oct. 13, 2017).

263. WYO. STAT. ANN. § 30-5-103(a).

264. See STEVEN P. CROLEY, REGULATION AND PUBLIC INTERESTS: THE POSSIBILITY OF GOOD REGULATORY GOVERNMENT 49 (2008) (“Administrators cater to special interests not because they are locked in an exchange relationship with

Even when revolving-door concerns are absent, the agency might be structured in a way that implicitly leads to capture.²⁶⁵ Or perhaps one interest group is supplying a disproportionate amount of the data on which that agency relies to make regulatory decisions.²⁶⁶ While citizens rarely participate in regulatory decision-making, interest groups can routinely exert pressure on an agency.²⁶⁷ Intuitively, states that require diverse oil and gas boards (like Colorado) are better poised to combat these concerns.

What about situations where the agency has no quota for industry representation because the members are elected rather than appointed? How might that affect the allegiance of certain board members? Because of the dynamic of campaign donations, members can feel beholden to the industry. The following Subsection briefly considers this phenomenon.

2. Competing Models: Should Board Members Be Elected or Appointed?

Of the ten states surveyed, most have charged the governor with appointing their oil and gas board members. Certain restrictions are often placed on the governor—for example, requiring that a limited number of the members be of the same political party, or requiring that a certain number of members have oil

legislators but rather to advance their own interests, such as favorable future employment prospects with regulated interests.”). Similarly, lawmakers in Idaho recently overhauled its Oil and Gas Conservation Commission to replace “mostly citizen commissioners with three industry experts, an elected county commissioner and the director of the Idaho Department of Lands.” Keith Ridler, *Overhaul of Idaho Oil and Gas Laws Include New Commission*, U.S. NEWS (Apr. 27, 2017), <https://www.usnews.com/news/best-states/idaho/articles/2017-04-27/overhaul-of-idaho-oil-and-gas-laws-includes-new-commission>.

265. See CROLEY, *supra* note 264, at 50 (“Although agency personnel are not motivated to engage in regulatory favoritism, for structural-institutional reasons their decisions nevertheless tend to be biased in favor of special interests.”).

266. *Id.* (“Information biases may then translate into regulatory biases.”).

267. *Id.* at 21 (“For ordinary citizens, the costs of registering or even of formulating regulatory preferences far exceed the benefits. Not so for organized interest groups. . . . Given that the benefits of regulatory goods are higher for organized groups than for individual voters, the former enjoy much more influence in regulatory decisionmaking relative to the latter.”); see also Richard A. Posner, *Regulation (Agencies) Versus Litigation (Courts): An Analytical Framework*, in *REGULATION VS. LITIGATION: PERSPECTIVES FROM ECONOMICS & LAW* 19 (Daniel P. Kessler ed., 2011) (“Agencies are subject to far more intense interest-group pressures than courts. . . . The fact that agency members are specialized, and that they are less insulated from the political process than judges are, makes them targets for influence by special-interest groups . . .”).

and gas experience.²⁶⁸ North Dakota and Wyoming take a hybrid approach: North Dakota's three ex officio members (all elected) delegate some powers to a division, the head of which was appointed;²⁶⁹ Wyoming's Governor is a member of its Board, along with four appointed members (two of whom serve ex officio).²⁷⁰

Oklahoma and Texas both elect their three-person commissions that oversee, among other things, the oil and gas development in those states.²⁷¹ This approach abandons any particular design (like Colorado's carefully balanced commission) and instead places the decision directly in the hands of voters. The question is, by electing their oil and gas board members, are the citizens of Oklahoma and Texas somehow better off? Can an elected oil and gas board more nimbly and adequately address the needs of local communities?

