LIKE IT OR NOT, YOU'RE FRACKED: WHY STATE PREEMPTION OF MUNICIPAL BANS ARE UNJUSTIFIED IN THE FRACKING CONTEXT

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ABSTRACT

Hydraulic fracturing or "fracking," a process of removing embedded oil or natural gas from rock, has greatly increased since the early '90s when horizontal drilling made previously economically inaccessible fossil fuels a profitable resource. As has been true for some time, fossil fuels mean big profits. The effects of these profits have been felt across the country—fracking is responsible for lower gas prices and drilling is taking place in regions that were previously untapped. But these profits do not come without a price—fossil fuel extraction also means big environmental concerns. While oil companies minimize or deny the environmental effects of fracking, water and air contamination, health effects, and the impending threat of climate change are all difficult concerns to ignore. Concerned about these dangers, municipalities across the country have enacted ordinances banning fracking within their borders. In response, statutes that preempt these bans, and thereby require towns to permit fracking within their borders, have emerged as a recent trend in state-level legislation.

This Note considers the environmental costs and economic benefits of fracking and examines the trends in legislation and litigation regarding municipal fracking bans. Using this background, this Note asks whether state statutes preempting local fracking bans make sense in the context of prevailing environmental preemption theories. This Note concludes by establishing that, while the prevailing theories tend to support state regulation of the technical aspects of fracking, these theories in no way support state preemption of local bans based on traditional land use considerations. Specifically, municipalities should be able to ban fracking when the decision is based on how it will affect the character and nature of a town. For example, a municipality that depends on tourism arising from its pristine natural resources, such as trout streams and forests, should not be compelled by

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a state-level law to permit an activity that could put its resources and the local economy in jeopardy.

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INTRODUCTION

As I drive down a dirt road through beautiful Pennsylvania woods, just outside the small town of Hughesville, I don't think about the vast deposits of natural gas trapped under pressure in solid rock over a mile beneath me. Instead, I note how pleasant it must be to live amongst such peaceful surroundings. As my drive continues over a recently reinforced bridge, I come across a clearing containing a farm, a silo, and a farmhouse. A little farther up, within the same clearing, there is a concrete platform spanning over an acre. Pipes and tanks jut out of the ground. Set farther back from the road, there are several towers that look like oil derricks. A sign with XTO Energy's corporate logo identifies this as an access road and states, "In case of emergency call 9-1-1."[1] Near another farm a little farther up the road, horses frolic next to a similar setup. The average person would not know by the sign that XTO Energy is a subsidiary of Exxon Mobil,[2] and that beneath this scenic view might lie over a mile of pipes stretching to a depth of 10,000 feet and sprawling another 10,000 feet horizontally.[3] Nor would the average person be likely to know that the municipality in question, the Borough of Penn, houses fifty-nine fracking wells, which are cumulatively guilty of 190 violations of their environmental permits.[4]

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Natural gas, oil, and other hydrocarbons are widely known as economically valuable energy resources. Far from being easily accessible, much of these resources are "locked inside tight sandstones, shales and other . . . geological formations," often over a mile underground.[5] Like other valuable resources, human ingenuity has proven its incredible ability to capture and profit from these re-

1. *See Well: Marquardt Unit 8517H*, STATE IMPACT, PENNSYLVANIA http://stateimpact.npr.org/pennsylvania/drilling/wells/081-20275 (last visited Sept. 14, 2016) (providing a map and history of violations of the described well).

2. *See generally* XTO ENERGY, http://xtoenergy.com/index.html (last visited Sept. 14, 2016).

3. Sharon Dunn, *Fracking 101: Breaking Down the Most Important Part of Today's Oil, Gas Drilling*, GREELY TRIB. (Jan. 5, 2014), http://www.greeleytribune.com/news/9558384-113/drilling-oil-equipment-wellbore#.

4. *Penn*, STATE IMPACT, PENNSYLVANIA, http://stateimpact.npr.org/pennsylvania/drilling/municipalities/penn-township-municipality-7 (last visited Sept. 14, 2016).

5. Robert B. Jackson et al., *The Environmental Costs and Benefits of Fracking*, 39 ANN. REV. ENV'T & RESOURCES 327, 329 (2014).

sources, even where extracting them seemed previously impossible.[6] As of July 2015, the Energy Information Administration estimated that the United States contained 622.5 trillion cubic feet of technically recoverable "wet shale gas"[7] and 78.2 billion barrels of "tight oil."[8] At $30 per barrel,[9] that amounts to over two trillion dollars in oil, and at $3.35 per thousand cubic feet at the wellhead,[10] well over two hundred billion dollars in wet shale gas.

To get at this "black gold," oil companies use a controversial technique called "hydraulic fracturing," known colloquially as "fracking." This method of extracting shale gas and "tight oil" has arguably been in use since 1865 when civil war veteran Col. Edward A.L. Roberts patented a technique wherein an explosive torpedo was lowered into an oil well, covered with water to "increase the effectiveness of the blast," and detonated, fracturing rock and increasing oil production.[11] However, the Geological Society of America traced hydraulic fracturing as we know it back to a well in Kansas in 1947,[12] which, with the invention of horizontal drilling in the 1990s, became more economical, allowing fracking to expand into the extensive practice it is today.[13]

There are countless resources available describing the modern fracking process in detail.[14] To break it down to its basic compo-

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6. *See id.*

7. "Dry [shale] gas" has "methane in it, but not much else," whereas "wet [shale] gas" also contains "compounds like ethane and butane. These 'natural gas liquids' . . . can be separated and sold on their own. . . . In order to increase profits, drillers are turning their attention to 'wet' shale plays, where they can extract ethane and other NGLs in addition to gas." *What's the Difference Between Wet and Dry Natural Gas?*, STATE IMPACT, PENNSYLVANIA https://stateimpact.npr.org/pennsylvania/tag/natural-gas-prices (last visited Sept. 14, 2016).

8. *World Shale Resource Assessment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/analysis/studies/worldshalegas (last updated Sept. 5, 2016). "Tight oil" is synonymous with "shale oil" and is generally only extractable through fracking. *Definition of Shale Oil*, INVESTOPEDIA, http://www.investopedia.com/terms/s/shaleoil.asp (last visited Sept. 14, 2016); *see also What is Tight Oil?*, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/clean-vehicles/clean-fuels/what-is-tight-oil#.VqaR1vGockQ (last visited Sept. 14, 2016).

9. *See Crude Oil*, NASDAQ, http://www.nasdaq.com/markets/crude-oil.aspx (last visited Sept. 14, 2016).

10. *U.S. Natural Gas Wellhead Price*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/dnav/ng/hist/n9190us3m.htm (last visited Sept. 14, 2016).

11. *Fracking*, BALLOTPEDIA, https://ballotpedia.org/Fracking (last visited Sept. 14, 2016).

12. Daniel R. Suchy & K. David Newell, *Hydraulic Fracturing of Oil and Gas Wells in Kansas*, KAN. GEOLOGICAL SURV., May 2012, at 1.

13. *See Hydraulic Fracturing's History and Role in Energy Development*, NAT'L GEOLOGICAL SOC'Y OF AM., http://www.geosociety.org/criticalissues/hydraulicFracturing/history.asp (last visited Sept. 14, 2016).

14. For a brief but thorough overview of the process, including siting the well, building supporting infrastructure, drilling and casing, the fracturing itself, hooking the site up to a

nents, fracking consists of drilling thousands of feet below the surface of the earth to get to the depth of hydrocarbons (primarily oil and natural gas) still trapped in rock, then drilling horizontally 6,000 or more additional feet.[15] This technique ultimately blasts large volumes of fluids under high pressure into the drill-holes,[16] "which causes the already-existing fracture networks to expand and also creates new fissures. This expanded fracture network gives previously trapped hydrocarbons an avenue to reach the wellbore."[17]

Of course, fracking, like other methods of fossil fuel extraction, comes with costs and benefits.[18] Because of concerns about its environmental impacts, municipalities across the United States have, with varying degrees of success, attempted to ban the practice within their borders.[19] Commonly, however, local attempts to ban fracking are thwarted by state regulations preempting municipalities from enacting such bans.[20]

This Note asks whether, based on prevailing environmental preemption theories ("race-to-the-bottom," "race-to-equilibrium," or "interstate externalities"), state legislation preempting municipal fracking bans are justified. In answering this question, this Note ex-

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pipeline, and storing the gas, *see* BETH E. KINNE, *The Technology of Oil and Gas Shale Development*, *in* BEYOND THE FRACKING WARS: A GUIDE FOR LAWYERS, PUBLIC OFFICIALS, PLANNERS, AND CITIZENS 3, 3–18 (Erica Levine Powers & Beth E. Kinne eds., 2013). For a graphical representation, *see Hydraulic Fracturing: What is Hydraulic Fracturing*, PROPUBLICA, http://www.propublica.org/special/hydraulic-fracturing (last visited Sept. 14, 2016).

15. Jackson et al., *supra* note 5, at 329.

16. These fluids "differ depending upon the precise geology of the area and the hydrocarbon to be extracted, but water and sand" are generally the "primary ingredients," and "are usually supplemented by various solvents, including hydrochloric acid or diesel fuel." Adam Garmezy, *Balancing Hydraulic Fracturing's Environmental and Economic Impacts: The Need for a Comprehensive Federal Baseline and the Provision of Local Rights*, 23 DUKE ENVTL. L. & POL'Y F. 405, 407 (2013). The fluids used in fracking operations are also the subject of extensive controversy over whether the contents should be protected as trade secrets in the wake of concerns about the potential effects of such fluids on the environment. *See Montana and Fracking*, SOURCEWATCH, http://www.sourcewatch.org/index.php/Montana_and_fracking (last visited Sept. 14, 2016); Mead Gruver, *Judge Sides With Wyoming in Fracking Chemical Suit*, HUFFINGTON POST (Mar. 25, 2013, 3:08 PM), http://www.huffingtonpost.com/huffwires/20130325/us-fracking-disclosure-lawsuit/.

17. Garmezy, *supra* note 16, at 407.

18. *See generally* Jackson et al., *supra* note 5 (taking a balanced approach to exploring fracking's economic and environmental impacts).

19. *See* Shaun A. Goho, Commentary, *Municipalities and Hydraulic Fracturing: Trends in State Preemption,* 64 PLAN. & ENVTL. L. 3, 4 (2012) ("[I]t appears that well over 100 municipalities have imposed either permanent bans or temporary moratoria on fracking.") (citing Mary Grant, *Local Resolutions Against Fracking*, FOOD & WATER WATCH (June 25, 2016), http://www.foodandwaterwatch.org/insight/local-resolutions-against-fracking (listing municipal bans by state)).

20. *See infra* Part II.

amines the distinction between statewide regulation of the technical aspects of drilling versus traditionally local land use decisions on whether fracking should take place in a municipality at all. Ultimately, this Note concludes that while the prevailing environmental theories support regulation of the technical aspects of fracking, none of them support preempting local land use bans. At a minimum, the decision on whether to allow such a potentially destructive activity should be left to local governments, which are in a better position to determine whether fracking would burden or benefit their towns.[21]

This Note is comprised of five major parts. Part I provides an overview of fracking's benefits and harms.[22] Part II provides a brief background on how preemption occurs at the state level, and what factors—chiefly, a state's Home Rule powers—can affect the extent to which a municipality's laws are preempted.[23] Part II then examines the status of relevant preemption legislation across the United States, looking especially at key judicial decisions.[24] Part III provides an overview of the prevailing environmental theories of preemption.[25] Part IV applies these theories in the context of fracking legislation and indicates why no prevailing environmental theory justifies preempting local bans.[26] Part IV also addresses why the theory of "uniform standards," which is not a prevailing environmental theory but is often cited by proponents of preemption legislation, also does not support preempting local bans.[27] This Note concludes in Part V by suggesting that because none of the aforementioned theories support preempting local bans, public choice theory may offer a better explanation of why such legislation is being passed.[28]

I. FRACKING COSTS AND BENEFITS

A. The Economics

The benefits of fracking are exclusively economic in nature and the numbers are substantial. Thanks to fracking, domestic oil production has increased by 82% in the past seven years, and natural

21. *But see* Jamal Knight & Bethany Gullman, *The Power of State Interest: Preemption of Local Fracking Ordinances in Home-Rule Cities*, 28 TUL. ENVTL. L.J. 297, 298 (2015) (arguing that municipal attempts to regulate hydraulic fracturing are misguided).

