

Explosions in the (Suburban) Sky: Maneuvering the Legal and Regulatory Pitfalls of Urban Gas Drilling

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I. Introduction

Imagine the following hypothetical: You're outside in the yard, intently tending to the barbeque ribs on the grill. You shut the lid to let the smoke seize the meat in its aromatic hold. You lean back in your lawn chair and open up the paperback anthology of American poetry that your sister gave you on Memorial Day. Flipping to a random page, you smile and begin reading aloud, "Ah yes, Robert Frost—the 'Mending Wall'":

Something there is that doesn't love a wall,
That sends the frozen-ground-swell under it,
And spills the upper boulders in the sun;
And makes gaps even two can pass—¹

Suddenly, a huge explosion rips through the suburban sky! The explosion, heard and felt though origin unknown, sends you toppling sideways off the lawn chair. In the not-so-distant distance, smoke plumes into the sky, blackening the very sun you had, coincidentally, just mentioned.

Hours later, with the ringing in your ears only now beginning to fade, you learn from the local news that the explosion originated from a recently drilled natural gas well. Owned and operated by an Oklahoma energy company, the well is located a mere half mile from your suburban home. A stray drill bit had apparently struck a pocket of methane gas, setting off the massive explosion. The result? One dead worker, dozens with severe burns, hundreds of nearby residents evacuated, and the possibility of imminent shockwaves and

toxic air particles. Understandably, you're upset. Your home is temporarily off-limits. Your family is undergoing medical checkups. And to boot, your barbeque ribs are ruined. The problem? In exchange for royalties, you, along with all your neighbors, actually *gave* the gas company permission to drill nearby!

As scary as the above situation sounds, the scenario is not just a cautionary tale. In fact, an almost identical explosion tore through the community of Forest Hill, Texas on April 22, 2006.² That natural gas explosion resulted in one casualty and the evacuation of hundreds of residents within a half-mile radius of the well blast site.³ Another natural gas explosion—this one in Palo Pinto County, Texas—left a crater 750 feet wide in diameter and ignited multiple fires for a mile around.⁴ The Palo Pinto blast was visible from one hundred miles away.⁵

Considering the extensive amounts of drilling that take place throughout the United States, these types of headline-making accidents are extremely rare.⁶ Nonetheless, public safety needs to be a chief concern for all parties affected by natural gas drilling, especially now that advances in technology have allowed companies to drill in more populated,

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1. Robert Frost, *Mending Wall*, in THE HEATH ANTHOLOGY OF AMERICAN LITERATURE, vol. 2, at 1149 (3d ed. 1998).

2. Peggy Hinkle-Wolfe & Lowell Brown, *Perils Afoot: Gas Boom Brings Potential Dangers Closer to Homes*, DENTON REC.-CHRON., Dec. 29, 2008, http://www.dentonrc.com/sharedcontent/dws/drc/specialprojects/drilling/stories/DRC_Behind_the_Shale_2_1229.186694ee.html.

3. *Id.*; see also LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., NATURAL GAS DRILLING FACTS AND ISSUES (2007), available at http://www.stwresources.com/_pdf/tarrant-county-drilling-facts.pdf [hereinafter LEAGUE OF WOMEN VOTERS, FACTS & ISSUES].

4. See *Fort Worth Flatulence*, EYES ON TEX., <http://durangotexas.com/eyesontexas/fortworth/barnettshale.htm> (last visited Mar. 1, 2011); *Gas Explosion Shakes Texas*, FOX NEWS, Dec. 16, 2005, <http://www.foxnews.com/story/0,2933,178903,00.html>; Jim Douglas, *Gas Pocket Caused Palo Pinto County Fire*, DALL. MORNING NEWS (December 16, 2005), http://www.dallasnews.com/sharedcontent/dws/dn/latestnews/stories/wfaa051216_wz_palopintoblast.14c5d87d.html.

5. Douglas, *supra* note 4.

6. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 5.

urban areas.⁷ The advent of urban drilling brings with it a number of legal and regulatory complications, ranging from safety and health hazards to leasing arrangements to the interpretation of local laws. Urban drilling will continue to increase throughout the United States, as vast reservoirs of natural gas in the Northeast, Southwest, Midcontinent, and Rocky Mountain regions are developed in order to meet the national demands for cleaner energy.⁸ Already, the Barnett Shale play, in densely populated North Texas, has provided an intricate portrait of urban drilling. Cities and states in other parts of the country should carefully analyze this Texas portrait as an example when shaping their own urban drilling policies, particularly when identifying which issues to tackle, which to avoid, and which to embrace. Those involved in the drilling process must address these issues now, before lengthy and divisive litigation concerning urban drilling becomes a burden on all of us.

This Article explores the potential legal and regulatory conflicts arising from increased natural gas drilling within city limits. Part II of this Article provides a brief background of the natural gas industry, outlines the drilling process, and explains the factors that have led to increased urban drilling. Part III then analyzes the major legal issues facing government officials, local residents, and gas companies as a result of urban drilling conflicts. Specifically, Part III addresses the following relationships: (1) the “love-hate dichotomy” between drilling companies and city residents; (2) the jurisdictional uncertainty between municipal control and state authority; and (3) the balance needed between economics and regulation when developing urban drilling laws. Part IV concludes the Article.

II. Background

A. Natural Gas Basics

Although nonrenewable, natural gas is a relatively clean-burning energy source used mainly for heating, generating electricity, and manufacturing processes.⁹ It is a gaseous mixture of hydrocarbons that, when burned, produces a significant amount of energy.¹⁰ “When burned, natural gas releases about fourteen kilograms of carbon dioxide (“CO₂”) per giga-

joule of energy produced,” whereas coal and oil release about twenty-five kilograms of CO₂ and twenty kilograms of CO₂, respectively, to produce a gigajoule of energy.¹¹ Thus, a conventional coal-fired power plant emits 9000 tons of CO₂ per day of activity, while an oil-powered plant emits 7500 tons of CO₂. By contrast, an electric power plant using conventional natural gas emits only 6000 tons of CO₂ per day of activity.¹²

The domestic supply of natural gas lags behind demand; thus the United States is an importer of natural gas.¹³ For example, in 2007, the United States produced nearly 24.7 trillion cubic feet of natural gas, mainly from Texas, the Gulf of Mexico, Wyoming, Oklahoma, New Mexico, and Louisiana.¹⁴ That year, the United States also imported roughly 4.6 trillion cubic feet of natural gas, primarily from Canada.¹⁵ Internationally, both Russia and Venezuela have shut off access to their large natural gas supplies to United States and other foreign companies.¹⁶ While offshore production of natural gas in the Gulf of Mexico has declined in recent years,¹⁷ new technologies have enabled energy companies to tap into onshore shale gas reserves and discover gas fields in deeper waters.¹⁸

Unlike the market for renewable energy sources, natural gas is a mature and well-established industry.¹⁹ Some environmental and political groups have called for a switch to alternative, renewable energy sources to combat global warming and reduce reliance on fossil fuels, but it may take another decade before any renewable energy source becomes cost-competitive with natural gas.²⁰ During the interim, increased use of natural gas in place of coal and oil, especially for the production of electricity, would reduce CO₂ emissions into the atmosphere.²¹ In addition, when burned, natural gas does not release any sulfur, which contributes to acid rain and harmful health effects in humans, nor does it

7. See Elizabeth Souder, *Not Far Afield: Big Gas Producers Take Fresh Look at N. Texas' Barnett*, DALL. MORNING NEWS, Nov. 29, 2005, reprinted in GLENROSEAREA.COM, available at <http://www.glenrosearea.com/pages/barnettddmn.html> (referring specifically to the Barnett Shale natural gas field).

8. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2010, 73 (2010), available at http://www.eia.doe.gov/oiaf/aeo/pdf/trend_4.pdf [hereinafter ANNUAL ENERGY OUTLOOK 2010].

9. See *Natural Gas Explained: Use of Natural Gas*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energyexplained/index.cfm?page=natural_gas_use (last visited Mar. 1, 2011), [hereinafter *Natural Gas Explained*]; LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., *supra* note 3, at 1.