For reasons similar to the regulatory capture analysis above,²⁷² the answer is likely no. Individuals running for office must solicit campaign donations. This grants the petroleum industry an opportunity to invest in certain candidates to encourage their allegiance to the industry.²⁷³ Elected officials can even receive substantial donations after entering office. For example, an elected commissioner of Oklahoma's oil and gas agency collected an additional \$80,000 after his election win—"mostly from donors in the oil and gas industry."²⁷⁴ The hazards of fracking are most acute for those living near drill and wastewater sites.²⁷⁵ These affected individuals are neither as numerous nor as organized as the petroleum industry. When Oklahoma was confronted with its recent spate of unprecedented earthquakes, the

268. See, e.g., *supra* notes 147–50 and accompanying text (describing the system in Colorado).

269. N.D. CENT. CODE ANN. § 54-17-02 (2017); *North Dakota Industrial Commission*, N.D. STATE GOV'T, <http://www.nd.gov/ndic/ic-about.htm> (last visited Oct. 13, 2017).

270. WYO. STAT. ANN. § 30-5-103(a) (2017).

271. See *supra* text accompanying notes 194–99.

272. See *supra* notes 262–67 and accompanying text.

273. Cf. Daniel C. Hardy, *Regulatory Capture in Banking 4* (Int'l Monetary Fund, Working Paper No. 06/34, 2006) ("The regulated firms may exercise pressure at the political level, for example, by . . . attempting to gain [politicians'] allegiance through campaign contributions.").

274. See Clay, *supra* note 196 (explaining that donors in Oklahoma may legally contribute to elected Corporation Commission members for 120 days after the general election).

275. See *supra* notes 74–102 and accompanying text.

avowedly pro-fracking Commissioners²⁷⁶ and skeptical Governor²⁷⁷ were slow to acknowledge the likely link to the injection wells. The Commissioners ultimately decided to work within the existing laws rather than impose, say, a moratorium on wastewater injection or enact any new regulations.²⁷⁸ If elected leaders fail to rapidly address something as glaring as the dangers of earthquakes, how can they be expected to adequately address invisible harms like air pollution?

It appears that being an elected member of an oil and gas board does not inherently make those members more sympathetic or responsive to public health concerns. Appointed boards are, of course, susceptible to their own problems. Governors can use appointments to reward loyal party members (rather than select individuals on merit alone), leading to “old boy syndrome.”²⁷⁹ Even though members of appointed boards do not receive campaign contributions, such boards could still be subject to regulatory capture. However, on balance, the appointed boards are more insulated from the industry, which may help them address public health concerns more effectively.

This Part assessed, first, the tension between the petroleum industry’s interest in efficiency and the public’s interest in health and safety. This tension is often embodied within the oil and gas boards themselves, which can strengthen the position of either side by adopting certain notice and comment regimes. The particular board members, including their backgrounds and which group’s interests they are designated to represent, will also affect how this tension gets resolved. The final Part makes recommendations on these matters.

276. See, e.g., Bob Anthony, *Response to Attacks on Hydraulic Fracturing (A Proven Well Completion Technology for Shale Gas)*, OKLA. CORP. COMM’N (Mar. 30, 2011), http://www.occeweb.com/Comm/Anthony/Woodford%20Summit%2003302011v_final3.pdf (explaining the fracking process and why state regulation is better than EPA regulation).

277. See John Burnett, *Texas, Oklahoma Divided over How To Handle Earthquakes Linked to Oil Drilling*, NPR (Nov. 28, 2016), <http://www.npr.org/2016/11/28/503632437/texas-oklahoma-divided-over-how-to-handle-earthquakes-linked-to-oil-drilling> (“The first research linking the state’s most important industry to the earthquake surge came out in 2013, though leaders like Governor Mary Fallin did not embrace the science until 2015.”).

278. *Id.*

279. See, e.g., Nancy McCarthy, *Elect or Appoint Bar Board Members? For Some, That Is the Question*, CAL. B.J. (Apr. 2011), <http://www.calbarjournal.com/April2011/TopHeadlines/TH5.aspx> (describing this problem in the context of the California State Bar board of governors).