22. *See infra* Part I.

23. *See infra* Part II.A–B.

24. *See infra* Part II.C–D.

25. *See infra* Part III.

26. *See infra* Part IV.

27. *Id.*

28. *See infra* Part V.

gas production is "up by nearly one-quarter."[29] This significant increase in oil production has been attributed to markedly lower gasoline and natural gas prices.[30] President Obama recently signed "a measure to lift a 40-year-old ban on the export of most U.S. crude."[31] Fracking has been attributed to raising national household income by $1,200.[32] It has also created "boomtowns" in various regions of the United States, bringing jobs and economic growth to previously stagnant local economies.[33] Fracking is also credited with boosting energy independence and is predicted to establish U.S. energy superiority.[34]

On the other hand, fracking's economic benefits have also been heavily criticized. Primarily, fracking seems to have excellent short-term gains but begins to look worse in the long term, especially in light of its environmental impacts.[35]

To begin, there is an abundance of information indicating that the fracking industry has reached a tipping point: the reduced cost of natural gas and oil, due to the increase in supply created by frack-

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29. Jennifer A. Dlouhy, *Despite Protests, Oil Industry Thrives Under Obama Agenda*, BLOOMBERG (Jan. 5, 2016, 3:20 PM), http://www.bloomberg.com/news/articles/2016-01-05/despite-protests-oil-industry-thrives-under-obama-energy-agenda.

30. Andrew Follett, *Average US Gasoline Price Drops Below $2 a Gallon Due to Fracking*, THE DAILY CALLER (Jan. 4, 2016, 10:36 PM), http://dailycaller.com/2016/01/04/average-us-gasoline-price-drops-below-2-a-gallon-due-to-fracking/ ("The average American now pays less than $2.00 a gallon for gasoline due to cheap energy provided by hydraulic fracturing."); *see also* Donald Kirk, *How Fracking Contributes to Oil Glut, Cheap Fuel for You and Me*, FORBES (Jan. 26, 2015, 9:18 AM), http://www.forbes.com/sites/donaldkirk/2015/01/26/how-fracking-contributes-to-oil-glut-cheap-fuel-for-you-and-me/#4ff632102699 (attributing low U.S. gas prices to the "phenomenon of fracking"); David Leonhardt, *Gas, Still Not as Cheap as It Used to Be*, N.Y. TIMES (Jan. 27, 2015), http://www.nytimes.com/2015/01/27/upshot/gas-still-not-as-cheap-as-it-used-to-be.html (noting that fracking has contributed to a decrease in gas prices); Knight & Gullman, *supra* note 21, at 297 ("[D]ue in part to hydraulic fracturing's role in releasing large reserves of oil and gas, gas prices have plummeted.").

31. Dlouhy, *supra* note 29.

32. Jim Efstathiou Jr., *Fracking Boom Seen Raising Household Incomes by $1,200*, BLOOMBERG (Sept. 4, 2013, 12:01 AM), http://www.bloomberg.com/news/articles/2013-09-04/fracking-boom-seen-raising-household-incomes-by-1-200.

33. *See generally* Peter Maniloff & Ralph Mastromonaco, The Local Economic Impacts of Fracking, (June 5, 2015) (unpublished manuscript), http://pages.uoregon.edu/ralphm/fracking_may_15.pdf (finding that fracking created approximately 220,000 local jobs between 2000 and 2010, and that wages increased by 6%–9% "depending on the intensity of the drilling").

34. James S. Robbins, Opinion, *America's Good News Energy Story: The U.S. is Set to Reap Big Strategic Rewards from the Fracking Revolution*, U.S. NEWS (Apr. 29, 2015, 3:20 PM), http://www.usnews.com/opinion/blogs/world-report/2015/04/29/fracking-revolution-reaps-strategic-rewards-for-the-united-states (quoting U.S. Secretary of Energy Ernest Moniz) ("[T]here's a good chance that we will be LNG [liquefied natural gas] exporters on the scale of Qatar . . .").

35. *See infra* Part I.B.

ing, have made some fracking operations no longer profitable.[36] While low fuel prices are good for other industries, the steep decline in oil prices caused by fracking is predicted to "wipe out many small companies involved in fracking, as well as plenty of others in oil services. It will cause many high-yield bonds to go into default. It will generate big losses at major energy companies, and will lead to job losses throughout the industry."[37]

Because of the drop in price, some boomtowns that formed as a result of fracking are doomed to bust.[38] These boomtowns also bring with them a host of problems, including increased crime, traffic, overcrowded schools, loss of tourism, and exorbitant housing prices.[39]

In contrast, evidence indicates that renewables offer cleaner, more sustainable jobs in the energy sector. For example, solar energy may now be creating more jobs than the oil and gas industries, notwithstanding the recent growth caused by increased shale extraction.[40]

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36. While still apparently using all the crude oil captured, at-capacity pipelines in North Dakota reportedly led thousands of fracking operations to literally burn off about a quarter of all natural gas produced by their wells. Andrew Moore & Katelyn Fossett, *The Face of the Fracking Boom*, POLITICO (Oct. 1, 2015, 6:48 PM), http://www.politico.com/magazine/gallery/2015/10/north-dakota-fracking-photo-gallery-000530?slide=8; *see also* Issac Arnsdorf, *Oil at $75 Means Patches of Texas Shale Turn Unprofitable*, BLOOMBERG (Nov. 20, 2014, 1:19 PM), http://www.bloomberg.com/news/articles/2014-11-20/oil-at-75-means-patches-of-texas-shale-turn-unprofitable; *see generally Documents: Leaked Industry E-mails and Reports*, N.Y. TIMES, http://www.nytimes.com/interactive/us/natural-gas-drilling-down-documents-4.html?_r=0#document/p1/a22779 (last visited Sept. 14, 2016) (487-page compliation from a review of "thousands of pages of documents related to shale gas" indicating fracking's profitability has been overhyped, and that fracking operations are not largely profitable, nor considered profitable by insiders in the oil and gas industries).

37. Noah Smith, *Oil's Plunge is Great News for Most of Us*, BLOOMBERG (Jan. 14, 2016, 3:43 PM), http://www.bloomberg.com/view/articles/2016-01-14/oil-s-plunge-is-wonderful-news-for-most-of-us.

38. *See, e.g.*, Jennifer Reingold, *Will America's Boomtown Bust? A Report from the Heart of North Dakota's Fracking Country*, FORTUNE (Mar. 1, 2015), *http://fortune.com/north-dakota-fracking/*; *see also Bakken Oil Boom Brings Growing Pains to Small Montana Town*, NAT'L GEOGRAPHIC, http://news.nationalgeographic.com/news/special-features/energy/2014/07/140709-montana-oil-boom-bakken-shale/ (last visited Sept. 14, 2016) [hereinafter *Bakken Oil*].

39. *See* Reingold, *supra* note 38; *Bakken Oil*, *supra* note 38.

40. According to the Solar Foundation, "[a]s of November 2015, the solar industry employs 208,859 solar workers." *National Solar Jobs Census*, THE SOLAR FOUND., http://www.thesolarfoundation.org/national (last visited Sept. 14, 2016). Thus, the solar industry employed more workers than oil and gas extraction industries in 2015, which reportedly numbered only 184,500 in December, 2015. Jana Kasperkevic, *US Solar Industry Now Employs More Workers than Oil and Gas, Says Report*, THE GUARDIAN (Jan. 12, 2016, 4:57 PM), https://www.theguardian.com/business/2016/jan/12/us-solar-industry-employees-grows-

B. Environmental Concerns

Environmental concerns surrounding the fracking industry are numerous, including its effects on greenhouse gas emissions, drinking water contamination, air pollution, and the subsequent health effects this pollution causes. Even if done *properly*, fracking accidents, or "fraccidents," pose a continued risk of harm.[41] These concerns are examined below.

1. Fracking contributes to climate change

In light of the record high temperatures in 2015, which are largely considered highly improbable without human-caused global warming, the prevalence of greenhouse gas emissions is becoming ever more relevant.[42] Well cognizant of public concern about global warming, fracking proponents often tout natural gas as a more carbon-friendly option than coal.[43] President Obama even stated in his 2014 State of the Union Address that "[i]f extracted safely, [natural gas is] the bridge fuel that can power our economy with less of the carbon pollution that causes climate change."[44]

However, largely hidden from public view are the large number of natural gas leaks during and after extraction, which allow natural gas to enter the atmosphere directly. While oil companies estimate "pre-plant natural gas leakage" at only "0.7%–2.6%,"[45] individual events of natural gas leakage can be much greater. For example, a giant natural gas leak at a storage facility in California emitted over 97,000 metric tons of methane into the atmosphere between October

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oil-gas (citing *The Employment Situation – December 2015*, BUREAU OF LAB. STAT., U.S. DEP'T OF LAB. (Jan. 8, 2015), http://www.bls.gov/news.release/archives/empsit_01082016.pdf).

41. *See infra* Part I.B.1.

42. Chelsea Harvey, *Recent Record Temperature Years 'Extremely Unlikely' Without Global Warming, Scientists Say*, WASH. POST (Jan. 25, 2016), https://www.washingtonpost.com/news/energy-environment/wp/2016/01/25/recent-record-temperature-years-extremely-unlikely-without-global-warming-scientists-say.

43. *See, e.g.*, *Does Natural Gas Reduce Greenhouse Gas Emissions?* CONOCOPHILLIPS, http://www.conocophillips.com/sustainable-development/common-questions/Pages/does-natural-gas-reduce-greenhouse-gas-emissions.aspx (last visited Sept. 14, 2016) [hereinafter *Does Natural Gas*] ("Many studies have shown that electric power plants fueled with natural gas emit far less greenhouse gas (GHG) than coal-fired plants. Reduction estimates tend to be quite consistent, ranging from 37% to 54% . . .").

44. Brad Plumer, *Read: Obama's 2014 State of the Union Address*, WASH. POST (Jan. 28, 2014), https://www.washingtonpost.com/news/wonk/wp/2014/01/28/read-obamas-2014-state-of-the-union-address/.

45. *Does Natural Gas*, *supra* note 43.

23, 2015 and February 11, 2016.[46] Moreover, recent independent research papers suggest that fracking extraction activities have been a significant and understated contributor to atmospheric methane.[47] The studies suggest that the percentage of natural gas that leaks from individual operations substantially exceeds the percentages put forth by the oil companies.[48] Leaks of natural gas, in the climate change context, are especially concerning, as methane, the main component of natural gas, is "84 times more potent than CO_2 in the first [twenty] years after it is released" into the atmosphere.[49]

Taking leaks out of the equation, one may still argue that natural gas is at least better than coal when it comes to climate change, as burning natural gas for fuel releases only a little more than half the amount of carbon dioxide released by coal.[50] However, even if natural gas is better than coal as far as climate change is concerned, it is still such a serious contributor that looking to it as a temporary solution could do more harm than good:

> The electric power sector is the largest contributor to U.S. global warming emissions and currently accounts for approximately one-third of the nation's to-

46. *Aliso Canyon Leak Sheds Light on National Problem*, ENVTL. DEF. FUND, https://www.edf.org/climate/aliso-canyon-leak-sheds-light-national-problem (last visited Sept. 14, 2016) (featuring a real-time counter of methane and carbon dioxide leaked into the atmosphere by the Aliso Canyon leak, and a video of the large plume, "1,000-feet high and several miles long"); *see also* Sarah Zhang, *California has a Huge Gas Leak, and Crews Can't Stop it Yet*, WIRED (Dec. 15, 2015, 7:00 AM) http://www.wired.com/2015/12/massive-gas-leak-california/ (discussing methane leaking from a natural gas storage cite, which has since been fixed).