10. Although comprised mainly of methane, natural gas extracted from underground will often contain other gases, such as ethane, propane, and butane. *Overview of Natural Gas: Background*, NATURALGAS.ORG, <http://www.naturalgas.org/overview/background.asp> (last visited Mar. 1, 2011).

11. ADAM SERCHUK & ROBERT MEANS, RENEWABLE ENERGY POLICY PROJECT, NATURAL GAS: BRIDGE TO A RENEWABLE ENERGY FUTURE 14 (1997), available at www.repp.org/repp_pubs/pdf/issueebr8.pdf.

12. *Id.* at 23 tbl.2.

13. See *Natural Gas Explained*, *supra* note 9.

14. See U.S. ENERGY INFO. ADMIN., NATURAL GAS ANNUAL, 1, 10 (2008).

15. *Id.* at 20.

16. Rebecca Clarren, *Boom on the Range: An Explosion of Natural Gas Drilling in Wyoming Has Given the State a Huge Financial Boost—and a New Set of Problems*, FORTUNE (June 4, 2007, 4:27 PM) available at http://money.cnn.com/magazines/fortune/fortune_archive/2007/06/11/100082885/index.htm?postversion=2007060416.

17. See U.S. ENERGY INFO. ADMIN., NATURAL GAS YEAR-IN-REVIEW 2007 2–3 (2008), available at http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2008/ngyir2007/ngyir2007.pdf; U.S. ENERGY INFO. ADMIN., NATURAL GAS YEAR-IN-REVIEW 2006 2 (2007), available at http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2007/ngyir2006/ngyir2006.pdf.

18. See ANNUAL ENERGY OUTLOOK 2010, *supra* note 8, at 73; *Gas Production in Offshore Fields, Lower 48 States*, U.S. ENERGY INFO. ADMIN. (Apr. 8, 2009), http://www.eia.gov/oil_gas/rpd/offshore_gas.pdf (showing offshore areas with the highest production tend to be located further from the coastline).

19. SERCHUK & MEANS, *supra* note 11, at 2–3.

20. See *id.* at 7.

21. *Id.* at 14; see also James Coan, *Renewables and Gas: The Odd Couple Should Work Together*, HOUS. CHRON. BLOG (Aug. 2, 2010, 2:22 PM), <http://blogs.chron.com/amymyersjaffe/2010/08/>.

result in solid waste byproducts.²² Natural gas then can serve as a “bridge” between the current energy reliance on oil and coal and the future of renewable energy sources.²³

Consequently, demand for natural gas domestically and throughout the world will likely continue for the foreseeable future. In the decade leading up to 2007, the tightening supply was partly responsible for a quadrupling of the price of natural gas.²⁴ The drop in natural gas prices since the economic downturn in 2009 has made gas use even more economically attractive compared to renewable energy.²⁵ Rising demand for natural gas has driven efforts to drill in nontraditional areas, including urban locations near major shale gas plays.²⁶

B. The Drilling Process

Gas drilling companies operate to extract reservoirs of natural gas trapped underground. Without barriers, natural gas would simply rise to the surface and dissipate into the atmosphere.²⁷ However, rising natural gas is often trapped in layers of porous shale rock and sealed in on top by a layer of impermeable rock.²⁸ The only way for energy companies to harvest these reservoirs of natural gas is to drill through the impermeable rock layer and into the shale rock.²⁹

After a company obtains the requisite government drilling permits, it must clear a drill site in order to set up a drilling rig and to hold the necessary production and safety equipment.³⁰ These sites range from one to several acres in size depending on the sophistication of the drilling required and the volume of natural gas to be extracted.³¹ The sites need to be cleared of vegetation, and access and service roads must be constructed.³² In addition to laying down pipes and connecting power lines, the drilling company must build a storage lagoon to hold the millions of gallons of water needed for drilling and fracturing of the shale formation.³³ This entire construction process involves transporting large amounts of heavy material via trucks and creates considerable noise for the areas surrounding the drill site.³⁴

The company typically trucks in a drilling rig and centers it over the chosen drill point of entry.³⁵ A drilling rig usually stands at 120 to 140 feet in height and is lined with numerous safety lights.³⁶ Once drilling begins, the rig must run constantly, and it requires a tremendous amount of power to drive the drill bit. Unfortunately, the diesel-powered engine running the rig emits polluting chemicals—one of the major drawbacks to drilling for fossil fuels.³⁷

After the well is drilled, the shale must be fractured in order to release the natural gas trapped inside.³⁸ Most of the water supplied to the site is mixed with small quantities of sand and chemicals used in the fracturing process.³⁹ This drilling fluid cycles through the drilling process and returns blackened and polluted.⁴⁰ Potentially hazardous, this polluted flow-back water must be properly disposed of or recycled.⁴¹

Once the shale has been successfully fractured, the drilling company must then “complete” the well in order to extract the natural gas.⁴² Completing the well requires, among other steps, the installation of well casing, lifting equipment, a collection tank, and the wellhead.⁴³ Harvested natural gas is most commonly transported through a series of underground tubes to processing plants for final production.⁴⁴ The completion process also includes the necessary mechanical safeguards to protect against the rare, but very real, possibility of blowouts—the primary safety concern with urban drilling.⁴⁵

C. Urban Drilling

In recent years, demand for natural gas has sharply outpaced supply, and the United States continues to import sizeable quantities every year from Canada and other nations to meet its energy needs.⁴⁶ This demand is driven in part by society’s increasing awareness that natural gas is a more environmentally friendly source of energy than coal or oil and can serve as an economically and environmentally healthy bridge between our current energy needs and the future.⁴⁷ It is also driven by state and federal governments taking actions to “promote[] greater domestic oil and gas produc-

22. SERCHUCK & MEANS, *supra* note 11, at 13.

23. *Id.* at 2; *see also* Coan, *supra* note 21.

24. Clarren, *supra* note 16.

25. *See* Amy Myers Jaffe, *Shale Gas Will Rock the World*, WALL ST. J., May 10, 2010, <http://online.wsj.com/article/SB10001424052702303491304575187880596301668.html>.

26. *See Business Overview: Natural Gas Demand*, NATURALGAS.ORG, <http://www.naturalgas.org/business/demand.asp> (last visited Mar. 1, 2011); ANNUAL ENERGY OUTLOOK 2010, *supra* note 8, at 3–4.

27. NATURALGAS.ORG, *Overview of Natural Gas: Background*, *supra* note 10.

28. *Id.* “Shale” is defined as “a fissile rock that is formed by the consolidation of clay, mud, or silt, has a finely stratified or laminated structure, and is composed of minerals essentially unaltered since deposition.” MERRIAM-WEBSTER ONLINE, <http://www.merriam-webster.com/dictionary/shale> (last visited Jan. 21, 2011).

29. NATURALGAS.ORG, *Overview of Natural Gas: Background*, *supra* note 10.

30. NRH, GAS DRILLING & PRODUCTION 2 (2007), *available at* <http://www.nrhtx.com/pdf/Buzz/Gas%20Drilling%20&%20Production.pdf> [hereinafter NRH].

31. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2.

32. *Id.*

33. *Id.*

34. *Id.* at 4.

35. *Id.* at 2.

36. *Id.*

37. *Id.*

38. *Id.*

39. *Id.*

40. *See id.*

41. *See* LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., GAS-DRILLING WASTE WATER DISPOSAL, (2008), *available at* <http://www.lwvtarrantcounty.org/Environmental%20Committee/Enviro%20GasDrlgWasteWaterDisp%20Feb2008.pdf>; *see also* Elaine Robbins, *The Backyard Drill*, PLANNING, Aug./Sept. 2004, at 16, 22 (reporting on residents’ concerns over the possibility that drilling discharge could contaminate nearby lakes).

42. *Natural Gas: Well Completion*, NATURALGAS.ORG, WELL COMPLETION 1, *available at* http://naturalgas.org/naturalgas/well_completion.asp (last visited Mar. 1, 2011).

43. *Id.*

44. *Processing Natural Gas*, NATURALGAS.ORG, http://naturalgas.org/naturalgas/processing_ng.asp (last visited Apr. 3, 2011).

