

MAPPING FRACKING: AN ANALYSIS OF LAW, POWER, AND REGIONAL DISTRIBUTION IN THE UNITED STATES

*Benjamin E. Apple**

This Note posits a framework with which to analyze U.S. fracking development at local and regional scales. It aims to illuminate the ways in which three legal regimes — private rights, public government regulation, and local government law — influence the interactive dynamics between local and regional actors, which in turn determine the distribution of fracking impacts across a regional mosaic of municipalities. Deploying this framework, the Note first concludes that law and economic-based disparities in bargaining power across municipalities should result in unequal exposure to fracking development and its suite of consequences, both beneficial and detrimental. It then sketches the substantive motivations, powers, and stakes of the most common actors in fracking development. Finally, it analyzes the stakes of a pending Pennsylvania Supreme Court case, Robinson Township v. Commonwealth, regarding the scope of municipal power to regulate fracking development.

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* J.D. Candidate, Class of 2014, Harvard Law School. Many thanks to Professor Frug, Professor Halley, Professor Kayden, Kate Konschnik, and Daniel Raichel for their helpful feedback, and to Professor Frug and Professor Halley for introducing me to many of the foundational ideas behind this Note. Any errors of fact or judgment are mine alone.

INTRODUCTION

A new drilling technology — horizontal hydraulic fracturing¹ — has unleashed the possibility of extracting enormous amounts of previously unavailable oil and natural gas in the United States. With estimates of newly accessible reserves as high as 201 billion barrels of oil and 700 trillion cubic feet of natural gas,² the industry has rushed to begin drilling wells and extracting oil and gas from subterranean shale deposits across the country.

While some states like New York have reacted with hesitance, others like Pennsylvania, Texas, Colorado, Wyoming, and North Dakota have welcomed fracking with open arms, hailing its promise of jobs, economic growth, and, in the case of gas, cheaper, cleaner energy. But as fracking wells and their infrastructure proliferate across these swaths of the country, the public has discovered that drilling and extraction do not occur within a vacuum. Indeed, fracking development extends across entire regions, and impacts those who do not even benefit from its activity.³ It requires thousands of truck deliveries to deliver water, sand, and gravel; millions of gallons of locally sourced water; advanced facilities to clean that water; industrial-grade roads; extensive networks of pipelines; compressor stations; short- and long-term housing; local business services; and expanded public safety and health services.⁴

The cumulative effects of fracking development are not always popular, and public concern about its impacts continues to rise.⁵ Reports of contaminated groundwater, toxic air pollution, and undesirable shifts in local economies and demographics have come to define the discourse, putting fracking companies on the defensive. Economists and sociologists, warning of phenomena like resource curse⁶ and boom-bust cycles,⁷ continue to shed doubt on the

¹ The terms “fracking” and “hydrofracking” denote the gas extraction process known more technically as high volume “slickwater” horizontal hydraulic fracturing. The process involves drilling a vertical well thousands of feet into the ground until reaching natural gas-rich shale rock, at which point the well is drilled horizontally to stay within the shale rock formation (a horizontal layer). After drilling, large volumes of water infused with chemical lubricants and sand are pumped into the well at high pressures to create cracks in the shale and release trapped oil or natural gas. The sand holds these cracks open so that the oil or natural gas can flow out. For a more comprehensive background on the process, see generally GEORGE E. KING, SOC’Y OF PETROL. ENGRS, HYDRAULIC FRACTURING 101 (2012); see also U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-12-732, OIL AND GAS: INFORMATION ON SHALE RESOURCES, DEVELOPMENT, AND ENVIRONMENTAL AND PUBLIC HEALTH RISKS 6–13 (2012).

² U.S. GOV’T ACCOUNTABILITY OFFICE, *supra* note 1, at 16–25.

³ *Id.*

⁴ For an excellent summary of the local and regional impacts, see Susan Christopherson & Ned Rightor, *How Shale Gas Extraction Affects Drilling Localities: Lessons for Regional and City Policy Makers*, 2 J. TOWN & CITY MGMT. 350, 358–66 (2012).

⁵ For a particularly stark account of fracking’s impacts in North Dakota, see Richard Manning, *Bakken Business*, HARPER’S MAG., Mar. 2013.