47. *See* Nick Stockton, *Fracking's Problems Go Deeper than Water Pollution*, WIRED (June 18, 2015, 1:28 PM), http://www.wired.com/2015/06/frackings-problems-go-deeper-water-pollution/.

48. *See, e.g.*, Anna Karion, et al., *Methane Emissions Estimate from Airborne Measurements over a Western United States Natural Gas Field*, 40 GEOPHYSICAL RES. LETTERS 4393, 4393 (2013) (estimating that methane emissions from a natural gas and oil production field in Unitah County, Utah corresponded to "6.2%–11.7% of average hourly natural gas production . . ."); *see also Natural Gas Extraction: Hydraulic Fracturing*, *Addressing Air Quality Impacts Associated with Hydraulic Fracturing Activities*, ENVTL. PROTECTION AGENCY, https://www.epa.gov/hydraulicfracturing#main-content (last visited Sept. 5, 2016) [hereinafter *Addressing Air Quality Impacts*] ("There have been well-documented air quality impacts in areas with active natural gas development, with increases in emissions of methane . . .").

49. *Methane Research: The 16 Study Series: An Unprecedented Look at Methane from the Natural Gas System*, ENVTL. DEF. FUND, https://www.edf.org/sites/default/files/methane_studies_fact_sheet.pdf (last visited Sept. 14, 2016).

50. *Frequently Asked Questions*: *How Much Carbon Dioxide is Produced When Different Fuels are Burned?*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.cfm?id=73&t=11 (last updated June 14, 2016) (discussing this difference in terms of British Thermal Units).

> tal emissions. . . . If the U.S. continues on its current path toward a natural gas-dominated electricity system, the electricity sector would generate *up to three times* the [National Research Council's] recommended amount of carbon emissions.[51]

Lending further support to this concern, the New York Department of Environmental Conservation also noted "while natural gas may serve as a 'bridge' or 'transitional fuel' towards greater utilization of non-emitting clean energy resources, increased natural gas development could extend the use of fossil fuels, or delay the necessary deployment of clean energy."[52]

Therefore, the push for increased fracking activities does not appear to be justified by climate change arguments: the increased natural gas use will never come close to meeting carbon targets; natural gas leaks release significant quantities of methane into the atmosphere; and a focus on natural gas could delay developments of renewables.

2. Health effects from fracking-related air pollution are a real threat

The EPA recognizes that fracking-related air quality impacts "have been well-documented . . . with increases in emissions of methane, volatile organic compounds (VOCs) and hazardous air pollutants."[53] Greenhouse gas emissions aside, studies indicate that such fracking-related air pollution poses serious threats to human health.[54]

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51. *The Climate Risks of an Overreliance on Natural Gas for Electricity*, UNION OF CONCERNED SCIENTISTS (Oct. 2013), http://www.ucsusa.org/climate-risks-overreliance-natural-gas-electricity-2013#.VqgIjvGoeOl (citing Lesley Fleischman et al., *Gas Ceiling: Assessing the Climate Risks of an Overreliance on Natural Gas for Electricity*, UNION OF CONCERNED SCIENTISTS (Sept. 2013), http://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_energy/climate-risks-natural-gas.pdf).

52. N.Y. STATE DEP'T OF ENVTL. CONSERVATION, FINAL SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM: FINDINGS STATEMENT (June 2015), http://www.dec.ny.gov/docs/materials_minerals_pdf/findingstatehvhf62015.pdf [hereinafter N.Y. FINDINGS STATEMENT].

53. *Addressing Air Quality Impacts, supra* note 48.

54. *See generally* TANJA SREBOTNJAK & MIRIAM ROTKIN-ELLMAN, NAT. RES. DEF. COUNCIL, FRACKING FUMES: AIR POLLUTION FROM HYDRAULIC FRACTURING THREATENS PUBLIC HEALTH

Amongst the concerns, fracking-related increases in truck traffic increases local diesel emissions, which "contain hundreds of toxic chemicals," and have been linked to cardiopulmonary disease, respiratory disease, birth defects, and cancer.[55] At gas fields in northeastern Utah, "researchers estimated the total annual mass flux of volatile organic compounds . . . to be equivalent to the emissions from 100 million cars."[56] Short-term health effects from VOCs differ depending on the chemicals and concentration, but can include "headaches, dizziness, light-headedness, drowsiness, nausea, and eye and respiratory irritation."[57] Long-term effects may include cancer and liver, kidney, or nervous system problems.[58]

Fracking has also been linked to increased regional ozone, or smog, in connection with increased oil and gas development; for example, "significantly elevated concentrations" of smog have been observed in "Wyoming, Colorado, Utah, Pennsylvania, Texas, and Oklahoma."[59] Among other effects, exposure to ozone may cause "respiratory disease symptoms, inflammatory processes, and premature death."[60]

3. Fracking indisputably causes water contamination

Fracking proponents argue that fracking, when done properly, does not contaminate water supplies.[61] Recently, these proponents have commonly cited a study by the Environmental Protection Agency (EPA) as confirming "what industry experts already knew: [s]afe hydraulic fracking doesn't threaten our drinking water."[62]

AND COMMUNITIES (Dec. 2014), http://www.nrdc.org/health/files/fracking-air-pollution-IB.pdf (examining health effects from fracking activities).

55. *Id.* at 2–4. For example, "[i]n Colorado . . . an evaluation of birth defects in areas with high concentrations of oil and gas activity found that mothers who lived near many oil and gas wells were 30 percent more likely to have babies with heart defects." *Id.* at 2.

56. *Id.* at 4.

57. *Volatile Organic Compounds (VOCs) in Commonly Used Products: How Can VOCs Affect Human Health*, N.Y. DEP'T OF HEALTH, https://www.health.ny.gov/environmental/indoors/voc.htm (last updated July 2013).

58. *See id.*

59. SREBOTNJAK & ROTKIN-ELLMAN, *supra* note 54**Error! Bookmark not defined.**, at 5.

60. *Id.*

61. *See, e.g.*, *America's Energy Environment*, ENERGY FROM SHALE, http://www.energyfromshale.org/americas-energy/environment (last visited Sept. 14, 2016) (statement of Colorado Gov. John Hickenlooper, "a trained geologist") ("[W]e can't find anywhere in Colorado a single example of the process of fracking that has polluted groundwater.").

62. *See e.g.*, *id.* (citing ENVTL. PROT. AGENCY, EPA/600/R-15/047a, ASSESSMENT OF THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING FOR OIL AND GAS ON DRINKINGPD WATER RESOURCES: EXECUTIVE SUMMARY 6 (2015) [hereinafter DRINKING WATER ASSESSMENT]).

However, a closer reading of that study indicates that fracking irrefutably *does* threaten drinking water:

> From our assessment, we conclude there are above and below ground mechanisms by which hydraulic fracturing activities have the potential to impact drinking water resources. These mechanisms include water withdrawals in times of, or in areas with, low water availability; spills of hydraulic fracturing fluids and produced water; fracturing directly into underground drinking water resources; below ground migration of liquids and gases; and inadequate treatment and discharge of wastewater.[63]

While the EPA did not find that "these mechanisms have led to widespread, systematic impacts on drinking water resources," it did find "specific instances where one or more mechanisms led to impacts on drinking water resources, including contamination of drinking water wells."[64] Although the EPA's draft assessment did not consider the impacts to be "widespread" and "systemic," recorded instances and reports of fracking-related drinking water contamination are not remotely difficult to identify.[65] For example, since

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63. DRINKING WATER ASSESSMENT, *supra* note 62 (noting that "[t]his document is a draft for review purposes only and does not constitute Agency policy."). In response to oil company arguments, the Sierra Club cites the same study to support the conclusion that the study "confirms what millions of Americans already know – that *dirty* oil and gas fracking contaminates drinking water." Alan Neuhauser, *EPA: Fracking Tainted Drinking Water, but Problems Not Widespread*, U.S. NEWS (Jun. 4, 2015, 3:35 PM), (emphasis added) http://www.usnews.com/news/articles/2015/06/04/epa-fracking-tainted-drinking-water-but-problems-not-widespread.

64. DRINKING WATER ASSESSMENT, *supra* note 62, at 6.

65. *See, e.g.*, PA. DEP'T OF ENVTL. PROT., WATER SUPPLY DETERMINATION LETTERS (Jan. 12, 2016), http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/OilGasReports/Determination_Letters/Regional_Determination_Letters.pdf [hereinafter PA. WATER SUPPLY LETTERS]; *see also* Nicholas St. Fleur, *Fracking Chemicals Detected in Pennsylvania Drinking Water*, N.Y. TIMES (May 4, 2015), http://www.nytimes.com/2015/05/05/science/earth/fracking-chemicals-detected-in -pennsylvania-drinking-water.html?_r=1 (discussing Garth T. Llewellyn et al., *Evaluating a Groundwater Supply Contamination Incident Attributed to Marcellus Shale Gas Development*, 112 PROC. NAT'L ACAD. SCI. 6325, 6325–30 (2015), *http://www.pnas.org/content/112/20/6325.full.pdf*); *see also* Laura Legere, *DEP: Oil and Gas Operations Damaged Water Supplies 209 Times Since End of '07*, PITTSBURGH POST-GAZETTE (July 22, 2014, 12:46 AM), http://powersource.post-gazette.com/powersource/policy-powersource/2014/07/22/DEP-Oil-and-gas -endeavors-have-damaged-water-supply-209-times-since-07/stories/201407220069; *see also infra* Part I.B.4.

2008, the Pennsylvania Department of Environmental Protection alone has reported 278 instances where oil and gas operations damaged private water supplies.[66] Moreover, on March 10, 2016, a federal jury ruled that two Pennsylvania families (one of which was featured in the documentary film, *Gasland*) were entitled to $4.2 million in damages from Cabot Oil & Gas Company for fracking-related groundwater contamination.[67]

In short, fracking *has* contaminated and continues to pose a threat to drinking water sources wherever it occurs. This remains true no matter how stringent the standards put in place, as fracking accidents are inevitable.

4. Fraccidents are inevitable

Even if one assumes that fracking, when done properly, is a perfectly clean activity, fracking accidents, or "fraccidents," will continue to pose undeniable environmental risks, just like any other fossil fuel extraction activity. While individual fraccidents are unlikely to have as severe an environmental impact as the Deepwater Horizon spill,[68] there are already too many recorded fraccidents to count.[69]

For example, in January 2015, fracking drill waste sprung from a pipeline in western North Dakota, releasing nearly three million gallons of "toxic . . . salty drilling waste" into two streams.[70] Similarly,

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66. PA. WATER SUPPLY LETTERS, *supra* note 65.

67. David Dekok, *Pennsylvania Families Win $4.2 Million Damages in Fracking Lawsuit*, REUTERS (Mar. 10, 2016), http://www.reuters.com/article/us-pennsylvania-fracking-idUSKCN0WC2I8; *see also* Mark Drajem, *Shale Drillers Lose on Two Fronts: Dimock Court Case, EPA Methane Pledge*, BLOOMBERG GOV'T (Mar. 11, 2016), http://about.bgov.com/blog/shale-drillers-lose-on-two-fronts-dimock-court-case-epa-methane-pledge.

68. *See generally* The Ocean Portal Team, *Gulf Oil Spill*, SMITHSONIAN MUSEUM OF NAT. HIST., http://ocean.si.edu/gulf-oil-spill (last visited Sept. 5, 2016) (describing the Deepwater Horizon oil spill, which occurred in the Gulf of Mexico in 2010).