45. *Id.* at 4.

46. *Natural Gas Explained: Where Our Natural Gas Comes From*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energyexplained/index.cfm?page=natural_gas_where (last visited Jan. 21, 2010).

47. *See* SERCHUCK & MEANS, *supra* note 11, at 2.

tion by offering tax incentives[] [and] easing environmental regulations”⁴⁸

Another facet of increased natural gas drilling is change in the political arena. Led mostly by the administration of President George W. Bush and Republicans in Congress, energy policy has shifted toward easing restrictions on natural gas drilling.⁴⁹ For instance, in 2001, the Energy Task Force, led by Vice President Dick Cheney, recommended that more public land in the Rocky Mountains West be made available for energy development, including natural gas drilling. As a result, “the Bureau of Land Management [(“BLM”)], the federal agency that issues drill permits to private companies for public land development, reduced environmental restrictions.”⁵⁰ The Wyoming office of the BLM planned to issue 4545 new drilling permits in 2007, a 300% increase over the number of permits issued in 2002.⁵¹ In conjunction with this increase in federal permitting, state permitting authorities have increased their issuance of oil and gas permits for natural gas drilling on non-federal lands.⁵² Unfortunately, the emphasis placed on energy production has greatly hampered the ability of state and federal agencies to conduct inspections and enforce current regulations.⁵³

Another way “state and federal governments have promoted greater domestic oil and gas production [is] by offering tax incentives[] [and] easing environmental regulations”⁵⁴ The Committee on Natural Resources of the U.S. House of Representatives approved a “Republican-drafted plan that would expand offshore drilling and open the northern coastal plain of the Arctic National Wildlife Refuge (“ANWR”) in Alaska to oil production.”⁵⁵ The Committee also approved an amendment that would lift the federal ban on natural gas drilling on the entire Outer Continental Shelf.⁵⁶ The ban had affected federally controlled coastal waters outside of the Gulf of Mexico since 1981.⁵⁷ Although the current administration has signaled that it would approach oil and gas companies differently than in the Bush years,⁵⁸ President Barack Obama and his administration have declined to halt plans to drill for natural gas in the Marcellus Shale of Pennsylvania

and New York.⁵⁹ President Obama has even expressed enthusiasm for increased natural gas exploration and production.⁶⁰

The high demand for natural gas, coupled with easing governmental regulations, has driven companies to explore innovative drilling techniques and technology.⁶¹ Companies like Mitchell Energy, now Devon Energy Corporation,⁶² began experimenting with new horizontal drilling and fracturing techniques that reduced surface disturbances by enabling the company to drill multiple wells from a single surface location.⁶³ Thus, urban natural gas drilling suddenly became an economically viable option.⁶⁴ These successful innovations have led to a modern-day “gold rush” to extract the vast natural gas reservoirs in the Barnett Shale and other shale gas plays.⁶⁵ A large swath of the Barnett Shale sits beneath the Fort Worth region, a densely-populated area comprising a number of municipalities, including Fort Worth, Arlington, Irving, and North Richland Hills.⁶⁶ The cities in this metropolitan area, if not all of their residents, have embraced the increased revenue resulting from natural gas drilling within their respective city limits.⁶⁷

In contrast, local governments in Colorado and other western regions have been much more reluctant to allow increased urban drilling.⁶⁸ The Rocky Mountain West boasts enormous potential gas reserves, with estimates that this region holds “enough natural gas to serve 10 million American households for seventy-six years.”⁶⁹ Current drilling in the Piceance Basin of the Rocky Mountain West almost never results in a “dry well,” and, driven by the demand for natural gas, drilling in the area will likely take place within the city limits of Silt and Rifle, Colorado.⁷⁰ Government officials and citizens of Silt and Rifle should carefully scrutinize the drilling situation in North Texas before making any long-

48. W. ORG. OF RES. COUNCILS, LAW AND ORDER IN THE OIL AND GAS FIELDS 1 (2009), available at <http://www.worc.org/userfiles/file/Oil%20Gas%20Coalbed%20Methane/LAO-2009.pdf> (showing dramatic rise in state-issued permits from 1999 to 2007).

49. See Clarren, *supra* note 16; see also *Feds Approve Gas Drilling Plan for Montana*, MSNBC.COM (last visited Mar. 24, 2011), <http://www.msnbc.msn.com/id/28448192>. See generally AM. GAS. FOUND., THE ENERGY POLICY ACT OF 2005 AND ITS IMPACT ON THE U.S. NATURAL GAS SUPPLY/DEMAND IMBALANCE: EXECUTIVE SUMMARY (2007), available at http://www.gasfoundation.org/ResearchStudies/Gap_Analysis_FINAL_Exec_Summary_1_2007.pdf.

50. *Id.*

51. *Id.*

52. See W. ORG. OF RES. COUNCILS, *supra* note 48, at 8.

53. *Id.* at 1.

54. *Id.*

55. Glenn Hess, *Energy Package Moves Forward*, CHEMICAL & ENGINEERING NEWS, Oct. 3, 2005, at 13, available at <http://pubs.acs.org/cen/news/83/i40/8340notw8.html>.

56. *Id.*

57. *Id.*

58. See Tom Doggett, *U.S. Overhauls Oil, Natural Gas Drilling Policy*, REUTERS, Jan. 6, 2010, available at <http://www.reuters.com/article/2010/01/06/us-usa-oil-drilling-idUSTRE6054S120100106>.

59. Mike Soraghan, *Obama Admin Rejects Timeout for Natural Gas Drilling in N.Y., Pa.*, N.Y. TIMES, Sept. 22, 2010, available at <http://www.nytimes.com/gwire/2010/09/22/greenwire-obama-admin-rejects-timeout-for-natural-gas-dr-60467.html>.

60. Mike Soraghan, *Obama's Enthusiasm for Gas Drilling Raises Eyebrows*, N.Y. TIMES, Nov. 4, 2010, available at <http://www.nytimes.com/gwire/2010/11/04/04greenwire-obamas-enthusiasm-for-gas-drilling-raises-eyeb-33483.html>.

61. See Elliott H. Gue, *Exxon's Blueprint*, INVESTING DAILY (Dec. 18, 2009), <http://www.investingdaily.com/pf/16832/exxons-blueprint.html>.

62. *Id.*

63. Holli Estridge, *Devon Energy Reaches Milestone*, DALL. BUS. J. (Oct. 18, 2007, 11:52 AM), http://www.bizjournals.com/dallas/stories/2007/10/15/daily27.html?ana=from_rss.

64. Marc Airhart, *Barnett Boom Ignites Hunt for Unconventional Gas Resources* (Jan. 2007), <http://www.jsg.utexas.edu/news/feats/2007/barnett.html>.

65. *Id.*

66. *See id.*

67. See, e.g., Jonathan Betz, *Dallas Neighbors Wary of Natural Gas Drilling Plans*, WFAA (July 19, 2010, 6:55 PM), <http://www.wfaa.com/news/local/betz-98789534.html>.

68. See Angela Neese, Note, *The Battle Between the Colorado Oil and Gas Conservation Commission and Local Governments: A Call for a New and Comprehensive Approach*, 76 U. COLO. L. REV. 561, 563 (2005); see Blaine Harden, *In Montana, Gas Drilling Hits a Rare Roadblock*, WASH. POST, July 5, 2004, available at <http://www.washingtonpost.com/ac2/wp-dyn/A28016-2004Jul4?language=printer>.

69. *Id.* at 561 (brackets omitted).

70. Joe Garner, *Divided Over Drilling: Natural Gas Boom Driving Wedge Between Western Slope Neighbors*, ROCKY MOUNTAIN NEWS (May 31, 2005), available at <http://www.rockymountainnews.com/news/2005/may/31/divided-over-drilling/>.

term deals with the gas companies. In the end, they may very well embrace the economic benefits to be had from urban drilling, but they should make that decision after weighing the potential conflicts that have already arisen in Texas and elsewhere.