⁶ The theory of resource curse claims that “natural resource dependence tends to be associated with lower economic growth,” even at very local levels (e.g., U.S. counties). Alex James & David Aadland, *The Curse of Natural Resources: An Empirical Investigation of U.S. Counties*, 33 RES. & ENERGY ECON. 440–41, 450–52 (2011). But see JEREMY G. WEBER, USDA, A DECADE OF NATURAL GAS DEVELOPMENT: THE MAKINGS OF A RESOURCE CURSE? (2013), available at <http://perma.cc/0JAUuinc9c>.

local and regional economic benefits touted by industry officials and state governments.

These environmentally risky, socially disruptive, and economically uncertain aspects of fracking development have sparked extensive scientific, political, and legal debates about the real consequences of fracking development and the appropriate means of regulating them.⁸ In particular, municipalities throughout the United States have passed absolute bans or regulatory ordinances on fracking and its ancillary processes. States and fracking companies have reacted with lawsuits arguing that local governments have little to no power to control the onslaught of fracking activities because state oil and gas laws preempt local ordinances.⁹

This Note takes a broader perspective. It applies theories of law and power¹⁰ to posit a general framework for understanding why various public and private actors involved in fracking development behave in particular ways, and how their interactions influence the distribution and impacts of fracking operations across localities and regions.

The inspiration for this viewpoint comes from a controversy described in an episode of Chicago Public Radio's *This American Life*.¹¹ In the piece, journalist Sarah Koenig describes a town, Mt. Pleasant, that sits in southwestern Pennsylvania at the heart of the Marcellus Shale, one particular formation of the oil- and natural gas-rich rock layer sought after by fracking companies. Because of Mt. Pleasant's location upon some of the highest producing natural gas wells in the region, a Texas fracking company Range Resources ("Range") had already leased out ninety-five percent of the town's mineral rights, drilled approximately 100 wells, and invested over one billion dollars in fracking equipment and infrastructure by the late 2000s.

The controversy in Mt. Pleasant arose sometime after a 2009 Pennsylvania Supreme Court decision¹² affirmed the power of municipalities to regulate cer-

⁷ In a fracking boom-bust cycle, "[j]obs and spending rise dramatically in localities during the drilling or boom phase of shale development, but drillers leave the region when the commercially viable resource is fully extracted, producing an economic bust." Christopherson & Rightor, *supra* note 4, at 351, 355–58.

⁸ See, e.g., *Should Fracking Stop?*, 477 NATURE 271 (2011); Jannette M. Barth, *The Economic Impact of Shale Gas Development on State & Local Economies: Benefits, Costs, & Uncertainties*, 23 NEW SOLUTIONS 85 (2013); Chris Mooney, *The Truth About Fracking*, SCI. AM., NOV. 2011, at 80.

⁹ E.g., John Tomicic, *State Joins Suit Against Longmont Fracking Ban*, COLO. INDEP., (July 11, 2013), <http://perma.law.harvard.edu/07245Fmh39N>.

¹⁰ See generally DUNCAN KENNEDY, *The Stakes of Law or Hale and Foucault!*, in SEXY DRESSING, ETC. 83 (1993) (combining theories of Robert Hale and Michel Foucault to describe how law distributes political and economic power in society).

¹¹ *This American Life: Game Changer*, CHICAGO PUB. RADIO (July 8, 2011), available at <http://perma.law.harvard.edu/0gSWtRZfRhC/>.

¹² *Huntley & Huntley, Inc. v. Borough of Oakmont*, 964 A.2d 855 (Pa. 2009). For an analysis of this decision and another issued shortly thereafter, see Daniel Raichel, *Between Huntley and Salem: The Current State of Municipal Authority in Pennsylvania to Affect Gas Drilling Through Zoning*, 19 BUFF. ENVTL. L.J. 141 (2011–12).

tain aspects of drilling — a power since preempted by the state legislature.¹³ The town residents had begun to complain about polluted water, ruined farmland, and headaches from airborne toxins. They were displeased with the noise, trucks, dust, and itinerant workers living on drill sites that had overrun their struggling agricultural town of 3,500 people. Mt. Pleasant's municipal government responded with plans to pass a zoning ordinance implementing *conditional use zoning*, a process in which each new gas well would require approval from a zoning commission. Range wanted *as-of-right zoning* — a set list of rules that, if followed, automatically authorizes land development — because it would provide a “predictable” regulatory landscape in which operations would be cheaper, easier, and faster.¹⁴

As communications between Range and the town officials progressed, negotiations over the choice between conditional and permitted use zoning eventually broke down, and the relationship became severely strained. It was at this point that Range began a powerful public relations campaign, sending out letters to town residents and organizing exclusive meetings for those who had leased out their land for fracking — the goal presumably being to intimidate town officials into capitulating to Range's demands.