69. *See* Evan Applegate, *Twenty-Five Years of Oil Spills*, BLOOMBERG BUS. (Mar. 13, 2014), http://www.bloomberg.com/bw/articles/2014-03-13/25-years-of-oil-spills; Hannah Wiseman, *Fracturing Regulation Applied*, 22 DUKE ENVTL L. & POL'Y F. 361, 366 n.28 (2012) ("Transportation of any hazardous materials always carries some risks from spills or accidents. Hazardous materials are moved daily across the state without incident, but the additional transport resulting from horizontal drilling poses an additional risk, which could be an adverse impact if spills occur.") (quoting N.Y. DEP'T OF CONSERVATION, REVISED DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM, at 6-315 (2011), http://www.dec.ny.gov/data/dmn/rdsgeisfull0911.pdf).

70. Meteor Blades, *Three-million-gallon drilling waste spill is North Dakota's worst,*

in April 2015, an equipment failure at a well in Arlington, Texas spilled 42,800 gallons of fracking fluid into the "streets and storm sewers of Arlington."[71] Additionally, the Pennsylvania Department of Environmental Protection has also brought multi-million dollar suits against fracking companies for fracking-related spills.[72] For a thorough list of fracking accidents, see the Earth Justice organization's website, which includes an interactive map of fraccidents spanning the country.[73]

II. FRACKIN' IN THE USA: PREEMPTION VERSUS HOME RULE

Currently, twenty-one states allow fracking, and each of those states regulates fracking-related activities to varying degrees.[74] Although some state legislatures allow municipalities to ban fracking altogether, others take measures to prevent local bans by using their "preemption powers,"[75] which, as this section discusses, can leave municipalities with little or no ability to resist.

A. Preemption Trends in the Fracking Context

State lawmakers almost always have the option to "preempt," and thereby invalidate, local fracking ordinances or bans through state statutes.[76] While there is significant variation depending on particular state laws and constitutions, intrastate preemption[77] of a local ordinance typically occurs through one of three primary categories:

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but far from the state's only one, DAILY KOS (Jan. 22, 2015, 3:21 PM), http://www.dailykos.com/story/2015/01/22/1359512/-Three-million-gallon-drilling-waste-spill-is-North-Dakota-s-worst-but-far-from-the-state-s-only-one.

71. *Texas Fracking Site that Spilled 42,000 Gallons of Fluid into Residential Area Hopes to Reopen*, RT (June 17, 2015, 3:07 PM), https://www.rt.com/usa/267838-arlington-texas-fracking-accident/.

72. Scott DiSavino & Barani Krishnan, *Pennsylvania Seeks Record Fine for EQT Fracking Fluid Leak*, REUTERS (Oct. 7, 2014, 2:41 PM), http://www.reuters.com/article/us-energy-pennsylvania-eqt-corp-fracking-idUSKCN0HW1VK20141007.

73. *Fracking Across the United States*,
EARTH JUSTICE, http://earthjustice.org/features/campaigns/fracking-across-the-united-states (last visited Sept. 6, 2016) (depicting an interactive, up-to-date map of fracking accidents across the US with descriptions of each violation).

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

75. *See* Knight & Gullman, *supra* note 21, at 301.

76. *Id.* at 298.

77. Intrastate preemption refers specifically to state preemption of a local statute, as opposed to federal preemption of a state statute. *See* Paul Diller, *Intrastate Preemption*, 87 B.U. L. REV. 1113, 1114 (2007).

(1) express preemption; (2) implied preemption; or (3) operational conflict preemption.[78]

Express preemption occurs when the legislature explicitly states that the state law preempts the local statute.[79] While results vary widely under implied and operational conflict preemption doctrines, statutes that expressly preempt local authority to ban fracking typically leave less room for argument. To provide a baseline, an amendment to the Texas oil and gas statute (commonly referred to as HB 40) may be the least ambiguous statute that expressly preempts municipal fracking bans.[80] The statute is titled "Exclusive Jurisdiction and Express Preemption,"[81] stating in relevant part that:

> [A] municipality or other political subdivision may not enact or enforce an ordinance or other measure, or an amendment or revision of an existing ordinance or other measure, that bans, limits, or otherwise regulates an oil and gas operation within its boundaries or extraterritorial jurisdiction. An oil and gas operation is subject to the exclusive jurisdiction of the state.[82]

As the Texas statute illustrates, express preemption provisions are generally easy to recognize; in contrast, identifying other types of preemption, such as implied or operational conflict preemption, is a bit unclear. Moreover, state courts have different tests to determine whether a local law is considered preempted, and sometimes the concepts of express and implied preemption can even overlap.[83] For

78. *See, e.g.*, Bd. of Cty. Comm'rs v. Bowen/Edwards Assocs., 830 P.2d 1045, 1056–57 (Colo. 1992) (discussing that there are three ways in which home rule can be abrogated: (1) through express preemption; (2) through implied preemption; or (3) through operational conflict preemption). However, these categories are far from a countrywide uniform standard; for example, some states include operational conflict as a subset of implied preemption, and implied preemption also generally includes the concept of "field" preemption. *See* Diller, *supra* note 77, at 1140–41. For purposes of this note, such concepts are dealt with individually as they arise. *See infra* Part II.B.

79. Diller, *supra* note 77, at 1115; *see, e.g.*, Sewpi, LP v. Mora Cty., 81 F. Supp. 3d 1075, 1193 (D.N.M. 2015) ("To expressly preempt local laws, the state 'legislature must clearly state its intention to do so.'") (quoting Rancho Lobo, Ltd. v. Devargas, 303 F.3d 1195, 1201 (10th Cir. 2002)).

80. H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523).

81. *Id.* Other states have attempted to clarify their preemption statutes. *See, e.g.*, S. 119, 2015 Gen. Assemb. Sess. (N.C. 2015); S. 318, 2016 Sess. (Fla. 2016); H.R. 1950, 2012 Sess., Act 13 Pub. L. 87, No. 13 (Pa. 2012) (codified at 58 PA. CONS. STAT. § 3201 et. seq.).

82. H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523).

83. *See generally* Diller, *supra* note 77, at 1140–41 (noting how express and implied preemption sometimes overlap). For example, in a New Mexico case where a county attempted to ban fracking, a federal district court held that implied preemption occurs through either field

the purposes of this Note, the various forms of preemption and their interactions with local laws will be dealt with individually as they arise.

When a state statute preempts a local ordinance, there should be—at least in theory—nothing a municipality can do to resist, as municipalities are generally said to derive their powers from the state.[84] Regardless, in some instances state courts have been reluctant to give full effect to preemption provisions in the fracking context, arguably by incorrectly giving too much weight to policy arguments, which should be left to state legislatures.[85] In other cases, wording of state statutes has led to ambiguities as to whether legislatures intended to expressly preempt local bans, as opposed to merely retaining exclusive authority over the technical aspects of drilling.[86] Municipalities in so-called "Home Rule" states are afforded additional means of resistance.[87]

The concept of municipal Home Rule authority is a departure from traditional "Dillon's Rule," which generally provides that municipalities only have those powers expressly granted to them by the states.[88] In the late nineteenth and twentieth centuries, Municipal Home Rule policies grew in popularity, with a strong resurgence in the 1950s and 1960s.[89] As of today, most states provide at least some Home Rule powers to local governments.[90] However, as each state

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preemption (when it is evident from the language of the law that the legislature "clearly intended to preempt a governmental area") or conflict preemption (where a local ordinance permits an act the state law prohibits, or prohibits an act the state law permits). Swepi, LP v. Mora Cty, 81 F. Supp. 3d 1075, 1193 (N.M. Dist. Ct. 2015) (quoting Racho Lobo, Ltd. v. Devargas, 303 F.3d 1195, 1203 (10th Cir. 2002)). It is difficult to distinguish the court's definition of field preemption in *Swepi* from the definition of express preemption, as both types of preemption are identified by language indicating the legislature "clearly intended to preempt a government area." *Id*.

84. *See* Bruce M. Kramer, *The State of State and Local Governmental Relations as it Impacts the Regulation of Oil and Gas Operations: Has the Shale Revolution Really Change the Rules of the Game?*, 29 J. LAND USE & ENVTL. L. 69, 86 ("In cases involving express preemption, the sole issue before the court relates to statutory interpretation, not whether or not there is a conflict between the local and state regulatory programs."); *see, e.g.*, Energy Mgmt. Corp. v. Shreveport, 467 F.3d 471, 475, 479 (5th Cir. 2006) (holding that a Shreveport ordinance forbidding new drilling "within 1,000 feet" of a lake was invalid where the state legislature clearly intended to preempt local ordinances); *see also* Knight & Gullman, *supra* note 2, at 306 (discussing the *Shreveport* decision). *But see* Wallach v. Town of Dryden, 16 N.E.3d 1188, 1194, 1203 (N.Y. 2014) (finding for municipality where state statute arguably expressly preempted local bans); *infra* Part II.B.

85. *See* Kramer, *supra* note 84, at 84–85.

86. *See infra* Part II.C.

87. *See* Knight & Gullman, *supra* note 21, at 301.

88. Diller, *supra* note 77, at 1122–23.

89. *See id.* at 1124–26.

90. *See id.* at 1126–27.

independently develops its Home Rule policies, the extent of these powers varies widely from state to state.[91] While the subject warrants entire articles,[92] for the purposes of this Note, "Home Rule" refers generally to a municipality's lawmaking authority independent of the state's authority.

B. Pennsylvania and California: Unique Examples of Home Rule Preservation

California is unique in that its Oil and Gas Statute contains a provision unlike any found in other states, which this author would describe as a "reverse preemption" provision. Unlike most oil and gas statutes, which tend to limit local authority,[93] California's statute expressly preserves municipal authority to regulate fracking activities:

> This chapter shall not be deemed a preemption by the state of any existing right of cities and counties to enact and enforce laws and regulations regulating the conduct and location of oil production activities, including, but not limited to, zoning, fire prevention, public safety, nuisance, appearance, noise, fencing, hours of operation, abandonment, and inspection.[94]

This provision has been interpreted so strongly in favor of municipal ability to enact local bans that an overview of court decisions indicates that to date, no California court has addressed the issue.[95]

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91. *Id.*; Hugh Spitzer, *"Home Rule" vs. "Dillon's Rule" for Washington Cities*, 38 SEATTLE U. L. REV. 809, 820 (2015).

92. It has been said that "there is perhaps no term in the literature of political science or law which is more susceptible to misconception and a variety of meaning than 'home rule.'" Spitzer, *supra* note 91, at 820 (quoting CHI. HOME RULE COMM'N, MODERNIZING A CITY GOV'T 193 (1954)).

93. *See infra* Part II.D.

94. CAL. PUB. RES. CODE § 3690 (Deering 2016); *see also* Hollin Kretzmann & Kassie Siegel, *Local Governments and the Power to Ban Fracking and Other Forms of Unconventional Oil and Gas Activity in California*, CENTER FOR BIOLOGICAL DIVERSITY 3 (Jan. 31, 2014), http://www.cafrackfacts.org/wp-content/uploads/2013/11/Local-Governments-and-the-Power-to-Ban-Fracking-January-201412.pdf (arguing that Cal. Pub. Res. Code § 3690 supports local bans).

95. Terms searched in LexisNexis and Westlaw: Hydrofracking & preempt!; fracking & preempt!; hydraulic fracturing & preempt!; fracking & municip!; hydrofracking & municp! (last searched Sept. 7, 2016).

Additionally, at least one oil company abandoned litigation after bringing a suit challenging a local ban.[96]

By contrast, Pennsylvania's express preemption statute led to extensive litigation. In the seminal Pennsylvania Supreme Court decision, *Robinson Township v. Commonwealth*, municipalities challenged an amendment to Pennsylvania's Oil and Gas Act, commonly known as Act 13, which contains a provision preempting local bans.[97]

Like statutes in other states,[98] Act 13 limits the extent to which companies are permitted to engage in fracking activities, ostensibly in part to protect the environment, while simultaneously preempting local ordinances seeking to prohibit or limit fracking within municipalities.[99] Unlike other states, Pennsylvania's Constitution also contains a seldom successfully-invoked Environmental Rights Amendment:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic[,] and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Common-

96. *See* Mike Gaworecki, *The Only Legal Challenge to Local Fracking Bans in California Was Just Quietly Dropped*, DESMOG, (Apr. 7, 2015), http://www.desmogblog.com/2015/04/07/only-legal-challenge-local-fracking-bans-california-was-just-quietly-dropped; *see also* Paul Rogers, *Fracking: Oil Company Drops Lawsuit Attempting to Overturn San Benito County Ban*, SAN JOSE MERCURY NEWS, (Apr. 7, 2015), http://www.mercurynews.com/drought/ci_27861090/fracking-oil-company-drops-lawsuit-attempting-overturn-san.