These conflicts give rise to safety and environmental concerns for residents.⁷¹ Concerned residents typically voice their displeasure to their local representatives, who in turn are compelled to increase restrictions in city ordinances that regulate natural gas drilling.⁷² Sometimes, frustrated individuals or organized groups, such as conservationists, may even erect legal roadblocks to prevent or delay drilling within sensitive city spots like public parks.⁷³ And then there is the ultimate question that every city dweller and government official has to consider: is the money worth it?

III. Analysis of the Legal and Regulatory Pitfalls of Urban Gas Drilling

A. The Love-Hate Dichotomy Between Mineral Owners and the Gas Company

If there is one observation to be gleaned from the advent of natural gas drilling, it is this: for most people, the money *is* worth it. The prospect of receiving royalty payments for the natural gas beneath their homes is a once-in-a-lifetime opportunity that they cannot possibly forego. After all, it's not like they would have the capacity to drill for the gas themselves!

For others, signing the lease agreement that allows drilling to occur next door feels like a betrayal of the public trust. Furthermore, these residents resent what they feel is a "take-it-or-leave-it" situation in which they have little say or negotiating power.⁷⁴ Although gas leasing conflicts are nothing new, the love-hate relationship between mineral owners and the drilling companies is magnified within the urban drilling landscape.

When presented with a preliminary lease agreement in the mail, the average city dweller will likely have a multitude of questions. Before asking, "Where do I sign?," residents should ask other questions, such as whether the annual royalty rate is fair, whether the signing bonus is sufficient, what the duration of the lease is, and whether the drilling company will have any surface access rights.⁷⁵ In the Barnett Shale, those residents who signed their leases early received, on average, smaller bonuses than those who waited and formed organized negotiating groups.⁷⁶ Disparity in signing bonuses and royalty rates within neighborhoods, across town, and even

among nearby cities will undoubtedly create more mistrust and frustration with drilling companies, and may possibly lead to legal action.

Indeed, residents are not guaranteed that they will receive royalty payments simply because they signed a lease.⁷⁷ Rather, these leases usually provide that payments be made only if natural gas is actually extracted from a landowner's designated area.⁷⁸ The following provision of a typical oil and gas lease sets out the term of the lease:

If, at the expiration of the primary term of this lease, oil or gas is not being produced on the leased premises, but lessee is then engaged in drilling for oil or gas, then this lease shall continue in force so long as drilling *operations* are being continuously prosecuted on the leased premises If oil or gas shall be discovered and produced from any such well or wells drilled or being drilled at or after the expiration of the primary term of this lease, this lease shall continue in force so long as oil or gas shall be produced from the leased premises.⁷⁹

The word "operations" in the lease has become standard, replacing the term "production" after the case of *Ridenour v. Herrington*.⁸⁰ Prior to *Ridenour*, the gas lease would have expired after the primary term if no "production" of gas were occurring, meaning that the mineral rights owner would not receive any royalty payments.⁸¹ After *Ridenour*, however, the lease would continue even if there were no "production" of gas, so long as there were "operations" for gas extraction.⁸² Thus, residents may find themselves subject to the terms of a gas lease without actually receiving royalty payments. In summary, gas drilling and extraction may indeed be a once-in-a-lifetime shot at gaining some revenue, but it is certainly no guarantee of one.⁸³

Gas companies typically have the upper hand in negotiations with property owners because they need only a specific number of approved leases to extract the natural gas from an entire subdivision.⁸⁴ Therefore, they are often not compelled to negotiate much at all, so long as they get a minimum num-

71. See, e.g., *id.*

72. See Neese, *supra* note 68, at 566.

73. *Id.* at 563, 573–74.

74. Garner, *supra* note 70.

75. See, e.g., Jim Ochterski, GAS EXPLORATION AND LEASING ON PRIVATE LAND: TIPS AND GUIDANCE FOR NEW YORK LANDOWNERS 4–8 (2008), available at <http://counties.cce.cornell.edu/otsego/documents/2008GasExplorationandLeasingonPrivateNYLand.pdf>.

76. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 3.

77. See *Bargsley v. Pryor Petroleum Corp.*, 196 S.W.3d 823, 825–26 (Tex. App. 2006); Richard F. Brown, *Oil, Gas, and Mineral Law*, 60 SMU L. REV. 1189, 1200 (2007).

78. See *Bargsley*, 196 S.W.3d at 825–26; Brown, *supra* note 77, at 1200; *Tips on Signing an Oil or Gas Lease on Your Property*, HUB-PAGES.COM (last visited Mar. 24, 2011), <http://hubpages.com/hub/Tips-On-Signing-An-Oil-or-Gas-Lease-On-Your-Property>.

79. *Bargsley*, 196 S.W.3d at 826 (emphasis added).

80. *Ridenour v. Herrington*, 47 S.W.3d 117 (Tex. App. 2001); see also Judon Fambrough, *Scrutinizing Royalty Payments*, TIERRA GRANDE (Apr. 2002), available at <http://recenter.tamu.edu/pdf/1559.pdf>.

81. *Ridenour*, 47 S.W.3d at 121 (describing "production" as "paying production, or production in paying quantities") (citation omitted).

82. Fambrough, *supra* note 80 ("Operations" means "any endeavor to produce oil and gas, whether or not in paying quantities.") (emphasis in original).

83. See, e.g., Garner, *supra* note 70.

84. 58 C.J.S. *Mines and Minerals* § 175 (2009) (Under the "law of capture," a landowner may extract all the natural gas "flowing through wells on his or her land, although it is drawn or flows from beneath the surface of an adjoining owner[.]""); see also *Riley v. Riley*, 972 S.W.2d 149, 155 (Tex. App. 1998) ("Under the rule of capture, the owner of a tract of land acquires title to the oil or gas produced from wells on his land, though part of the oil or gas may have come from adjoining lands.").

ber of individuals to agree to the lease terms.⁸⁵ Ownership rights to extracted natural gas become even more complicated under pooling arrangements⁸⁶ and unitization plans,⁸⁷ whether voluntary or forced. Those residents who refuse to participate in these joint-leasing plans may end up losing out on any claims to the natural gas beneath their land.⁸⁸ Certainly, individual residents may negotiate a few percentage points on the royalty rates and possibly even double the signing bonus.⁸⁹ But what about protecting surface rights? Or obtaining indemnity provisions? Residents who are unhappy with material terms of the lease are faced with a take-it-or-leave-it quandary: either sign a lease that is not in their best interests, or refuse to sign and come away with nothing while the gas company drills anyway.⁹⁰

Not only does this unequal bargaining power fuel resentment among those residents ambivalent over urban drilling, but it will create future problems for gas companies in the form of more organized opposition and perhaps legal backlash.⁹¹ Already, many North Texas residents have united with their neighbors in order to better deal with the gas companies.⁹² Most of these individuals are not unilaterally opposed to drilling—after all, the money is worth it!—but instead have organized to improve their negotiating power.⁹³

Finally, drilling leases, though binding contracts, are still subject to judicial review.⁹⁴ The more the leases resemble standard form contracts, the more likely it is that courts will overturn them on the basis of unconscionability and overreaching.⁹⁵ Gas companies are best advised to avoid a

court ruling on this matter, because a negative ruling could void a significant number of leases and be detrimental to a company's financial health and drilling operations. Prior leasing conflicts have turned on the interpretation of but a few words in the written lease. For instance, a Texas court determined that a lease containing the phrase "deepest producing interval as obtained in the test well" covered only a fixed and limited well depth, while noting that if the lease had instead contained the phrase "producing formation," it would have covered the entire gas formation.⁹⁶ Significant property rights are involved in gas leases,⁹⁷ and an adverse court interpretation of lease language would be disastrous for drilling companies if the same language was used in leases held with thousands of landowners.

Potentially, the leading reason for gas leasing conflicts to arise in an urban setting is the sheer number of urban residents without legal representation. The nuances surrounding gas leasing means the average unrepresented city resident is at a significant disadvantage in lease negotiations compared to the sophisticated gas company. Arguably, the best solution is to recommend that each party involved in negotiating a gas lease retain legal representation.⁹⁸ Realistically, however, this option will not be viable where the cost of an attorney would cut drastically into any bonuses or royalties to be received by residents. Therefore, residents should consider forming an association with their neighbors for the singular purpose of negotiating gas leases or joining an existing neighborhood association in order to better educate themselves about the leasing process.