III. LIMITING HARM BEFORE IT OCCURS: WAYS TO STRENGTHEN THE PUBLIC'S ROLE IN THE PERMIT PROCESS

The final Part of this Note attempts to reconcile the competing interests of the petroleum industry and the public in a way that tips the balance toward the interests of property owners and community members. Giving nearby landowners a greater role in the permit process would require that state-level oil and gas agencies consider the perspective of those landowners when deciding whether to grant a permit. Because the current regulatory regime tends to favor efficiency over transparency and public health, this Note suggests a solution that gives the public a stronger role.

Section A proposes that because fracking and its associated waste products are hazardous to human and environmental health, nearby landowners are entitled to actual notice by mail and a public forum for all new exploratory wells outside of existing fields. Then, Section B proposes that state-level oil and gas agencies use a modified Colorado model: they must include at least one board member who specializes in public health, and one board member who specializes in ecology or biology. Finally, Section C proposes that each oil and gas agency establish an epidemiological monitoring program to be implemented at petroleum exploration fields. It should not be incumbent on individual citizens to collect data and monitor the toxic byproducts of drilling operations near their homes.

A. AN APPLICATION FOR NEW EXPLORATORY WELLS SHOULD MANDATE MAILED NOTICE TO NEARBY LANDOWNERS AND A PUBLIC FORUM

Property owners and communities have a right to know about and comment on proposed oil and gas drilling projects before they occur. The need for transparency and public involvement can be balanced against the efficiency arguments that the petroleum industry and the oil and gas boards often make. Because any new exploratory well has the potential to become a fully operating well and harm environmental health, Montana is right to view such permit requests as worthy of heightened scrutiny.²⁸⁰ However, its form of notice and its subsequent hearing in front of the Board are not the best solution. Oil and gas boards

280. See *supra* text accompanying notes 33–73 (describing an overview of the drilling process).

should instead use Colorado's public forum approach, which is procedurally simpler but accomplishes the same goal.²⁸¹

When an oil and gas board receives a permit request for a new exploratory well outside of an existing field, it should alert, by direct mail, the state's department charged with overseeing public health and the department that oversees conservation or wildlife issues. The board should also alert, by direct mail, an appointed person in the county seat of the requested drilling project. If any of those three parties request a public forum in the county seat, then a public forum will be arranged. Concurrently, any landowners within a reasonable distance of the land on which the well is proposed should also be directly notified with the option to request a public forum. At a minimum, this should include landowners who share a property line with the affected parcel. Lastly, mandatory notice in local newspapers and the major newspaper of that state's capital should allow any other interested party to request a public forum.

Next, if someone does request a public forum, then those same nearby landowners should be notified by mail about the forum at least three weeks in advance. Local newspapers and the major newspaper of that state's capital would run a notice at least two weeks in advance. The costs incurred during both rounds of notice should be billed to the operator requesting the permit. Although e-mail alerts could be useful in some circumstances, e-mail would work less well for full notice requirements. This is because, unlike landowner records and addresses, there is not yet a local registry of each individual's primary e-mail address. Additionally, nearly a quarter of the people living in rural areas—the places most affected by the petroleum exploration—still do not regularly use the Internet.²⁸²

Finally, if a public forum occurs, then the local official in charge of the forum would produce a report to be sent to the oil and gas agency. The report should be made public on the agency's website, perhaps including a full transcript and video of the proceedings. If the proposed well is ultimately approved, then the community will likely be more knowledgeable about its potential health threats because of the public forum. The public

281. In Colorado, public forums are sometimes used if an application violates well density limitations. *See supra* text accompanying notes 162–66.

282. Andrew Perrin & Maeve Duggan, *Americans' Internet Access: 2000–2015*, PEW RESEARCH CTR. (June 26, 2015), <http://www.pewinternet.org/2015/06/26/americans-internet-access-2000-2015> (“Those who live in rural areas are less likely than those in the suburbs and urban areas to use the internet. Still, 78% of rural residents are online.”).

forum would “afford them an opportunity to present their objections.”²⁸³ Local communities cannot unilaterally prevent oil and gas projects from showing up in their peripheries. But, these steps will promote a more well-informed community. They will also create a record of the specific concerns about a new drilling location, which could be useful in future litigation.