97. 58 PA. CONS. STAT. §§ 3201–3504 (2012); Robinson Twp. v. Commonwealth, 83 A.3d 901, 914–15 (Pa. 2013).

98. *See, e.g.*, H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523) (identifying an "overriding policy objective" as including the aim of "fully and effectively exploit[ing] oil and gas resources" while "protecting the environment and public's health and safety," while simultaneously expressly preempting regulation of oil and gas operations by municipalities).

99. 58 PA. CONS. STAT. § 3202 ("The purposes of this chapter are to: (1) Permit optimal development of oil and gas resources of this Commonwealth consistent with protection of the . . . environment . . . (4) Protect the natural resources, environmental rights and values secured by the Constitution of Pennsylvania."); *id.* § 3302 ("all local ordinances purporting to regulate oil and gas operations regulated by Chapter 32 . . . are hereby superseded."); *id.* § 3303 (prohibiting municipal regulation of environmental acts, and stating that "Statewide" oil and gas regulations "occupy the entire field of regulation, to the exclusion of all local ordinances"); *id.* § 3304 (specifically mandating that local regulations permit a list of oil gas activities).

> wealth shall conserve and maintain them for the benefit of all the people.[100]

Based on this provision, the *Robinson Township* plurality determined that statewide preemption of local bans violated the Pennsylvania Constitution.[101] Among the facts cited in support of the decision, the court described the experiences of homeowners, listing adverse impacts from fracking operations, including "heavy truck traffic, causing structural damage to [a] home's foundation, road collapse, as well as large amounts of dust and deterioration [of] air quality," "significant noise pollution," and contaminated well-water, which caused pets to die.[102] Exposure to the air and water pollution reportedly also caused "debilitating headaches, nosebleeds, nausea . . . shortness of breath, skin rashes and lesions, bone and muscle pain, inability to concentrate, and severe fatigue."[103]

In contrast, Justice Baer's concurring opinion was based on zoning concerns and due process, rather than environmental rights:

> How can the legislature's "one size fits all" within Act 13 possibly protect the constitutional rights of the landowners of this diverse citizenry and geography? Zoning provisions should . . . give consideration to the character of the municipality, the needs of the citizens, and the suitabilities and special nature of particular parts of the municipality.[104]

Illustrating how requiring all municipalities to allow fracking could have a disparate impact on different communities, Justice Baer also noted that "while the placement of a gas well in a mountain surrounded valley, hidden from all humanity, in central Pennsylvania might be appropriate for one municipality, the same may not be said for the erection of a similar well in the flatlands of southeastern Pennsylvania." [105] And, "[w]hatever the proffered reason for the benefit of the community may be, it remains unassailable that the hallmark of an unconstitutional zoning ordinance or statute is

100. PA. CONST. art. I, § 27.
101. 83 A.3d at 976, 985.
102. *Id.* at 937–38.
103. *Id.* at 938.
104. *Id.* at 1006 (Baer, J., concurring) (citations omitted).
105. *Id.* at 1007 n.5 (Baer, J., concurring).

'an arbitrary and discriminatory impact on different landowners.'"[106]

Unlike the plurality, Justice Baer's opinion highlights the theme that has been the focus of courts in states without Environmental Rights Amendments—the distinction between the state's superior position to regulate the *technical* aspects of drilling versus a municipality's role in determining proper aesthetic and other traditionally local concerns regarding the nature and character of a community.[107]

C. Distinguishing Between the "Technical Aspects" and Traditional Zoning Concerns

In states without provisions like California's reverse preemption statute or Pennsylvania's Environmental Rights Amendment, municipalities attempting to ban fracking are more likely to be subject to traditional preemption analyses. One trend in these analyses is for courts to focus on the distinction between municipal attempts to create standards that regulate the *technical aspects of drilling*[108] and traditional *zoning* decisions that consider factors like the impact of land uses on the town's character and aesthetics.[109] Courts in Ohio and New York reached two very different outcomes based on this dichotomy.[110]

1. Ohio: where state law trumped local permitting requirements

Ohio amended its oil and gas law in 2004 to "provide 'uniform statewide regulation' of oil and gas production . . . and to repeal 'all

106. *Id.* at 1005 (Baer, J., concurring) (quoting Hopewell Twp. Bd. of Sup'rs v. Golla, 452 A.2d 1337, 1343 (Pa. 1982)).

107. *See infra* Part C.

108. Throughout this Note, for simplicity, reference is made to the "technical aspects of *drilling*;" however, this author uses it more generally to refer to all technical aspects of fracking.

109. *See infra* notes 134–36 and accompanying text.

110. In addition to the Ohio and New York decisions, Home Rule challenges have also occurred in other jurisdictions. *See, e.g.*, Ne. Nat. Energy, LLC v. City of Morgantown, 2011 WL 3584376 (W. Va. Cir. Ct. 2011) (finding local home rule challenge based on nuisance preempted by state oil and gas law); City of Longmont v. Colo. Oil & Gas Ass'n, 369 P.3d 573 (Colo. 2016) (holding that state law preempted an Article of Longmont's home-rule charter which banned both fracking, and the storage or disposal of the waste byproduct as a result of fracking within city limits); Swepi, LP v. Mora Cty., 81 F. Supp. 3d 1075, 1198–204 (D.N.M. 2015) (applying prohibits/permits test and finding against the local ban).

provisions of law that granted or alluded to the authority of local governments to adopt concurrent requirements . . . .'"[111] In *State ex rel. Morrison v. Beck Energy Corporation*, the Ohio Supreme Court decided whether Ohio's Home Rule Amendment prevented local ordinances from being preempted by its state fracking statute.[112]

The opinion's recitation of the facts indicates that in 2011, Beck Energy Corporation obtained a state permit to drill in Munroe Falls.[113] The city attempted to block the drilling by relying on local ordinances, one of which required a certificate before engaging in "construction or excavation" activities, while others had the combined effect of prohibiting a person from drilling for "oil, gas, or other hydrocarbons" until complying with certain conditions.[114]

Ohio's Home Rule Amendment provides that "[m]unicipalities shall have authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary and other similar regulations, as are not in conflict with general laws."[115] Rather than simply addressing the three types of preemption typically analyzed in intrastate preemption cases,[116] the Ohio Supreme Court applied a unique three-step analysis, holding that a municipality must yield to state law where three conditions are met: "(1) the ordinance is an exercise of the police power, rather than of local self-government, (2) the statute is a general law, and (3) the ordinance is in conflict with the statute."[117] The Ohio courts use this analysis rather than the traditional approach, described in Part II.A, to give full effect to their constitutionally mandated Home Rule control over *purely local concerns*.[118]

All of the justices in *Morrison* agreed that the local ordinances were an exercise of the police power;[119] however, the city argued that the statute was not a "general law" because it did not apply uniformly to the entire state, as "only the eastern part of Ohio has

111. State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 131 (Ohio Ct. App. 2015) (quoting JEFF GRIM, OHIO LEGIS. SERV. COMM'N, FINAL ANALYSIS: SUB. H.B. NO. 278 at 3 (2004)); OHIO REV. CODE ANN. § 1509.02 (West 2013).

112. 37 N.E.3d at 131; OHIO REV. CODE ANN. § 1509.02 (West 2013).

113. 37 N.E.3d at 131–32.

114. *Id.* at 133.

115. OHIO CONST. art. XVIII, § 3.

116. *See supra* note 79 and accompanying text.

117. 37 N.E.3d at 133.

118. *See supra* Part II.A; *see also supra* note 79 and accompanying text; Kramer, *supra* note 84, at 88.

119. *See* 37 N.E.3d at 134; *id.* at 139 (O'Donnell, J., concurring); *id.* at 141 (Pfeifer, J., dissenting); *id.* at 144 (Lanzinger, J., dissenting); *id.* at 147 (O'Neill, J., dissenting).

economically viable quantities of gas and oil."[120] The majority found this argument unpersuasive, indicating that "a general law can operate uniformly throughout the state 'even if the result . . . is that the statute does not operate in all geographic areas within the state.'"[121]

The justices disagreed as to whether the ordinance conflicted with the statute under the third prong.[122] To determine whether such a conflict existed, the Court applied two tests. First, it applied what has been referred to as the "Prohibit/Permit" test.[123] Courts commonly apply this test to determine whether a local rule is invalid through conflict preemption.[124] Under this test, a conflict exists if the "ordinance 'permits an act prohibited by a statute or prohibits an act permitted by a statute.'"[125] This test has been criticized as overly restrictive in the sense that if a local ordinance can only regulate that which state law *already* regulates, little room is left to local regulation.[126]

In applying the Prohibit/Permit test, the Ohio Supreme Court held that the ordinances prohibited what the state oil and gas law[127] allowed: "state-licensed oil and gas production within [the city]."[128] The additional requirements the local ordinances imposed—waiting "one year after the city council approved the conditional zoning certificate" before drilling, paying "a nonrefundable $800 application fee," depositing "a $2,000 'performance bond,'" and scheduling "a public meeting at least three weeks prior to drilling"[129]—were a "classic licensing conflict," and invalidly conflicted with the state

120. *Id.* at 134.

121. *Id.* (alteration in original) (quoting Clermont Envtl. Reclamation Co. v. Wiederhold, 442 N.E.2d 1278, 1282 (Ohio 1982)).

122. *See id.* at 135; *id.* at 141 (Lanzinger, J., dissenting); *id.* at 147 (O'Neill, J., dissenting) (noting agreement with Justice Lanziner's position).

123. *See* Diller, *supra* note 77, at 1142–44; *Morrison*, 37 N.E.3d at 135–36.

124. Diller, *supra* note 77, at 1142.

125. *See id.* The court in *Morrison* applied the same test but described it using slightly different and slightly more confusing language: "A conflict exists if 'the ordinance permits or licenses that which the statute forbids and prohibits, and vice versa.'" 37 N.E.3d at 135 (quoting Struthers v. Sokol, 140 N.E. 519, 520 (Ohio 1923)); *see also*, *e.g.*, Swepi, LP v. Mora Cty., 81 F. Supp. 3d 1075, 1198 (D.N.M. 2015) (applying the Permits/Prohibit test in the fracking/preemption context).

126. Diller, *supra* note 77, at 1142–43, 1146–49 (using the following example to illustrate the point: if a state law permits smoking in all places by not banning it, a city ordinance prohibiting smoking in bars and restaurants would prohibit "something permitted by state law," and the ban would therefore be an invalid, unreasonable result).

127. OHIO REV. CODE ANN. § 1509.02 (2013).

128. *Morrison*, 37 N.E.3d at 135.

129. *Id.*

law because they restricted "an activity which a state license permit[ted]."[130]

The city argued that there was no such conflict because the ordinances and the statute "regulate[d] two different things. . . . [T]he ordinances address[ed] traditional concerns of zoning, whereas [the statute] relate[d] to technical safety and correlative rights topics."[131] But the court found this argument unpersuasive and interpreted the ordinances as imposing *technical-permitting requirements* on top of those already imposed by the state government—a kind of "double licensing"—not as addressing traditional zoning concerns.[132]

In the second step of its conflict-preemption analysis, the court asked whether "the language of the statute" indicated that "the General Assembly *intended* to preempt local regulation on the subject."[133] If such intent is found, and the other two prongs of Ohio's preemption analysis are satisfied, Ohio courts will hold that the local regulation is invalid.[134] Notably, although the Ohio Supreme Court includes this test as part of its determination of whether *conflict preemption* exists, this part of the analysis might more accurately be classified as an *express preemption* analysis, as the test required the court to make its determination based on whether the language of the statute indicated legislative intent to preempt.[135]

The city proffered various policy arguments regarding the second step of the conflict-preemption analysis. The city argued that while the state may be better at controlling technicalities such as "details of well construction and operations," municipalities are better situated to deal with issues involving "which land within their borders is available for those activities."[136] As is proper under an express preemption analysis, the court deferred to the legislature's policy judgment, declining to give the city's policy arguments much con-

130. *Id.* at 135–36 (quoting Ohio Ass'n of Private Detective Agencies v. N. Olmsted, 602 N.E.2d 1147, 1150 (Ohio 1992)).