Forming or joining a neighborhood association would help urban residents interested in negotiating leases with gas companies in several respects. First, it would allow residents to more easily benefit from their neighbor's knowledge concerning bonuses, royalties, and other lease specifics. A neighborhood association would also prevent the take-it-or-leave-it scenario with the gas company; instead, residents could discuss among themselves whether or not they wished to lease, especially when unitization or pooling is involved.⁹⁹ Furthermore, an organized neighborhood association could employ the services of an attorney to represent it in leasing negotiations, with each member contributing to the legal fees. This way, the legal costs would be spread out among the members of the association and not incurred by each member individually. For their part, drilling companies should encourage residents to band together and negotiate. Not only would the companies benefit from better public relations, but they could avoid many separate legal conflicts with a large number of individuals by instead dealing with a single association.

In summary, lease negotiations for urban gas drilling should be executed in a fashion that creates an honest and

85. Another unfortunate result of these leasing negotiations is that neighbors are sometimes pitted against neighbors for competing interests. See, e.g., Steve Stoler, *Drilling Plans in Flower Mound Pit Neighbor Against Neighbor*, WFAA (Jan. 20, 2010, 9:26 AM), <http://www.wfaa.com/news/local/Drilling-plans-in-Flower-Mound-pit-neighbor-vs-neighbor-82133667.html> (describing a dispute between neighbors who want to lease and neighbors that do not want to lease because they are concerned about the consequences of drilling activities on their health and the environment).

86. "Pooling" is an arrangement where "owners of different tracks of land may unite in the execution of a joint or community lease[.]" whereby the owners "join to drill a well and to share in the benefits to be expected." 38 AM. JUR. 2D, *Gas and Oil* § 172 (2010).

87. "Unitization" refers to the "development and operation of an oil [or gas] pool as a unit, and involves the consolidation or merger of all of the interests in the pool." *Id.*

88. See *Baumgartner v. Gulf Oil Corp.*, 168 N.W.2d 510, 516 (Neb. 1969) (Although "all interested parties in the field must be offered an opportunity to join in any unitization project[.]" if a party "refuses to join he should not be permitted to capitalize on that refusal.")

89. See generally Ochterski, *supra* note 75, at 4–8.

90. See *Baumgartner*, 168 N.W.2d at 516.

91. See, e.g., Casey Junkins, *Wheeling Residents Working to Negotiate Gas Lease*, CHARLESTON DAILY MAIL, July 19, 2010, available at LEXISNEXIS NEWS & BUSINESS DATABASE; Jessica Deleon, *Residents United to Get a Better Deal*, FORT WORTH STAR-TELEGRAM, Jan. 22, 2008, available at http://startelegram.typepad.com/barnett_shale/files/Hurstgas.doc; Gas Leases Information, SANDYBROOK NEIGHBORHOOD ASS'N, <http://www.sandybrookna.com/gas-leaseinfo/gasleasesinfo.html>.

92. See, e.g., Deleon, *supra* note 91; SANDYBROOK NEIGHBORHOOD ASS'N, *supra* note 91.

93. Deleon, *supra* note 91, and Sandybrook Neighborhood Association, *supra* note 91.

94. Richard A. Lord, *Gas, Oil and Other Mineral Leases*, 17 Williston on Contracts § 50:57 (4th ed. 1999).

95. See *id.* ("Thus, in recognition of the fact that most oil and gas leases are prepared by the lessee, several courts have refused to apply to gas and oil leases the rule governing ordinary leases under which uncertainties in the lease are to be construed against the lessor, and have applied the rule that uncertainties

in the lease are to be construed in favor of the lessor and against the lessee.") (citation omitted).

96. *Id.* at 1196 (discussing and quoting the court's decision in *EOG Resources, Inc. v. Wagner & Brown, Ltd.*, 202 S.W.3d 338 (Tex. Ct. App. 2006)) (emphasis in original).

97. See *id.* at 1197.

98. See Ochterski, *supra* note 75, at 9 (2008).

99. See *Baumgartner*, *supra* note 90 and accompanying text.

mutually beneficial relationship between gas companies and city residents. Both parties realize that the possibility of economic benefit drives the relationship; nonetheless, gas companies should recognize that fair dealing from the outset will lead to better returns for all involved.

B. *Problems with State and Local Laws*¹⁰⁰

Inconsistent, ambiguous, and often conflicting state and local laws will lead to increased litigation and wasted taxpayer money. Inevitably, political interest groups and gas companies will seize upon this legal confusion to manipulate local laws in ways that further their respective agendas. States should proactively pass legislation to accomplish two things: (1) define the exact scope of state regulatory power over the extraction of natural resources, and (2) repeal local ordinances that conflict with state regulatory laws. Urban drilling will no doubt fuel an array of conflicts, but the existence of clear state laws will create much needed uniformity within each state. Hopefully, this legal uniformity will prevent expensive litigation and deter the manipulation of local laws for political and commercial purposes.

The confusion encountered in implementing state versus local laws is analogous to that which has surrounded federal versus state laws concerning oil and gas drilling. For example, the federal Energy Policy Act of 2005 sought to ban the issuance of new federal or state drilling permits allowing gas companies to drill under the federally controlled portions of the Great Lakes.¹⁰¹ However, legal issues have arisen as to whether the permanent ban may be considered a “taking” and require just compensation to the states affected.¹⁰² Framing the entire issue is the doctrine of preemption, which invalidates any state law that conflicts with the federal ban.¹⁰³ But what if a state law conflicts only in part with federal law? Do the nonconflicting provisions remain valid?

State goals of advancing natural resource development and preventing the waste of natural resources are often inconsistent with local government aims, which tend to favor out-of-sight development.¹⁰⁴ Similar to the preemption doctrine relating to federal versus state law, municipal ordinances are preempted if they conflict with state laws or are expressly preempted by them.¹⁰⁵ In addition, at least in Colorado, a municipal ordinance will be preempted if it creates an “operational conflict” with state law—that is, a conflict that would “materially impede or destroy the state interest.”¹⁰⁶ Colorado courts have also taken into consideration whether an issue traditionally falls under state or municipal control.¹⁰⁷ In gen-

eral, municipalities control local matters such as zoning¹⁰⁸ and land use.¹⁰⁹ States, on the other hand, hold jurisdiction over matters granted to them by their respective state legislatures.¹¹⁰ In Texas, for instance, the Railroad Commission possesses statutory authority to promulgate rules governing the natural gas industry for the purposes of preventing discriminatory production and taking of natural gas, preventing waste, promoting conservation, and protecting correlative rights, all purposes authorized by legislature.¹¹¹ In Colorado, Oklahoma, and Tennessee, state courts have construed oil and gas leases to favor development and production.¹¹²

Whether the state or local government has regulatory jurisdiction can often be difficult to ascertain, however. In *Voss v. Lundvall Bros.*, the Colorado Supreme Court considered four factors in holding that the state interest was sufficient to preempt the city ordinance: (1) “whether there is a need for statewide uniformity of regulation [of oil and gas development and production]”; (2) whether the city ordinance has an effect on territory outside of the city limits; (3) “whether the subject matter is one traditionally governed by state or local government”; and (4) “whether the Colorado Constitution specifically commits the particular matter to state or local regulation.”¹¹³ Although the court held that a city ban on drilling was inconsistent with the state’s interests, it also held that state preemption of local laws “is not total.”¹¹⁴ Instead, each provision of the challenged local law must be examined on a case-by-case basis to determine its validity.¹¹⁵ Unfortunately, this case-by-case analysis is unpredictable and impractical, resulting in increased litigation and confusion over whether the state or city has ultimate control.¹¹⁶

Seizing upon this confusion, political groups and gas companies have manipulated local laws to achieve their own interests.¹¹⁷ Take, for example, the drilling ordinances the City of Fort Worth began developing in 2001 in response to increased gas drilling in the Barnett Shale.¹¹⁸ Originally, the application process to drill within city limits was considered a zoning issue and had to go through Fort Worth’s planned development procedures.¹¹⁹ The new drilling ordinances eliminated this cumbersome and restrictive step altogether, enabling drilling companies to apply directly to the state via the Railroad Commission.¹²⁰ Not surprisingly, the people who were integral to the development and drafting of the drilling ordinances included representatives from Mitchell

100. This Article does not address issues arising from federal control of public lands.

101. Pervaze A. Sheikh, Aaron M. Flynn & Marc Humphries, *Drilling in the Great Lakes: Background and Issues*, CRS Report for Congress 1 (June 1, 2006), available at <http://www.ncseonline.org/NLE/CRSreports/06Jul/RL33455.pdf>.