The drawback to this plan lies in its compromise. By substituting Montana’s hearings with public forums, individuals are no longer making arguments in front of the board itself. Instead, their concerns are bundled into a tidy report to be perused by the board in a distant city. An in-person discussion with the ultimate decision-makers could make citizens’ concerns more psychologically persuasive. The plan also lessens the efficiency of the permit process by adding extra procedures. In turn, this increases uncertainty for drillers; if their permit is finally approved, perhaps the board would tack on unpredictable and costly stipulations based on community concerns. Especially concerning for drillers may be the ability for *any* interested party to request a public forum. What if environmental organizations stymie every single permit request with a public forum demand?

These drawbacks—for both sides—seem outweighed by the benefits. The public forum option is only offered, as in Montana law, when a permit is requested to drill *outside of an existing field*.²⁸⁴ Even if environmental organizations managed to arrange a public forum for each of those permit requests, the stakes are not as high as during a formal hearing; the public forum will produce no final, binding decision. It is less burdensome for locals (who do not have to travel to a board meeting to be heard) and less burdensome for the oil and gas boards. At the same time, locals receive the notice and the ability to comment that are currently lacking in most states. As parties whose rights may be affected by the drilling, they “are entitled to be heard.”²⁸⁵

B. STATE-LEVEL OIL AND GAS AGENCIES SHOULD INCLUDE MEMBERS WHO SPECIALIZE IN PUBLIC HEALTH AND ECOLOGY

When making regulatory decisions, oil and gas boards must balance efficiency with the public interest. This balance is determined in part by the members themselves. How states decide who is a member of such agencies and who is not will affect how

283. *Mullane v. Cent. Hanover Bank & Tr. Co.*, 339 U.S. 306, 314 (1950).

284. *See supra* text accompanying notes 142–43.

285. *Baldwin v. Hale*, 68 U.S. (1 Wall.) 223, 233 (1863).

that agency frames the issues that come before it. Without representation in the agency, some groups will have a much weaker voice in the agency's decisions than the groups that did receive representation. The connection between the petroleum industry and threats to public health is well documented and regularly demonstrated. For this reason, oil and gas boards should include representatives from those fields as permanent, voting members.

Colorado's Oil and Gas Conservation Commission serves as an exemplary entity in this regard. Not only are the Department of Natural Resources and the Department of Public Health and Environment both present on the Commission, but the appointed members must also represent specific public and environmental health needs.²⁸⁶ This is not redundant. By mandating that five of the nine Commission members represent public or environmental health, Colorado can better assess the immediate harms associated with drilling. It is also in a better position to make long-term decisions about what is in the state's best interest, since, theoretically, the individuals representing public health or the environment are less motivated by short-term economic gains and are more concerned with the far-reaching implications of today's policies.

A problematic aspect of Colorado's arrangement is that an environmental lawyer can qualify as the member with "substantial environmental or wildlife protection experience."²⁸⁷ Environmental lawyers do not necessarily know much about ecology or how ecosystems function. To better address potential environmental harms, the members representing the environment should be trained in natural sciences. Each oil and gas board should contain one member trained and working as an ecologist or biologist and another trained in public health. Whether this requirement would be filled by *ex officio* members of relevant agencies, or by separate individuals, or by both (like Colorado) would depend on each state.

This Note also recommends that: (1) oil and gas agency members be appointed by the governor; and (2) that they require someone "trained in geology" rather than "with experience in the petroleum industry." Both of these suggestions aim to minimize the likelihood of regulatory capture. The former assures the public that the members of their state's oil and gas board were not

286. *See supra* text accompanying notes 147–50.