By that time, Range had paid out over twenty-five million dollars in royalties and rents to town residents, and donated hundreds of thousands of dollars to local causes like the 4-H Club, the Boy Scouts, the town's libraries, the fire department, local schools, an apple festival, and a bronze statue of a farmer cradling a calf in the center of downtown. Local business was up thirty percent, and the town residents were enjoying the refurbished barns, new cars, and fancy lawnmowers that they could now afford. But Range threatened the end of this newfound flow of money and its perks. Range vilified the town officials as uncooperative.

Ultimately, the town became deeply divided between leaseholders and non-leaseholders, categories which, because property owners split estates into mineral and surface rights generations ago,¹⁵ equated roughly with mineral rights owners and non-mineral rights owners — well-off “city folk” who settled recently and poor, farming folk who had lived there for generations. Despite the rising tensions within Mt. Pleasant and with Range, mediation between Range and the town produced a compromise: a streamlined version of conditional use zoning. Nonetheless, Range ceased fracking development in the area and pulled out of the town. This is where the radio story ended.

Beyond the difficult issue of what would have been best for Mt. Pleasant, one comes away asking broader questions: What would have happened had the

¹³ See 58 PA. CONS. STAT. § 3304 (2013). However, ongoing litigation contests the state constitutionality of section 3304. For a more detailed analysis of this controversy, see *infra* Part V.

¹⁴ As noted by Sarah Koenig, her contact at Range Resources, Matt, used a variant of “predictable” twenty-eight times in one interview. *This American Life*, *supra* note 11.

¹⁵ TIMOTHY W. KELSEY, ALEX METCALF, & RODRIGO SALCEDO, PENN STATE CTR. FOR ECON. & CMTY. DEV., MARCELLUS SHALE: LAND OWNERSHIP, LOCAL VOICE, & THE DISTRIBUTION OF LEASE & ROYALTY DOLLARS 13 (2012) (referencing the role of coal companies in splitting property into surface and mineral estates).

population been poorer? Wealthier? How many other municipalities are facing the opportunity of economic development from fracking and the threat of its departure if they dare consider regulation? What factors, other than money, might influence the outcomes of negotiations between these towns, their residents, and fracking companies? This Note hopes to help answer some of these questions as fracking development continues throughout the United States. More generally, it hopes to illustrate how a particular legal-economic system may structure the ways in which actors negotiate fracking development at local and regional scales. Because of fracking's still contested environmental and socio-economic impacts, the patterns of fracking development engendered by this legal-economic system have important implications for the ecology and public welfare of U.S. localities.

In Part I, the Note proceeds by laying out four basic scenarios for fracking development in municipalities. The rest of the Note explores how various factors and legal regimes influence the roles of actors in realizing these different scenarios. Part II describes the relevant macro factors, local actors, and local dynamics through which fracking development plays out. Part III provides a rough description of the various legal regimes that structure the powers and motivations of actors in the fracking context. Part IV combines all of the above with local government law's distributional effects to posit a general theory of regional distribution for fracking. This analysis suggests that the weak bargaining power of low-income municipalities exposes them to disproportionate risks and unequal economic compensation. Part V maps out the motivations and powers of various actors and the ways in which they may wield those powers. Finally, Part VI deploys part of the framework to analyze a specific statute recently enacted and still subject to litigation in Pennsylvania.

In the course of developing this Note, I have found Duncan Kennedy's *Legal Economics of U.S. Low Income Housing Markets in Light of "Informality" Analysis*¹⁶ especially helpful as a model for mapping complex interactions and dynamics. Because actors and interests in the U.S. fracking industry partially parallel those within U.S. housing markets,¹⁷ I draw heavily from the form and general substance of Kennedy's essay throughout this Note, particularly Parts I, II, III, and V.¹⁸

¹⁶ Duncan Kennedy, *Legal Economics of U.S. Low Income Housing Markets in Light of "Informality" Analysis*, 4 J.L. Soc'y 71 (2002–03).

¹⁷ Here, I mean that the actors and interests surrounding property (and its monetary value), local development, public welfare, and various levels of governmental decision-making are similar in many development contexts. Indeed, fracking development is even more analogous to many forms of local development that bring potentially detrimental impacts (e.g., casinos, power plants, mining).