102. *Id.* at 16–19.

103. *Id.* at 14 n.56.

104. See Neese, *supra* note 68, at 571.

105. See *id.* at 582.

106. *Id.*

107. *Id.* at 583.

108. *Id.* at 579.

109. See *id.* at 586.

110. See *id.* at 580.

111. See *Railroad Comm’n of Texas v. Lone Star Gas Co.*, 844 S.W.2d 679, 683, 685 (Tex. 1992).

112. See Lord, *supra* note 94.

113. *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1067 (Colo. 1992); see also Neese, *supra* note 68, at 583.

114. Neese, *supra* note 68, at 584.

115. *Id.*

116. *Id.*

117. See *id.* at 585–89; Patrick C. Forbis, *Barnett Shale Development Encroaches on DFW Metroplex as Play Grows by Leaps and Bounds; Spreads South*, TX. DRILLING OBSERVER, Apr. 18–22, 2002, at 2, available at <http://www.drillingobserver.com/Regional%20Rpt.%20Sample.pdf>.

118. Forbis, *supra* note 117, at 2.

119. *Id.*

120. *Id.*

Energy Co. and Chief Oil & Gas.¹²¹ Had there been more certainty as to which regulations—state or city—controlled the issue of permitting, the energy companies probably would not have so easily drafted ordinances in their favor.

On the flip side, environmental groups and local governments in Colorado have manipulated local ordinances to prevent and delay drilling operations.¹²² Many local governments passed extremely restrictive ordinances that require city permits for drilling, in addition to a state permit.¹²³ The City of Greeley attempted to ban outright oil and gas drilling within its city limits.¹²⁴ That ordinance was based upon Greeley's "home-rule" right to regulate zoning,¹²⁵ but it was inconsistent with the State of Colorado's interest in developing natural resources and the state's traditional authority to regulate oil and gas issues.¹²⁶ The Colorado Supreme Court ultimately struck down the ordinance because Greeley did not have the authority to ban oil and gas drilling, even within its city limits.¹²⁷ Here, the existence of an unambiguous state law that excludes a ban on drilling from local land use regulation would have avoided the expensive litigation involved and prevented the manipulation of local laws as a delaying tactic.

To prevent political groups and energy corporations from using local ordinances to their benefit, state legislatures need to define more clearly the regulatory authority of state agencies and local governments. Furthermore, concerning urban drilling regulations, states should determine from the outset which local ordinances are preempted by state laws. The four factors recited in *Voss* are adequate guidelines for determining preemption, especially as it concerns traditional home-rule authority of local governments.¹²⁸ Once preemption has been established, any ambiguous provisions in the local ordinance should also be invalidated. States like Colorado should consider Ohio House Bill 278, passed in 2004, as a general guideline:

[H.B. 278] repeals all provisions of law that granted or alluded to the authority of local governments to adopt concurrent requirements with the state concerning oil and gas exploration and operation as well as all provisions that limited that authority. It states that the Division of Mineral Resources Management has sole and exclusive authority to regulate the permitting, location, and spacing of oil and gas wells within the state. Further, the act states that the regulation of oil and gas activities is a matter of general statewide interest that requires uniform statewide regulation¹²⁹

121. *Id.*

122. "While the Bush administration's drive to increase domestic energy production has met strong opposition in places like Colorado, where people from other parts of the country are moving to enjoy clean air and pristine wilderness, Texas attitudes are shaped by the wealth that minerals have created."

Robbins, *supra* note 41, at 19; *see also* Neese, *supra* note 68, at 563.

123. Neese, *supra* note 68, at 585–89.

124. *Id.* at 581.

125. *Id.* at 581, 583.

126. *Id.* at 583.

127. *See id.*

128. *See Voss v. Lundvall Bros.*, 830 P.2d 1061, 1067 (Colo. 1992).

129. JEFF GRIM, OHIO LEGISLATIVE SERV. COMM'N, FINAL ANALYSIS OF SUB. H.B. 278, 125 GEN. ASSEMBLY, at 3 (2004), available at <http://www.lsc.state.oh.us/analyses125/04-hb278-125.pdf>.

An Ohio court has already upheld the law, despite protests from seven Ohio suburbs and a group of Cleveland-area residents.¹³⁰

Every state's goal should be to create uniformity between state and local laws by abolishing inconsistent local ordinances and by using clear language that defines the exact scope of the state's regulatory power over natural resources. Other states should follow Ohio's example before political groups and gas companies seize the opportunity created by regulatory confusion to further their own agendas.

C. Economics Versus Public Safety and Environmental Impact

I. The Economics of Urban Gas Drilling

In developing rules and ordinances for the regulation of urban drilling, state and local governments must strike the perfect—or as close to perfect as possible—balance between economic interests and the safety of local residents, workers, and the environment. As most politicians will agree, a cost-benefit analysis weighing human safety against cost concerns is probably not appropriate. Instead, government officials should closely examine the policy reasons behind particular regulatory provisions. As discussed earlier, more uniformity among the various laws, agency regulations, and local ordinances would help considerably in defining these policies.¹³¹

Unfortunately, many ordinances—although seemingly drafted from the same template—vary widely in the details.¹³² For instance, the permitting requirements for natural gas drilling are entirely different in Texas than in Ohio.¹³³ The City of Irving, Texas requires that

[a] person wanting to engage in and operate in gas production activities [must] apply for and obtain a gas well permit . . . [and] indicate what type of gas well permit is requested. It shall be unlawful for any person acting either for himself or acting as agent, employee, independent contractor, or servant for any person to drill any well, assist in any way in the site preparation, reworking, fracturing, or operation of any such well or to conduct any activity related to the production of gas without first obtaining a gas well permit issued by the city¹³⁴

On the other hand, Ohio has expressly reserved permitting authority to the state.¹³⁵ The City of Irving ordinance also differs from the ordinance in nearby Midland, Texas.

130. Tasha Flournoy, *Cuyahoga Judge Upholds State's Right to Regulate Gas Well Drilling in Suburbs*, PLAIN DEALER, June 21, 2006, at B4.

131. *See supra* Part III.B.

132. "To anticipate this energy bonanza, cities in north central Texas are scrambling to create drilling ordinances to manage the impacts on their communities. Although the ordinances vary widely, few of them try to prevent drilling." Robbins, *supra* note 41, at 18.

133. *Compare Barnett Shale Information*, RAILROAD COMM'N OF TEX., <http://www.rrc.state.tx.us/barnettshale/> (last updated Dec. 2, 2010) and 16 Tex. Admin. Code § 3.5, with GRIM, *supra* note 129 and Ohio Rev. Code § 1509.

134. Irving, Tex., Ordinance No. 8591 §64-5(a) (Jan. 12, 2006), available at <http://www.ci.irving.tx.us/city-attorney/pdfs/gaswell-ordinance-8591.pdf> [hereinafter Irving Ordinance No. 8591].

135. GRIM, *supra* note 129, at 3.

The Irving ordinance provides that a wellhead must be placed at a minimum distance of 600 feet from an occupied residence;¹³⁶ the Midland rule requires a minimum distance of 500 feet from an occupied residence.¹³⁷ Meanwhile, Texas law states that a natural gas well “may not be drilled in the thickly settled part of the municipality or within 200 feet of a private residence.”¹³⁸ The City of North Richland Hills, Texas, has a 600-foot distance requirement for wellheads near any residence, but its ordinance allows, with written consent from the occupants of the residence, the location of a well as close as 150 feet.¹³⁹ Uniformity among the different ordinances would certainly help in understanding and ensuring compliance with the regulations.