287. *See supra* note 255 (noting also that the soil conservation member is trained as a geologist).

simply bought through industry donations and campaign contributions. The latter distinction makes clear that it is the geologic *skills and knowledge* that are needed—whether those skills were honed in the industry, in the government, or in academia.

The details of both this proposal and the former one could be assessed by a legislative committee, or could be determined by the oil and gas boards themselves through adequate hearing and notice procedures. States might vary in which particular health or environmental departments should be present on oil and gas agencies. They might also vary in the particular scientific specialties of the appointed members, depending on what ecosystems are most threatened by the industry in that particular state. Similarly, the precise parameters of who receives direct notice for new exploratory permits could depend on local factors, such as the likely fallout zone of any health risks. This could be assessed by determining the mile range around a drilling site in which air quality could be diminished or by examining the paths of streamflow to estimate the exposure route of a potential surface-level wastewater spill.

C. STATE-LEVEL OIL AND GAS AGENCIES SHOULD ESTABLISH EPIDEMIOLOGICAL MONITORING PROGRAMS

Finally, oil and gas boards should adopt the epidemiological monitoring program suggested by The Endocrine Disruption Exchange.²⁸⁸ In a paper published in 2011, the organization recommended the “environmental monitoring of air and water as well as any health changes in those living and working in regions of natural gas operations.”²⁸⁹ At the very least, the enhanced notice and comment regime proposed in this Note will allow communities to do such monitoring on their own before and after the drilling activity. But, not all communities will have the ability—or resources—to do so. This is why all oil and gas boards should establish their own epidemiological monitoring programs. The boards themselves, perhaps through their public health member, would collect data on environmental and human health near drilling operations. This data would be available to the public in

288. See Theo Colborn et al., *Natural Gas Operations from a Public Health Perspective*, 17 HUM. & ECOLOGICAL RISK ASSESSMENT: AN INT’L J. 1039, 1055 (2011) (“Given the general consistency of reported adverse health effects by citizens and laborers across many gas plays, public health authorities should establish an epidemiological monitoring program . . . in order to increase power and be able to reach conclusions early on.”).

289. *Id.*

regular reports. That way, public health officials and concerned citizens can better assess the ongoing risks posed by any particular drilling field.

Certainly, such a plan would provoke outcry: let the oil and gas boards be in charge of issuing permits, and let the public health and environmental agencies be in charge of regulation. That fragmented approach has not been working in most states. Public health and environmental agencies must mitigate harms that have already occurred. It is time to bring fracking-related public health problems to the fore and put the onus for their oversight where it belongs: with the initial permitting bodies.

CONCLUSION

The ability to frack the natural gas out of tight shale formations has certainly been a boon for energy independence in the United States and for the petroleum industry. However, the drilling process and its associated wastewater pose health and safety risks to humans living nearby and to the environment at large. Depending on which state they live in, landowners could wake up to a drilling operation on the other side of their property line without receiving any notice and without ever having an opportunity to voice their concerns.

When designing their oil and gas boards, states attempt to balance the interests of the industry and local communities. But, they often fall short of protecting public health. Because of the documented health risks that the oil and gas industry poses to humans and the environment at large, state legislatures should modify their oil and gas boards. By mandating that a public health specialist and ecologist sit in those agencies, and by mandating that the boards monitor oil and gas pollution for epidemiological threats, the health of local communities and ecosystems would no longer be an afterthought. In turn, the public should be equipped with a stronger notice and comment regime. These suggestions will not ensure that a community has given its full, informed consent to any particular drilling project. But, by shifting the emphasis to public and environmental health, oil and gas boards can help preempt harm.