131. *Id.* at 136.

132. *Id.* at 136–37.

133. *Id.* (emphasis added) (quoting Westlake v. Mascot Petroleum Co., 573 N.E.2d 1068, 1071 (Ohio 1991)).

134. *See id.* at 133, 136–37.

135. *See id.* at 136–37; *see also infra* note 157 and accompanying text (the court in New York's *Dryden* decision underwent a very similar analysis, but explicitly characterized it as an express preemption analysis). The confusion created by this part of the court's analysis might also be consistent with the overlap that is said to occur between express and implied preemption, as discussed in Part II.A. *Supra* note 83 and accompanying text. *But see,* Kramer, *supra* note 84, at 88–89 (noting that the court "appl[ied] traditional conflict preemption theory" and "gave no weight at all to the express preemption provisions").

136. *Morrison*, 37 N.E.3d at 137.

sideration.[137] Limiting the reach of its decision, the court further noted that its analysis was confined specifically to whether the ordinances at issue in the case, which created a type of "double licensing," were in conflict with the statute; the court made no determination as to whether "*other* ordinances could coexist [with the state statutes]."[138]

In an apparent attempt to clarify the majority's limited discussion of the potential validity of other ordinances, Justice O'Donnell offered a concurring opinion indicating that the city's attempt to limit fracking might have succeeded if it had merely enacted *traditional zoning laws*—as opposed to the *permitting* ordinances it enacted, which erroneously attempted to regulate the "technical aspects of drilling."[139] Potentially valid traditional zoning laws include those that ensure "compatibility with local neighborhoods, preserv[e] property values, or effectuat[e] a municipality's long-term plan for development, by limiting oil and gas wells to certain zoning districts . . ."[140]

In support of this position, Justice O'Donnell distinguished the state's interest in regulating "location" and "spacing" from local interests.[141] The state's "[s]cientific expertise regarding the physical characteristics of oil and gas reserves is required to efficiently produce oil and gas, prevent waste, and protect the correlative rights of neighbors . . ."[142]

> In contrast, that same scientific and regulatory expertise is not required to determine whether an oil and gas well is compatible with the *character and aesthetics* of a particular zoning district, such as a residential neighborhood, and *we generally presume that zoning authorities are far more familiar with local conditions and therefore are better able to make land use decisions*.[143]

Justice O'Donnell went on to state that the "General Assembly sought to preempt the inconsistent patchwork of local health and safety regulations governing the *technical aspects* of drilling" and that

137. *Id.*; *see supra* note 84 and accompanying text.

138. 37 N.E.3d at 137 (emphasis added).

139. *Id.* at 138–41 (O'Donnell, J., concurring).

140. *Id.* at 138.

141. *Id.* at 139–40. In the context of oil and gas regulation, "location" and "spacing" refer to the "placement of wells on a tract in relation to the resource pool and to each other." *Id.* at 140.

142. *Id.* at 140.

143. *Id.* (emphasis added) (citations omitted).

"[i]f the legislature had intended to override all local zoning ordinances that affect oil and gas drilling, it could have declared that intent . . . ."[144]

The distinction between local *zoning regulations* and local regulations of the *technical aspects* of drilling has emerged as a common theme in determinations of whether state law preempts local regulations.[145] While the city of Munroe Falls may have failed because it crafted its ordinance in a manner that exceeded the scope of local interests, crossing into regulation of the technical aspects of drilling, New York municipalities succeeded by limiting their regulations to purely local concerns.

2. New York, the outlier: where municipalities prevailed over what was arguably an express preemption statute

In *Matter of Wallach v. Town of Dryden*,[146] the New York Court of Appeals held that local zoning laws banning fracking and related activities were not in violation of New York's Oil, Gas and Solution Mining Law [OGSML][147] as they were a reasonable exercise of Home Rule and zoning authority under the New York Constitution's Home Rule provision.[148]

New York's Home Rule provision provides, in relevant part, that "every local government shall have power to adopt and amend local laws not inconsistent with the provisions of this constitution or general law . . . except to the extent that the legislature shall restrict the adoption of such a local law."[149] The relevant provision in this case was the OGSML supersession clause: "The provisions of this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law."[150]

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144. *Id.* at 141 (emphasis added).

145. *Id.* at 140–41 (citing La Plata Cty. Bd. of Comm'rs v. Bowen/Edwards Assocs., 830 P.2d 1045, 1057 (Colo. 1992); Wallach v. Town of Dryden, 16 N.E.3d 1188, 1195, 1198 (N.Y. 2014); Huntley & Huntley, Inc. v. Oakmont Borough Council, 964 A.2d 855, 865–66 (Pa. 2009)) ("Courts of last resort in other jurisdictions have declined to view preemptive language in oil and gas statutes that preclude all local regulations of oil and gas drilling as irreconcilable with local zoning laws."). *Id.*

146. 16 N.E. 3d 1188, 1191 (N.Y. 2014).

147. N.Y. ENVTL. CONSERV. LAW § 23-0303(2) (Consol. 2016).

148. 16 N.E.3d at 1202–03; *see* N.Y. CONST. art. IX, § 2; § 23-0303(2).

149. 16 N.E.3d at 1194 (quoting N.Y. CONST. art. IX, § 2(c)(ii)).

150. § 23-0303(2).

In *Dryden*, the town invoked the language of local police power, expressly granted to municipalities by New York state law, when it banned fracking within its borders.[151] The town of Dryden based this decision on its determination that allowing fracking "would endanger the health, safety and general welfare of the community through the deposit of toxins into the air, soil, water, environment, and in the bodies of residents."[152]

In contrast to the ordinances at issue in *Morrison*, which the court viewed as additional permitting requirements,[153] the regulations in *Dryden* were within the realm of *traditional zoning concerns*.[154] Specifically, the *Dryden* majority noted that the "Cooperstown area [another party to the case] is known worldwide for its clean air, clean water, farms, forests, hills, trout streams, scenic view sheds, historic sites, quaint village and hamlets, rural lifestyle, recreational activities, sense of history, and history of landscape conservation."[155] In light of these unique local characteristics, Middletown determined that "industrialization, such as hydrofracking, would 'eliminate many of these features' and 'irreversibly overwhelm the rural character of the Town.'"[156]

Similar to *Morrison*, in determining whether the OGSML preempted the local bans, the *Dryden* court conducted an express preemption analysis, asking whether the legislature made a "clear expression of legislative *intent* to preempt local control over land use."[157]

In divining that intent, the court looked to (1) the plain language of the statute; (2) the statutory scheme as a whole; and (3) the legis-

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151. The court quoted several New York statutes which essentially grant municipalities the power to exercise police powers, including the following: "To implement [New York's] constitutional [Home Rule] mandate, the state legislature enacted the Municipal Home Rule Law, which empowers local governments to pass laws both for the 'protection and enhancement of [their] physical and visual environment' and for the 'government, protection, order, conduct, safety, health and well-being of persons or property therein.'" 16 N.E.3d at 1194 (quoting N.Y. MUN. HOME RULE § 10(1)(ii)(a)(11), (12) (Consol. 2014)) (alteration in original) (citations omitted).

152. *Id.* at 1192.

153. *See supra* notes 133–35 and accompanying text.

154. 16 N.E.3d at 1202–03.

155. *Id.* at 1193.

156. *Id.*

157. *Id.* at 1195 (emphasis added) (quoting Gernatt Asphalt Prods. v. Town of Sardinia, 664 N.E.2d 1226,1234 (N.Y. 1996); *see supra* note 135 and accompanying text. Unlike the *Morrison* decision's conflict preemption analysis, which this author characterizes as functionally equivalent to an express preemption analysis, the *Dryden* decision's express preemption analysis was explicit. *Compare id. with* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 136–37 (Ohio Ct. App. 2015).

lative history.[158] In examining each of these prongs, the court in *Dryden*, as did the concurring opinion in *Morrison*, identified the distinction between the State's interest in regulating the *technical* aspects of drilling (such as standards regulating "drilling, casing, operation, plugging and replugging of wells . . . fil[ing] well logs and samples with the Department [of Environmental Conservation] . . . grant[ing] well permits" and "issu[ing] orders governing the appropriate spacing between oil and gas wells to promote efficient drilling and prevent waste") versus the local zoning interest in "preserving the character" of communities.[159]

In response to this finding, the plaintiffs alternatively argued that even if zoning laws were not preempted by the OGSML, the statute should be interpreted as preempting zoning ordinances that have the effect of completely prohibiting fracking: that an outright ban goes too far, but local restrictions on residential areas might be reasonable.[160] The Court was unconvinced by this argument, holding that the towns reasonably exercised "their zoning authority . . . . The towns both studied the issue and acted within their home rule powers in determining that gas drilling would permanently alter and adversely affect the deliberately-cultivated, small-town character of their communities."[161]

Since the *Dryden* decision, "after more than seven years of study," and over 260,000 public comments, the New York State Department of Environmental Conservation (NYDEC), empowered by Governor Cuomo's administration, issued a statewide moratorium on fracking.[162] In reaching its decision, NYDEC weighed the environmental and economic costs against the economic benefits of allowing "high-volume hydraulic fracturing," but determined that the "expected positive socioeconomic impacts on employment, income, and tax generation" was "substantially less (in the tens to hundreds of millions of dollars)" than previously anticipated.[163] The Department ultimately concluded that "[i]n the end, there are no feasible or prudent alternatives that would adequately avoid or minimize adverse

158. 16 N.E.3d at 1195–1201.

159. *Id.* at 1197–1202; *see supra* notes 148–54 and accompanying text.

160. 16 N.E.3d at 1201–02.

161. *Id.* at 1202.

162. N.Y. FINDINGS STATEMENT, *supra* note 52; Glenn Coin, *New York State Officially Bans Fracking*, SYRACUSE.COM (June 29, 2015, 1:54 PM), http://www.syracuse.com/news/index.ssf/2015/06/new_york_officially_bans_hydrofracking.html

163. N.Y. FINDINGS STATEMENT, *supra* note 52, at 39.

environmental impacts and that address the scientific uncertainties and risks to public health from [fracking]."[164]

D. Where Express Preemption was More Clear, Municipalities were Fracked

In contrast to the more ambiguous oil and gas statutes like those in New York and Ohio, some states have adopted express preemption provisions that leave little-to-no doubt as to whether the legislature intended for state law to preempt local bans. Where state-level statutory language clearly purports to preempt municipalities from banning fracking, municipal bans are generally unsuccessful, notwithstanding the distinction between regulation of the technical aspects versus regulation of local interests; Texas is perhaps the most notable example.

1. The "Denton Fracking Bill" expressly preempted local bans

In November 2014, the citizens of Denton, Texas voted to pass a local ban on fracking.[165] In response, Texas Governor Greg Abbott ratified what has been referred to as the "Denton Fracking Bill" in May 2015.[166] Proponents of the bill noted the importance of avoiding the "'patchwork of regulations' that threaten oil and gas production."[167]

Clarifying any foreseeable confusion that might allow a successful ban, the Denton Fracking Bill amended the Texas oil and gas law to include an express preemption provision.[168] The Purpose section of the bill (section 1) indicated that municipal regulation was impliedly preempted because previous state legislation already "occupie[d] the field, while facilitating the overriding policy objective . . . of fully and effectively exploiting oil and gas resources while protecting the environment," and the new legislation was merely to "explicitly confirm the authority to regulate oil and gas operations" in the state.[169] Section 1 concludes by stating that "[t]he legislature intends that this Act expressly preempt the regulation of oil and gas opera-

164. *Id.* at 42.