These examples also illustrate that states and cities differ in their prioritization of the interests that shape urban natural gas drilling regulations. Ohio’s prohibition on city-issued permits signals its preference to reserve more regulatory authority at the state level.¹⁴⁰ The issue of permitting has inherent economic policy implications as well—specifically, whether requiring a city permit and permit application fee in addition to a state-issued permit constitutes a tax.¹⁴¹ Following the explosion in Forest Hill, Fort Worth extended its minimum distance requirement between a wellhead and a home from 300 feet to 600 feet in certain high impact areas.¹⁴² In North Richland Hills, with the effects of gas drilling on the environment in mind, the permitting process requires that gas companies provide detailed information, including a tree preservation plan.¹⁴³ Thus, in developing city ordinances to address the advent of urban drilling, cities must attempt to balance the economic needs of the city and its residents with concern for public safety and the local environment.

North Texas has not been the only region in the United States to benefit from increased natural gas drilling. Royalty payments from natural gas production in Wyoming resulted in a nearly \$2 billion state budget surplus in 2006.¹⁴⁴ The explosion in drilling activity there “created a windfall for sparsely populated Wyoming”¹⁴⁵ Unemployment decreased to 2.6%, one of the lowest rates in the country at that time, and Wyoming’s per capita income rose 43% from 2000 to 2006.¹⁴⁶

All of these economic benefits beg the question of what cities should do with such additional revenue. State governments have debated the best and wisest methods for spending money derived from urban drilling.¹⁴⁷ In Wyoming, the

state “legislature eliminated sales taxes on groceries and created scholarships for state colleges.”¹⁴⁸ North Richland Hills requires that “such revenue would be used for public projects and services benefiting all residents of the City.”¹⁴⁹ One of the primary concerns with spending urban drilling revenue is that, similar to the home owner’s dilemma in signing a lease,¹⁵⁰ natural gas royalty payments will be collected only to the extent that there remains any gas to produce. Wyoming, for one, is familiar with the bust that followed the depletion of oil reservoirs in the 1970s.¹⁵¹

Thus, the Wyoming legislature required that “40% of tax revenue from minerals flow into a trust fund,” with \$40 million already invested in the fund by 2007.¹⁵² Wyoming Governor Dave Freudenthal, however, preferred a different approach: “We should put that money to work instead of stuffing it in a sack We need to develop our natural resources in a way that preserves our quality of life in Wyoming.”¹⁵³ The governor’s economic policy would see natural gas revenue go to fixing highways, creating affordable housing, and better monitoring potential environmental impacts.¹⁵⁴

Because natural gas is a nonrenewable fossil fuel, city officials should develop an economic plan that uses revenue received from natural gas drilling in a fiscally conservative manner. The Wyoming legislature’s establishment of a trust fund or another interest-bearing account is probably the best route, and something that other jurisdictions should mimic. First, an interest-bearing fund delays use of money from a nonrenewable source until the full ramifications of urban drilling have been realized.¹⁵⁵ Second, interest earned from the natural gas revenue would benefit not only today’s residents, but also future generations. In determining whether the money should be invested or spent, city officials should be mindful of concerns among residents that the officials are not tied to the pockets of gas companies. Therefore, city officials must make sure there they have no conflicts of interest before enacting an economic policy for urban drilling.¹⁵⁶

136. Irving Ordinance No. 8591, *supra* note 134.

137. MIDLAND, TEX., CODE tit. VI, ch. 1 § 6-1-23(H)(2)(a) (2010), available at <http://library.municode.com/index.aspx?clientId=13275&stateId=43&stateName=Texas>.

138. TEX. LOC. GOV’T. CODE ANN. § 253.005(c) (West 2010).

139. NORTH RICHLAND HILLS, TEX., CODE OF ORDINANCES, ch. 104-6(i), available at <http://www.municode.com/resources/gateway.asp?pid=13926&csid=43>.

140. See GRIM, *supra* note 129.

141. See Neese, *supra* note 68, at 588.

142. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2.

143. NRH, *supra* note 30, at 3.

144. See Clarren, *supra* note 16, at 42.

145. *Id.*

146. *Id.*

147. See *id.*

148. *Id.*

149. NRH, *supra* note 30, at 3.

150. See *supra* Part III.A.

151. See Clarren, *supra* note 16, at 42.

152. *Id.*

153. *Id.* at 42, 44.

154. *Id.* at 42.

155. Safety and health concerns, such as highway conditions and gas pipeline ruptures, will require long-term maintenance. See LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 6.

156. The following is one of the twenty-eight (rhetorical) questions that the Fort Worth Citizens Against Neighborhood Drilling Ordinance posed for Fort Worth Mayor Mike Moncrief: “Do you think that your personal relationship with executives from Four Sevens Oil/Gas Co. and possibly other such firms sends the wrong message to Fort Worth citizens who expect you to make unbiased decisions on their behalf? Do you see it as a conflict of interest? Should you recuse yourself from any City Council decisions . . . ?” 28 Questions for Mike Moncrief, FORT WORTH CITIZENS AGAINST NEIGHBORHOOD DRILLING ORDINANCE, <http://www.fwcando.org/28questions> (last visited Apr. 3, 2011) [hereinafter FWCANDO].

2. Public Safety and Health

Public safety issues are extremely important when it comes to urban drilling.¹⁵⁷ In a rural environment, natural gas wells are typically located far from residences; this is not so in urban areas.¹⁵⁸ City residents are primarily worried about the possibilities, however remote, of blowouts at the wellheads.¹⁵⁹ A blowout occurs “when a drill reaches a formation with unusually high pressure, and results in the explosive discharge of the well’s contents.”¹⁶⁰ The set-back distance requirements for wellheads from residential and commercial structures are “largely dependent on the level of risk that each jurisdiction or entity considers acceptable.”¹⁶¹ As detailed earlier, a number of Texas cities have settled on a distance requirement of 600 feet, while a few, such as Flower Mound, require a minimum of 1000 feet.¹⁶² To minimize the effects of a potential blowout, some experts have recommended that the minimum distance a natural gas well should be located from an occupied residence ought to be 1300 feet.¹⁶³

Wellhead explosions are rare, however,¹⁶⁴ and more common safety and health issues do exist as a result of urban drilling.¹⁶⁵ Some of the most common complaints by residents living near drilling sites involve noise levels and aesthetic impacts.¹⁶⁶ Other important issues include the safety of the drill sites, increased crime, traffic congestion due to heavy trucking, worker safety, and air pollution.¹⁶⁷ Drilling ordinances passed by Texas cities have addressed most of these concerns. For instance, North Richland Hills provides for the monitoring of “noise levels and can require additional sound muffling devices if noise exceeds” specified levels.¹⁶⁸ Furthermore, it requires that “[l]ights at the gas well sites will be directed downward and shielded to prevent illumination of public roads, dwellings and buildings”¹⁶⁹

In developing ordinances to regulate urban drilling, other cities should carefully determine the exact “level of risk” they consider acceptable.¹⁷⁰ Minimizing the risk of fatalities and

serious injury in the case of a blowout should remain a primary concern. But, in addition to proper distance requirements and insurance policies, cities should develop proper evacuation and safety plans.¹⁷¹ To help develop these plans, cities should consider spending a small portion of their natural gas tax revenue to employ safety consultants and industry experts.