APPENDIX

	Notice to Surface Owners for New Exploratory Well Permits	Notice to Public for New Exploratory Well Permits	Public Hearing for New Exploratory Well Permits	Notice to Public for Wastewater Injection Permits	Number of Board or Commission Members	Requirement for Public Health or Scientist Member
Arkansas	Y ²⁹⁰	N ²⁹¹	N ²⁹²	Y ²⁹³	9 ²⁹⁴	N ²⁹⁵
Colorado	Y ²⁹⁶	Nearby Landowners ²⁹⁷ or Upon Request ²⁹⁸	N ²⁹⁹	Y ³⁰⁰	9 ³⁰¹	Y ³⁰²
Montana	Y ³⁰³	Y ³⁰⁴	Upon Request ³⁰⁵	N ³⁰⁶	7 ³⁰⁷	N ³⁰⁸

290. ARK. CODE ANN. § 15-72-203(a) (2017).

291. *Id.* § 15-72-203(c)(4) (“After written notice of the operator’s intent to begin shale operations is given under this subsection, an operator is not required to give any other notice . . .”).

292. *See id.* § 15-72-203.

293. ARK. OIL & GAS COMM’N, GENERAL RULES AND REGULATIONS, GENERAL RULE H 192–214 (2016), <http://www.aogc.state.ar.us/rules/rulesregs.pdf>.

294. *Id.* § 15-71-102(a)–(b).

295. *Id.*

296. COLO. CODE REGS. § 404-1:305.c(1) (2017).

297. *Id.*

298. COLO. REV. STAT. § 34-60-108(5) (2016).

299. *See* COLO. CODE REGS. § 404-1:305.

300. COLO. CODE REGS. §§ 404-1:325.j, :325.n.

301. COLO. REV. STAT. § 34-60-104(2)(a)(I).

302. *Id.*

303. ENVTL. QUALITY COUNCIL, A GUIDE TO SPLIT ESTATES IN OIL AND GAS DEVELOPMENT 2 (2013), <http://leg.mt.gov/content/publications/environmental/hb790brochure.pdf>.

304. MONT. ADMIN. R. 36.22.601(1), 36.22.620(2) (2017).

305. *Id.* at 36.22.601(4).

306. *See id.* at 36.22.1403.

307. MONT. CODE ANN. § 2-15-3303(2) (2015).

308. *Id.*

New York	Y ³⁰⁹	N ³¹⁰	N ³¹¹	Y ³¹²	N/A ³¹³	N ³¹⁴
North Dakota	Y ³¹⁵	Nearby Land-owners ³¹⁶	N ³¹⁷	Y ³¹⁸	3 ³¹⁹	N ³²⁰
Ohio	Y ³²¹	Nearby Urban Land-owners ³²²	N ³²³	N ³²⁴	5 ³²⁵	N ³²⁶

309. N.Y. ENVTL. CONSERV. LAW § 23-0305 (McKinney) at ¶ 13.

310. “Public hearings are held when there is dispute about the spacing units for a formation or if the entire mineral property to be affected by the project is not contractually under the control of the applicant. This is not typical in NY; however, in these cases, a notice is posted to the ENB [Environmental Notice Bulletin].” Email from a civil servant, N.Y. Bureau of Oil & Gas Permitting & Mgmt., Div. of Mineral Res., to author (Mar. 9, 2017, 15:25 CST) (on file with author).

311. *Id.*

312. The EPA has full oversight of New York’s underground injection program. *See Primary Enforcement Authority for the Underground Injection*, EPA, <https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program> (last visited Oct. 13, 2017). It publishes notice of proposed permits on its website. *See Underground Injection Control in EPA Region 2, (NJ, NY, PR, and VI)*, EPA, <https://www.epa.gov/uic/underground-injection-control-epa-region-2-nj-ny-pr-and-vi> (last visited Oct. 13, 2017).

313. *See Division of Mineral Resources*, N.Y. DEP’T OF ENVTL. CONSERVATION, <http://www.dec.ny.gov/about/636.html> (last visited Oct. 13, 2017). The Division of Mineral Resources has three offices handling oil and gas drilling permits, with ten people working on permits. E-mail from C. Scott Dietzel, Mineral Res. Specialist 2, N.Y. Bureau of Oil & Gas Permitting & Mgmt., Div. of Mineral Res., to author (Mar. 10, 2017, 08:26 CST) (on file with author).