¹⁸ In particular, I borrow the following terms from Kennedy: macro factors, local actors, private rights, regulatory overlay, players, legal cards, stakes, property interests, service providers, and policy intellectuals. *Kennedy*, *supra* note 16.

I. FOUR FRACKING DEVELOPMENT SCENARIOS

Based on stories like Mt. Pleasant's and on economic and sociological literature, I describe four basic scenarios that typify the kinds of changes that fracking development may bring to U.S. municipalities.¹⁹

The first scenario I call the *uncontrolled development scenario*. In this situation, the fracking company leases out a large proportion of the available mineral rights and invests large amounts of capital in fracking infrastructure and political goodwill within the municipality. It employs many local residents and increases business for many more. The town becomes a sort of company town in which the fracking company largely controls the laws and economy. As in Mt. Pleasant, the town is overrun with trucks, dust, noise, and workers. The municipality becomes crisscrossed with typical fracking infrastructure — natural gas piping, drilling pads, compressor stations, and wastewater storage pits. Any dissenting voices gradually migrate to other municipalities, either selling their land or renting it out and perhaps leasing their mineral rights — if they have any — to the fracking company. The municipality will likely experience some type of boom-bust cycle or resource curse. If Mt. Pleasant had capitulated to the fracking company's demands, this uncontrolled development scenario probably would have occurred.

In an *at-risk development scenario*, the fracking company leases out any amount of mineral rights and invests any amount of capital in infrastructure and local politics. The ability of the municipality to mitigate the various impacts of fracking while capturing the economic benefits remains in question. Political divisions run deep as different actors pursue conflicting interests. All actors operate in a context of extreme uncertainty. The situation will likely either deteriorate into *uncontrolled development* or stabilize into *controlled development* as local actors respond to the situation and to one another. This was Mt. Pleasant until it passed its conditional use zoning ordinance, and Range ceased development in the municipality.

In a *controlled development scenario*, the municipality has passed laws that guard it and its constituents from the risks and impacts that the municipality deems more costly than their marginal economic benefits. Fracking companies interact with private actors and local government accordingly. The companies may invest large amounts of capital and bring much development to the area, but the municipality and its citizens have control over the location and operation of wells, the use of local roads, and the amount of taxes and fees

¹⁹ Note that, for the purposes of this Note, the term "municipality" encompasses all sub-state local governments such as counties, townships, cities, and villages. Because the lowest unit of local government with relevant regulatory powers depends on the state, this analysis applies to different levels of local government in different states. For instance, in some states the lowest level of local government is the county, rather than the city or the township.

needed to pay for increased public services and other mitigation techniques. This is Mt. Pleasant after it passed its zoning ordinance.²⁰

In a *complete exclusion scenario*, the municipality uses its zoning powers to bar oil and gas operations. Fracking companies must either look elsewhere for leasing and development opportunities, put political pressure on the municipality to amend its laws, challenge the ordinance in state court, or lobby the state government to supersede local zoning powers.²¹

II. MACRO FACTORS, LOCAL AND REGIONAL ACTORS, AND LOCAL-REGIONAL DYNAMICS

The way in which any given municipality responds to the prospect of fracking development — and thus the particular scenario that a municipality experiences — depends largely on the legal and economic regimes structuring the interactions of local actors. In this Part and those following, the Note examines the causal influences driving fracking development and the legal contexts structuring the powers and interactions of local actors.

Two layers of causal influences drive the distributional dynamics of fracking: macro factors and regional actors. At the macro level, the fracking industry is influenced by the national and international demand for natural gas which varies with fluctuations in economic activity, demographic changes (e.g., birth rate, income, lifestyle), changes in prices of alternative sources of energy, and shifts in long-term weather patterns (i.e., demand for indoor heating). Influencing the local actors that interact with fracking companies and each other are changes in the national economy, the national real estate market, the national job market, and the national network of news and information generated around the topic of fracking development.

These macro factors affect particular municipalities through their interaction with a multitude of local and regional actors. Most obvious, fracking companies and landowners are negotiating the leasing of mineral rights for fracking, and the strength of their respective bargaining positions depends in part on the aforementioned macro factors.²² Of equal, if not greater importance are the state and local governments, which aim to serve their constituencies'

²⁰ For a more developed example, see SANTA FE CNTY. GENERAL PLAN: OIL & GAS ELEMENT (2008) (on file with the Harvard Law School Library); SANTA FE CNTY., N.M., Ordinance 2008-19 (2008), available at <http://perma.cc/0qUJZV6SsQj>. For a discussion of this plan's merits, see Robert H. Freilich & Neil M. Popowitz, *Oil and Gas Fracking: State and Federal Regulation Does Not Preempt Needed Local Government Regulation*, 44 URB. LAW. 533, 556–75 (2012).