165. Jim Malewitz, *Dissecting Denton: How a Texas City Banned Fracking*, TEX. TRIB. (Dec. 15, 2014), http://www.texastribune.org/2014/12/15/dissecting-denton-how-texas-city-baned-fracking.

166. H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523); *see* Malewitz, *supra* note 167.

167. Malewitz, *supra* note 167.

168. H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523).

169. *Id.*

tions by municipalities and other political subdivisions, which is impliedly preempted by the statutes already in effect."[170]

Lest there be any confusion regarding bans specifically, the section of the bill to be codified (Section 2) was entitled "Exclusive Jurisdiction and Express Preemption," and indicated that, besides minimal exceptions—such as traffic regulation—"a municipality or other political subdivision may not enact or enforce an ordinance or other measure . . . that bans, limits, or otherwise regulates an oil and gas operation."[171] In response to the passage of the bill, the City of Denton repealed its ban on fracking in June 2015.[172]

2. North Carolina's Senate Bill 119 is even more restrictive than Texas' "Denton Fracking Bill"

In October 2015, the North Carolina Legislature passed Senate Bill 119 ("SB 119"), which closely paralleled Texas' Denton Fracking Bill.[173] North Carolina Senator Bob Rucho explained the rationale behind the bill:

> Under the original bill that passed, it was clear that a local government was not authorized to use zoning changes and/or any type of ordinances that would actually inhibit or prohibit any type of shale gas exploration and development. . . . Apparently the language wasn't as tight as it was intended to be, and in doing what we did we just clarified that language in SB 119 so that it's totally clear as to what the intent was.[174]

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170. *Id.*

171. H.R. 40, 84th Leg., Reg. Sess. (Tex. 2015) (codified at TEX. NAT. RES. § 81.0523).

172. *See City of Denton Fracking Ban Initiative (November 2014)*, BALLOTPEDIA, https://ballotpedia.org/City_of_Denton_Fracking_Ban_Initiative_%28November_2014%29 (last visited Aug. 10, 2016). *Cf.* Nicole R. Metcalf, *The Fight Over Fracking is Not Yet Done in Texas*, LAW360 (June 5, 2015, 11:16 AM), http://www.law360.com/articles/663852/the-fight-over-fracking-is-not-yet-done-in-texas (arguing that an exemption to the preemption clause of the statute for local measures that are "commercially reasonable" may mean that some municipal bans might still be sustainable).

173. *See* S. 119, 2015 Gen. Assemb. Sess. § 56.2.(a) (N.C. 2015); H.R. 40, 84th Leg. Reg., Sess. § 1 (Tex. 2015) (codified at Tex. Nat. Res. § 81.0523).

174. Charlie Passut, *North Carolina Nails Down Law Against Local Bans on Oil/Gas Development*, NGI'S SHALE DAILY (Oct. 7, 2015), http://www.naturalgasintel.com/articles/103941-north-carolina-nails-down-law-against-local
-bans-on-oilgas-development; S. 119, 2015 Gen. Assemb. Sess. § 56.2.(a). (N.C. 2015).

Similar to the language of the Texas bill, Rucho's statement indicates that state lawmakers thought the previous version of the law already prevented local bans—the new bill simply clarified what the original acts already purported to do—limit municipal-ability to prevent fracking operations. Unlike the Texas bill, however, SB 119's amendments removed language forbidding local fracking bans, replacing it with more stringent language forbidding *any type of local regulation of oil and gas activity*.[175] Increasing the restriction from forbidding bans to forbidding *any type* of local regulation means the North Carolina bill gives even less power to municipalities than Texas' Denton Fracking Bill. Notwithstanding the new law, at least one North Carolina county (Lee County) has enacted a twenty-four-month moratorium on issuing fracking permits.[176] The moratorium prohibits Lee County from approving any oil and gas development or mining activities, and includes an enforcement provision allowing for enforcement through injunctive relief or any other "legal or equitable remedy."[177] The ordinance arguably does not purport to *regulate* fracking activities, but merely prohibits the issuing of permits. Whether it will ultimately succeed in preventing fracking activities seems doubtful in light of SB 119's restrictive language.

3. Florida considered passing similar legislation

In 2016, Florida's House of Representatives approved a bill similar to those passed in North Carolina and Texas. If approved, House Bill 191 would have amended Florida oil and gas law to include a provision prohibiting local land use controls that "would . . . impose a moratorium on, effectively prohibit, or inordinately burden" oil and gas activities.[178] However, the bill "died" in the Senate Environmental Preservation and Conservation Committee.[179] As this Note suggests below, various environmental theories tend to support the Committee's decision to allow local land use controls.

III. WHEN DO ENVIRONMENTAL THEORIES JUSTIFY PREEMPTION?

The two predominant theories supporting centralized environmental regulation, and thereby intrastate preemption, are the "race

175. S. 119, 2015 Gen. Assemb. Sess. § 56.2.(a) (N.C. 2015).

176. LEE COUNTY, N.C., LEE COUNTY CODE OF ORDINANCES ch. 12, art. IV (2015), http://frackfreenc.org/wp-content/uploads/Lee-County.pdf.

177. *Id.*

178. H.R. 191, 2016 Sess. (Fla. 2016).

179. *Id.*

to the bottom theory" and "interstate externalities."[180] Further, while not a prevailing environmental theory, "uniformity of standards" arguments are often used by fracking proponents to support intrastate preemption of local bans—these arguments are addressed briefly in Part IV.[181]

While the prevailing environmental theories are generally applied in the federal versus state context,[182] the concepts are equally applicable in the state versus local arena, as the key question in either instance remains whether centralized regulation is preferable to decentralized regulation. More specifically, whether a larger government entity should have power over smaller entities.[183]

A. Defining the Race to the Bottom

Race-to-the-bottom (RTB) theory postulates that centralized environmental regulation is justified because local units would otherwise compete "for industry by offering pollution control standards that are too lax."[184] Consider the following hypothetical example of balancing the economic benefits versus the health effects: Town *A*, if in isolation, might determine that a pollution level of 5 units is acceptable for a particular industry. This level would be considered "socially desirable" because it sufficiently protects the health of its citizens, while still maintaining a desirable level of economic benefits from the industry.[185] However, Town *A*'s neighbor, Town *B*, in a

180. Henry N. Butler & Jonathan R. Macey, *Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority*, 14 YALE L. & POL'Y REV. 23, 41–45 (1996); Richard L. Revesz, *Federalism and Interstate Environmental Externalities*, 144 U. PA. L. REV. 2341, 2342 (1996) ("The two justifications most prominently offered, both in the academic literature and the legislative arena, for vesting responsibility for environmental regulation at the federal level focus on the existence of a 'race to the bottom' and of interstate externalities.").

181. *See infra* Part IV; Robert L. Glicksman & Richard E. Levy, *Symposium: Ordering State-Federal Relations through Federal Preemption Doctrine: A Collective Action Perspective on Ceiling Preemption by Federal Environmental Regulation: The Case of Global Climate Change*, 102 NW. U. L. REV. 579, 607 (2008) (explaining that uniformity-based arguments support "ceiling preemption" to prevent "chaos" because businesses would to have to comply with "a multiplicity of divergent . . . standards.").

182. *See, e.g.*, Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 599 (1996).

183. *See infra* Parts III.A–B. Similarly, preemption doctrine is typically applied uniformly in both the federal and intrastate contexts. *See* Uma Outka, *Intrastate Preemption in the Shifting Energy Sector*, 86 U. COLO. L. REV. 927, 948 (2015).

184. Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1210 (1992). Rather than referring to "centralized" regulation, Revesz refers to federal regulation in his discussion of RTB theory; to remain consistent with the purpose of this Note, which focuses on intrastate regulation, the term "centralized" is used here in place of "federal." *See id*.

185. *See id.* at 1214.

bid to attract the industry to its jurisdiction and reap the economic benefits, might permit a pollution level of 6 units, thereby neglecting the health standards of its people for the economic benefits.[186] Setting its standard at this less than ideal level results in industry leaving Town *A* for the more desirable lax standards in Town *B* — the more the industry is allowed to pollute, the more money it can make.

Because of Town *B*'s actions, Town *A* would be forced to consider setting a lower standard to compete with Town *B* to recover its economic loss due to the industry migrating to Town *B*. The Towns thus enter a race to set lower standards to compete for the industry; the race ultimately ends with each setting a standard at less than the optimum level.[187] To prevent this sort of undesirable competition from occurring, RTB theory suggests using centralized regulation to eliminate this competition, resulting in a mandatory, universally adopted socially desirable standard.[188] This, of course, would benefit both Towns.

Like any prevailing theory, RTB has been criticized.[189] The prevailing criticism comes from Richard Revesz.[190] Revesz' theory might be characterized as a "race-to-equilibrium."[191] Revesz posits that "the forces of interstate [for our purposes, inter-municipal] competition, far from being conclusively undesirable, are at least presumptively beneficial."[192] Under Revesz' theory, jurisdictions compete for more than one variable; instead of just competing over "environmental quality," Towns *A* and *B* might compete over "environmental protection and worker safety."[193]

> Assume that, in the absence of federal regulation, [Town *A*] chooses a low level of environmental protection and a high level of worker safety. [Town *B*] does the opposite: it chooses a high level of environmental protection and a low level of worker safety protection. Both [towns] are in competitive equilibri-

186. *See id.* at 1216.

187. *Id.* at 1210.

188. *Id.* at 1217.

189. *See id.* at 1216.

190. *See* Kristen H. Engel, *State Environmental Standard-Setting: Is There a "Race" and is it "To the Bottom?"*, 48 HASTINGS L.J. 271, 274–77 (1997).

191. *See* Revesz, *supra* note 184, at 1231–33.

192. *Id.* at 1253.

193. *Id.* at 1245.

> um: industry is not migrating from one to the other.[194]

By competing based on two different variables, jurisdictions might reach an equilibrium, whereby some jurisdictions are more socially beneficial in some regards (e.g., worker safety), while other jurisdictions are better in other regards (e.g., environmental quality).[195] Revesz then invites us to consider the impact of centralized environmental standards on this scenario: if centralized environmental standards are set lower than those adopted by Town *A*, Town *A* will need to adopt less stringent worker safety standards to compete with Town *B*.[196] "Thus, [centralized] environmental standards can have adverse effects on other [local] programs."[197] Revesz proposes that centralized regulation can actually be harmful, as it may lead a jurisdiction to decrease social welfare in non-environmental areas, resulting in a net decrease in overall social welfare.[198]

B. Defining "Interstate Externalities"

The other prominent rationale for centralized regulation is to minimize interstate [for our purposes, "inter-municipal", or "inter-town"] externalities.[199] Stated simply, the theory puts forth that centralized environmental regulation is justified where pollution from one jurisdiction would otherwise enter another jurisdiction.[200] The reason being that the polluting jurisdiction has no economic incentive to stem the effects of the pollution, as all of the negative effects of the pollution are felt by the other town or municipality.[201] The polluting jurisdiction thereby reaps the economic benefits associated with the polluting activity with none of the costs.[202] According to the theory, a centralized government can alleviate the problem of externalities by "limiting the amount of pollution that can cross interstate borders, thereby 'showing' upwind states the costs that they impose

194. *Id.*
195. *Id.*
196. *Id.*
197. *Id.* at 1246.
198. *Id.*
199. Revesz, *supra* note 184, at 2342.
200. *Id.* at 2343.
201. *See* Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 DUKE L.J. 931, 932 (1997).
202. *Id.*

on downwind states."[203] An early Supreme Court decision, *Georgia v. Tennessee Copper Co.*, clearly exemplifies the problems that can occur in the absence of such regulation.[204]

In that case, the State of Georgia sued to enjoin a Tennessee company from "discharging noxious gas" which turned into acid rain, resulting in "destruction of forests, orchards and crops" growing in Georgia.[205] Without the benefit of a centralized law governing this type of pollution, Georgia was forced to rely on common law injunctive relief.[206] While the extent of their effectiveness has been criticized, federal regulations, such as the Clean Air Act and Clean Water Act, now provide a centralized means of regulating such pollution.[207]

IV. APPLYING THE THEORIES

State fracking legislation tends to address the "technical" aspects of fracking within the same statutes that preempt municipal abilities to regulate fracking through zoning or ban it entirely.[208] It may be easier for state officials to address both of these concerns together, but valid arguments for state-level regulation of the technical aspects are completely distinct from arguments in favor of preempting local bans.