314. E-mail from Thomas E. Noll, Dir., N.Y. Bureau of Oil & Gas Permitting & Mgmt., Div. of Mineral Res., to author (Mar. 17, 2017, 09:35 CDT) (on file with author).

315. N.D. CENT. CODE § 38-08.1-04.1(4) (2017).

316. *Id.*

317. *See id.* §§ 38-08.1-04, -04.1.

318. N.D. ADMIN. CODE 43-02-05-04(1) (2017) (“No underground injection may be conducted without obtaining a permit from the commission after notice and hearing.”).

319. N.D. CENT. CODE § 54-17-02.

320. *Id.*

321. OHIO REV. CODE § 1509.06(A)(9) (2017).

322. *Id.* §§ 1509.06(A)(9), .60.

323. *See id.* § 1509.06.

324. *See* OHIO ADMIN. CODE 3745-34-12 (2016).

325. OHIO REV. CODE § 1509.35(A).

326. *Id.*

Okla- homa	Y ³²⁷	N ³²⁸	N ³²⁹	Y ³³⁰	3 ³³¹	N ³³²
Pennsyl- vania	Y ³³³	Nearby Land- owners ³³⁴	N ³³⁵	Y ³³⁶	N/A ³³⁷	N ³³⁸
Texas	Y ³³⁹	N ³⁴⁰	N ³⁴¹	Y ³⁴²	3 ³⁴³	N ³⁴⁴
Wyoming	Y ³⁴⁵	N ³⁴⁶	N ³⁴⁷	N ³⁴⁸	5 ³⁴⁹	N ³⁵⁰

327. OKLA. ADMIN. CODE § 165:10-3-1(g) (2016).

328. *See id.* § 165:10-3-1.

329. *See id.*

330. *Id.* § 165:10-5-5(d).

331. *See* OKLA. CORP. COMM'N, <http://www.occeweb.com/index.html>.

332. OKLA. CONST. art. 9, § 16.

333. 58 PA. CONS. STAT. § 3211 (b)(2), (b.1) (2017).

334. “The applicant shall forward by certified mail a copy of the plat to . . . all surface landowners and water purveyors, whose water supplies are within 1,000 feet of the proposed well location . . .” *Id.* § 3211(b)(2).

335. *See id.* §§ 3211, 3212.

336. The EPA has full oversight of Pennsylvania’s underground injection program. *See* EPA, *supra* note 312. It publishes notice of proposed permits on its website. *See Underground Injection Control in EPA Region 3 (DE, DC, MD, PA, VA, and WV)*, EPA, <https://www.epa.gov/uic/underground-injection-control-epa-region-3-de-dc-md-pa-va-and-wv> (last visited Oct. 13, 2017).

337. *See Office of Oil and Gas Management*, PENN. DEPT OF ENVTL. PROT., <http://www.dep.pa.gov/business/energy/oilandgasprograms/oilandgasmgmt/Pages/default.aspx> (last visited Oct. 13, 2017).

338. *See id.*

339. *See* JUDON FAMBROUGH, REAL ESTATE CENTER, MINERALS, SURFACE RIGHTS AND ROYALTY PAYMENTS 1 (2009), <https://assets.recenter.tamu.edu/documents/articles/840.pdf>.

340. 16 TEX. ADMIN. CODE § 3.5 (2017).

341. *See id.*

342. *Id.* § 3.9(5)(D).

343. *See Commissioners*, R.R. COMM'N OF TEX., <http://www.rrc.state.tx.us/about-us/commissioners> (last visited Oct. 13, 2017).

344. *Id.*

345. WYO. STAT. ANN. §§ 30-5-402(b), -403(a) (2017).

346. *See id.*

347. *See id.*

348. *See* OIL & GAS CONSERVATION COMM'N, WYO. ADMIN. R. ch. 3 (2016).

349. *Id.* § 30-5-103(a).

350. *Id.*