D. Environmental Impact of Urban Gas Drilling

Inevitably, natural gas drilling will have some degree of environmental impact.¹⁷² Oil and gas drilling in environmentally sensitive areas such as the Great Lakes and offshore areas along the Outer Continental Shelf are potentially much more devastating than urban drilling, as evidenced by the 2010 Deepwater Horizon oil spill in the Gulf of Mexico.¹⁷³ In an urban area, drilling would affect fewer endangered species and habitats, and negative impacts to wetlands would be less likely.¹⁷⁴ Nonetheless, urban drilling can produce some very real environmental consequences. These problems can occur through “leaks, spills, and blowouts, among other things.”¹⁷⁵

The environmental consequences of urban drilling include air pollution from drilling activities, soil contamination from ruptured pipes, and loss of green space due to construction of well sites and laying down pipes.¹⁷⁶ Drilling in environmentally sensitive areas such as public parks can also disrupt wildlife and vegetation, as well as the beauty and peacefulness that parks bring to a community.¹⁷⁷ North Richland Hills is one community that has made preparations to authorize drilling for natural gas beneath city parks, ensuring that “stringent requirements are in place to protect public health and safety, as well as the appearance of” the parks.¹⁷⁸

Perhaps the biggest environmental impact from urban drilling will be the waste resulting from water use.¹⁷⁹ The following are three major features of the critical water used in the drilling process: “(1) [t]he drilling/fracturing process has the potential to pollute existing aquifers; (2) [t]he drilling/fracturing (fracing) process for one well requires an average of 4.5 million gallons of water; [and] (3) [t]he water disposal process has the potential to pollute existing aquifers.”¹⁸⁰ If accidentally (or purposely) released into streams or aquifers,

157. See, e.g., *Gas Explosion Shakes Texas*, *supra* note 4, Hinkle-Wolfe & Brown, *supra* note 2.

158. See LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2; see, e.g., Robbins, *supra* note 41, at 18.

159. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 5.

160. Sheikh, Flynn & Humphries, *supra* note 101, at 8.

161. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2.

162. *Id.*; see also Robbins, *supra* note 41, at 19.

163. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2.

164. Robbins, *supra* note 41, at 18.

165. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 6.

166. See *id.*; FWCANDO, *supra* note 156; Betz, *supra* note 67.

167. FWCANDO, *supra* note 156; see also LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., GAS ADVOCACY ISSUES (2008), available at <http://www.lwvtarrantcounty.org/Environmental%20Committee/Enviro%20GasDrilgAdvocacy%20Nov2008.pdf>; Chris Hawes, *Barnett Shale Air Study Reveals Alarming Results*, WFAA (Nov. 25, 2009, 9:27 PM), <http://www.wfaa.com/home/related/More-Known-about-Barnett-Shale-Air-Quality-Study-73645207.html> (concerning levels of benzene).

168. NRH, *supra* note 30, at 2.

169. *Id.*

170. See LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 2.

171. See FWCANDO, *supra* note 156.

172. See NRH, *supra* note 30, at 3.

173. See U.S. ARMY CORPS OF ENGINEERS, KNOWN AND POTENTIAL ENVIRONMENTAL EFFECTS OF OIL AND GAS DRILLING ACTIVITY IN THE GREAT LAKES 153, 197, 203–04 (2005), available at <http://www.lrc.usace.army.mil/GrtLakes/OilGas/FinalReport.pdf>.

174. See *id.* at 153, 203.

175. See Sheikh, Flynn & Humphries, *supra* note 101, at 8.

176. See FWCANDO, *supra* note 156; LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 6.

177. See LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 6.

178. NRH, *supra* note 30, at 3. The City of North Richland Hills has entered into drilling leases for several parks. *Id.* Drilling, however, will not occur on any of those parks, with perhaps the exception of Fossil Creek Park. *Id.*

179. See LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 3–4; see generally LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., GAS DRILLING WASTE-WATER DISPOSAL, *supra* note 41, at 1 (recommending methods for handling wastewater disposal and recycling).

180. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 3.

polluted water—along with drilling byproducts—may harm the local environment.¹⁸¹ Texas residents and city officials should sleep soundly, however, because “Devon Energy, XTO Energy and Pitts Oil Co., have formed a group called the Barnett Shale Water Conservation and Management Committee . . . to examine methods to conserve and recycle water used . . . during the drilling process.”¹⁸²

Rather than relying upon the recommendations of a committee formed by the polluting companies, cities should conduct their own environmental studies. Currently, many state agencies require the issuance of a state-mandated Environmental Impact Statement¹⁸³ (“EIS”) before drilling can occur. A local EIS modeled after the federal EIS, which is required for drilling on federal land and coastal waters, would contain detailed analysis of the potential effects of urban drilling on the city environment.

The best way to avoid messy litigation over urban drilling is for the city to develop a comprehensive drilling plan that harmoniously balances economic needs with safety and environmental concerns. At a minimum, development of local urban drilling ordinances should include all interested parties, including state and city officials, representatives of gas companies, and local residents. Optimally, discussions should also include neutral parties (this theoretically includes attorneys) as well as industry experts. Reports and studies used in the development of local ordinances should be conducted by impartial third-party companies or organizations. The resulting ordinances should address how, and in what amount, the revenue derived from urban drilling should be spent by the city. The ordinances should contain provisions that authorize the development of proper evacuation and safety plans in the rare event of a natural gas wellhead blowout. Finally, in recognizing that natural gas drilling may negatively affect environmentally sensitive city locations, the local ordinances should provide that either state or local governments must conduct local EISs prior to the issuance of permits for natural gas drilling within city limits. By addressing these contentious issues during the developmental stages of urban drilling, local governments can strike a near-perfect balance between competing needs and neutralize legal conflicts before they arise.

IV. Conclusion

Drilling for natural gas in an urban environment is a relatively new phenomenon. Advances in drilling technology, primarily the use of horizontal drilling and fracturing techniques, have enabled gas companies to extract natural gas from suburban backyards and city parks.¹⁸⁴ A tightening supply and high demand for natural gas as an alternative to heavy-polluting coal and oil have spurred urban drilling.¹⁸⁵ Dealing with a multitude of city residents and city regulations poses many challenges to energy companies seeking to profit from the gas beneath the cities.

Legal conflicts have arisen in Colorado, Wyoming, and Ohio,¹⁸⁶ but the paradigm for urban drilling has been established in the vast natural gas play in North Texas called the Barnett Shale. There, urban drilling has seized city residents and governments alike, because the potential economic benefits from natural gas production are so great. Most residents, although distrustful of gas companies and their take-it-or-leave-it leasing arrangements,¹⁸⁷ nevertheless sign leases to collect signing bonuses and royalty payments. City governments have seen huge budget surpluses as a result of the revenue from urban natural gas production.¹⁸⁸

This economic benefit comes with a price, however. Urban drilling is a dangerous and environmentally dirty business, and wellhead explosions have caused mounting consternation among the public.¹⁸⁹ Drilling regulations at the state and local levels are inconsistent, exposing government as ill-prepared for the advent of urban drilling.¹⁹⁰

As urban drilling continues to expand, newly affected communities must take stock of the potential legal conflicts that have afflicted Texas’s cities. City residents should band together to negotiate lease deals in order to receive fair treatment. State agencies must clarify their regulatory powers and strike down inconsistent local laws that can be manipulated by political groups and corporations. The city governments themselves must develop local urban drilling ordinances that balance economic needs with public safety and the environment. The legal and regulatory issues that have plagued Texas’s cities offer lessons that the rest of the county should heed carefully before implementing urban drilling programs.

181. Sheikh, Flynn & Humphries, *supra* note 101, at 8.

182. LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 4.

183. See generally Shane McGuire, *Environmental Impact Statements: A Necessity for Texas*, 38 TEX. TECH L. REV. 159, 160 (2005) (providing a detailed analysis of the need for a state-mandated EIS).

184. See Asher Price, *As Urban Gas Drilling Expands, So Do Health Concerns*, AUSTIN AM.-STATESMAN, June 13, 2010, at A1, available at <http://www.statesman.com/news/texas-politics/as-urban-gas-drilling-expands-so-do-health-744189.html>; *Natural Gas and Technology*, NATURALGAS.ORG, <http://www.naturalgas.org/environment/technology.asp> (last visited Nov. 17, 2010); Estridge, *supra* note 63.

185. See NATURALGAS.ORG, *Business Overview: Natural Gas Demand*, *supra* note 26; see Jaffe, *supra* note 25.

186. See generally Neese, *supra* note 68; Clarren, *supra* note 16; Flournoy, *supra* note 130.

187. See Garner, *supra* note 70; see *supra* Part III.A.

188. See Clarren, *supra* note 16, at 42.

189. See generally LEAGUE OF WOMEN VOTERS OF TARRANT CNTY., FACTS & ISSUES, *supra* note 3, at 5–6.

190. See *supra* Part III.B.