In *Morrison*, Justice O'Donnell's concurring opinion highlights this distinction.[209] As was identified in *Dryden*, state-level technical concerns properly deal with issues like "drilling, casing, operation, plugging and replugging of wells . . . grant[ing] well permits" and "appropriate spacing between oil and gas wells to promote efficient drilling and prevent waste."[210] It is logical to regulate these sorts of concerns at the state level, because state legislatures have greater access to technical expertise and can set minimum standards to prevent spills and other types of pollution. In contrast, local zoning concerns, such as whether gas well-pads, increased traffic, and other pollution-generating activities will affect the "character and aesthet-

203. Revesz, *supra* note 184, at 2343.

204. Georgia v. Tenn. Copper Co., 206 U.S. 230, 236–39 (1907).

205. *Id.* at 236.

206. *See id.*

207. *See* Revesz *supra* note 184, at 2344–61 (identifying and criticizing the effectiveness of provisions meant to minimize interstate externalities).

208. *See supra* notes 109–11 and accompanying text.

209. State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 137–42 (Ohio Ct. App. 2015) (O'Donnell J., concurring).

210. Wallach v. Town of Dryden, 16 N.E.3d 1188, 1199 (N.Y. 2014) (citing N.Y. ENVTL. CONSERV. LAW § 23-0305(8)(d), 23-0501, 23-0503 (Consol. 2006)).

ics" of a neighborhood, do not require the "scientific and regulatory expertise" possessed by the state.[211]

As Justice Baer noted in his concurring opinion in *Robinson Township*, "while the placement of a gas well in a mountain surrounded valley . . . in central Pennsylvania might be appropriate for one municipality," a well drilled in a flatter, more heavily populated area may not be appropriate.[212] Regions such as Cooperstown, New York, which is "known worldwide for its clean air, clean water, farms, forests, hills, trout streams," and other features, are in a better position than state legislatures to determine whether fracking operations are a good fit for their towns.[213]

When determining whether intrastate preemption is justified based on prevailing theories, the distinction between the technical aspects and traditional zoning concerns becomes very important.

Arguments in favor of statewide regulation of the technical aspects of drilling are completely valid under RTB theory. Under RTB theory, advocates in favor of statewide preemption legislation could easily argue that without minimum state-level environmental standards, towns might enact lax environmental standards to attract fracking companies in exchange for the economic benefits.[214] Controls on how drilling is done, how wells are cased, and what protections are necessary when the well bore travels through groundwater are all issues that a state should control to prevent gas leaks, oil spills, groundwater contamination, air pollution, or other societal harms that could be incurred through unchecked competition for industry.[215]

In stark contrast, the race-to-the-bottom theory in *no way* supports preempting a local *ban* on fracking. RTB theory posits that towns will race to lower standards to attract industry, but a ban of a polluting activity is the exact opposite of racing to the bottom. Rather than a race-to-the-bottom, the towns seeking to *ban* fracking might at most be accused of racing to the top.[216] A centralized *preemption of local bans* accomplishes the exact opposite of the centralized envi-

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211. *Morrison*, 37 N.E.3d at 140 (O'Donnell, J., concurring).

212. *See* Robinson Twp. v. Commonwealth, 83 A.3d 901, 1007 n.5 (Pa. 2013) (Baer, J., concurring).

213. *See Dryden*, 16 N.E.3d at 1193.

214. *See supra* note 184 and accompanying text.

215. *See supra* Part I.B. for a discussion of legitimate environmental concerns.

216. A potential "race-to-the-top" could logically be cause for a valid "not in my backyard" [NIMBY] argument, but because so many towns are choosing to embrace fracking, and because the resource has already been exploited to the point where many wells are no longer economically viable, the NIMBY argument is not viable in this context. Glicksman & Levy, *supra* note 181, at 606.

ronmental regulation that RTB theorists advocate for—it sets a *ceiling* on a town's ability to restrict pollution, forcing it to accept the socially undesirable consequences that RTB theory seeks to limit.

There is, however, a strong argument that race-to-the-bottom theory does not directly apply in the fracking context—rather, municipal behavior toward the fracking industry might more accurately be described as a race-to-equilibrium.[217] Pennsylvania and California are both illustrative of this idea—municipalities in both of those states have been granted authority to decide for themselves whether to allow fracking within their borders, and while some choose to ban the practice, a great portion choose to embrace it.[218] Under Revesz' race-to-equilibrium theory, the California and Pennsylvania models would be encouraged—by granting municipalities the freedom to decide for themselves whether to allow fracking, some municipalities can choose to adopt a permissive standard, accepting the environmental harms in exchange for the economic benefits.[219] In contrast, towns that place greater value on environmental quality, such as towns similar to Cooperstown, New York, can opt out of fracking altogether, protecting their natural features, such as pristine trout streams.[220]

Since the race-to-equilibrium theory supports limits on centralized regulation, it is unique in that it might be construed to argue against both regulations of the technical aspects of drilling, and preemption of local bans on fracking. However, like RTB theory, race-to-equilibrium theory would in *no way* support a statewide preemption of bans. As the courts have generally recognized, when it comes to determinations based on the nature and character of a community, municipalities are in a better position than the states to decide whether certain types of polluting industries, like fracking, will have a net benefit on the town. [221] Stripping municipalities of lo-

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217. *See supra* Part III.A.

218. *See supra* Part II; *see* Pennsylvania Municipalities With Active Wells, NPR: STATE IMPACT, http://stateimpact.npr.org/pennsylvania/drilling/municipalities (last visited Sept. 7, 2016); *Fracking in California: Where is Fracking Occurring?*, CA FRACK FACTS, http://www.cafrackfacts.org/fracking-in-california/where-is-fracking-occurring (last visited Sept. 7, 2016).

219. *See supra* Part III.A.

220. *See supra* Part II.C.2.

221. *See, e.g.*, State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 138–39 (Ohio Ct. App. 2015) (O'Donnell, J., concurring); Robinson Twp. v. Commonwealth, 83 A.3d 901, 979 (Pa. 2013) (noting that the difference in conditions of municipalities make environmental values and decisions "a quintessential local issue that must be tailored to local conditions"); Wallach v. Town of Dryden, 16 N.E.3d 1188, 1194 (N.Y. 2014) (noting that part of a municipality's "core powers" is to control land use to keep the character of the community).

cal autonomy needed to make these determinations would disrupt the equilibrium hypothesized by Revesz, resulting in negative economic impacts on towns like Cooperstown, whose economies rely on local character and aesthetic factors that are incompatible with fracking-related activities.[222]

Finally, like RTB theory, the theory of inter-town externalities supports regulating the technical aspects of drilling, but in no way supports preempting local bans. For example, if hypothetical Town *A* allowed a well-pad to be placed on its border, absent centralized regulation, it could lower its standards to allow the fracking operation to cut corners, resulting in pollution to groundwater that seeps into Town *B*, or spills into a stream that flows into Towns *B* and *C*. Alternatively, Town *A* could neglect to regulate toxic air emissions, which would be carried by the wind into Town *B*. Inter-town-externality theory supports setting minimum standards to prevent these sorts of spill-overs from occurring—any such spillovers would likely be closely analogous to the *Tennessee Copper* case, discussed in Part III.B.[223] Ideally, under the theory, centralized regulation should be enacted to prevent such spillovers from occurring, providing a regulatory alternative to inefficient common law nuisance remedies.[224]

However, inter-town-externality theory in no way supports *preempting a ban*—like many a lesson from health class, with "fraccidents" always being a possibility, fracking abstinence (perhaps, "fracctinence") is the only fool-proof means of preventing a spill.[225] Enacting a local ban would only *decrease the chance of fracking-related externalities*, and therefore, preempting such a ban could not possibly follow from inter-town-externality theory.

Before concluding, it may also be worth addressing the argument for "uniform standards," which, while not a leading environmental theory, is frequently invoked in the context of fracking regulation.[226]

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222. *See supra* note 160 and accompanying text; *see also* Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 No. 5 J. POL. ECON. 416, 418 (1956) (hypothesizing that individuals are mobile and will choose a "community whose local government best satisfies his set of preferences").

223. *Supra* Part III.B.

224. *See id.*

225. *See supra* Part I.B.4.

226. *E.g.*, Jamal Knight & Bethany Gullman, *The Power of State Interest: Preemption of Local Fracking Ordinances in Home-Rule Cities*, 28 TUL. ENVTL. L.J. 297, 303–04 (2015). Knight also states that "[O]il does not follow local boundary lines. To drill outside [of a city] and stop at the border is an inefficient use of resources." *Id.* at 304. While this may be technically true in a small number of circumstances, Knight does not offer any empirical support that this is a major issue for fracking companies; moreover, considering the current economic situation, where

Specifically, the undesirable image of a "patchwork of regulations" is invoked: Oklahoma Governor Mary Fallin cited this rationale when defending Senate Bill 809, a proposed preemption statute, which she said "was needed to prevent a 'patchwork of inconsistent municipal regulations across the state.'"[227] The phrase was also invoked in connection to Texas' "Denton Fracking Bill,"[228] and in Justice O'Donnell's concurrence in the Ohio Supreme Court's *Morrison* decision.[229]

However, just as under the theories discussed, "uniform standards" only supports the passage of statewide regulation of the *technical aspects* of drilling—it could otherwise be significantly difficult for an oil company to navigate a list of local technical ordinances, which overlap at the state and local level, and could foreseeably require a year or more before obtaining approval.[230] In contrast, a "patchwork" of *towns* that have *banned and not banned* fracking would do little to significantly impair fracking operations—the fracking company has only one regulation to worry about, can it frack in the town, or can it not? In light of so many fracking operations becoming unprofitable,[231] any insignificant effect on the industry imposed by such a simple determination does not seem to justify statewide preemption of all local bans.

CONCLUSION

States and municipalities have different strengths and weaknesses. In the fracking context, the prevailing environmental theories suggest that the state might be best for its technical expertise and for preventing socially undesirable inter-municipal interactions, but in no way do any of the prevailing theories support the idea that preempting local bans makes sense environmentally. Rather, municipalities are in the better position to determine whether fracking and fracking-related activities fit within the character and aesthetics of a town. More likely, the best explanation of why states are preempt-

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many wells are shutting down because they are no longer profitable, it is difficult to justify imposing fracking operations across all borders to extract every molecule of natural gas or oil.

227. Paul Monies, *Fallin Signs Bill Preventing Cities from Enacting Drilling Bans*, BARTLESVILLE EXAM'R-ENTER. (May 31, 2015, 11:11 AM), http://examiner-enterprise.com/news/state/fallin-signs-bill-preventing-cities-enacting-drilling-bans.

228. *Supra* note 172 and accompanying text.

229. *Supra* note 119 and accompanying text.

230. *See, e.g.*, *supra* note 128 and accompanying text (noting that local permits required Beck Energy Corporation to comply with a number of local permits in addition to state permits).

231. *See supra* Part I.A.

ing local zoning in the fracking context is rooted in public choice theory, which suggests that well-organized, well-connected, and wealthy parties can "buy" legislation that benefits them.[232] Considering the environmental concerns, the already historically low prices of oil, and the many fracking operations shutting down due to a lack of profitability, we should seriously question whether the economic benefits outweigh fracking's detrimental impacts on American towns that want to ban it.

232. *See generally* George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971) (explaining the state's power to regulate industry in ways that benefit the industry and small group's ability to use political power to obtain favorable regulation).