²¹ See, e.g., *Norse Energy Corp. USA v. Town of Dryden*, 964 N.Y.S.2d 714, 724 (N.Y. App. Div. 2013) (holding that New York oil and gas statutes “[do] not preempt, either expressly or impliedly, a municipality’s power to enact a local zoning ordinance banning all activities related to the exploration for, and the production or storage of, natural gas and petroleum within its borders”).

²² See *infra* Part IV.C.

competing interests within regional and national contexts.²³ Through regulation, taxation, and zoning, state and local governments attempt to mediate the conflicting interests of economic development, social stability, and public and environmental health. Meanwhile, these same governments deliver services (e.g., road maintenance, public schools, police, and emergency response) to localities, and control publicly owned lands with interests in both protecting that land from damage (e.g., preventing environmental degradation from fracking) and extracting its value (e.g., leasing the land for fracking). Informing the actions of local and state governments are organized interest groups such as property owners, tenants, environmentalists, unions, non-unionized employees, owners of local businesses, the unemployed, and whoever else happens to care about fracking in the state or locality.

Other key institutional actors include banks, mortgage companies, and insurance companies. They act peripherally as service providers through the provision, or refusal, of capital and the protection of it. Thus, they enable or limit other local actors such as landowners, fracking companies, businesses, and local governments.

A web of legal regimes — ranging from the U.S. Constitution to local ordinances — structures the ability of the fracking companies, landowners, governments, various interest groups, and economic institutions to influence each other's behavior as they negotiate conflicts and pursue their differing and overlapping interests. The law's configuration of these powers may achieve momentary equilibria — “partial equilibri[a]”²⁴ — and produce predictable outcomes, which fall within the particular scenarios outlined in Part I. More likely, however, the outcomes of interactions sparked by fracking development will depend on the local-regional dynamics²⁵ produced by local and regional actors' unique configuration of preferences and their imperfect navigation of uncertain circumstances.

In the context of these dynamics, the outcomes of fracking development in any given municipality or region are not entirely predictable. The decision of one actor may shift the balance of power and influence others' decisions, which in turn influence the original actor. This type of feedback loop — or “circular causation”²⁶ — has the potential to produce disproportionate shifts in power and lead to unexpected development scenarios from the initial decisions of a few actors. For instance, the decision of a few middle-income landowners to

²³ The federal government remains largely uninvolved with the regulation of fracking on non-federal land up to the time of this writing. *See, e.g.*, Abrahm Lustgarten, *EPA's Abandoned Wyoming Fracking Study One Retreat of Many*, PROPUBLICA (July 3, 2013, 10:58 AM), <http://perma.law.harvard.edu/0EAD5jAVmbS>.

²⁴ *See* KENNEDY, *supra* note 10, at 89 (explaining how repeated bargaining will result roughly in the same outcome when all relevant factors remain constant).

²⁵ Here, I adapt Kennedy's discussion of “neighborhood dynamics” to the context of fracking. *See* Kennedy, *supra* note 16, at 75–76. For a more abstract discussion of Kennedy's theory of law and social structure as developed from the works of Robert Hale and Michel Foucault, see generally KENNEDY, *supra* note 10.

²⁶ Kennedy, *supra* note 16, at 75.

lease out land to fracking companies and the subsequent development may cause wealthier neighbors to sell their land and leave the area. As wealth flees and property values decline, those who stay become more dependent on fracking companies, potentially leading to an uncontrolled development scenario. On a broader scale, the decision of a few low-income municipalities to permit fracking operations could generate social, environmental, and economic effects that spill over into other municipalities and influence their decisions on whether to permit fracking.

Local-regional dynamics are complicated by “areal factors,” the idea that “actors make choices on the basis of guesses about what will happen and contribute by their guessing both to unanticipated outcomes and to self-fulfilling prophecies.”²⁷ Some regions or individual municipalities may be especially resistant to the above dynamics, creating a “hyperstable equilibrium.”²⁸ As fracking development increases (if it occurs at all), local actors like middle-income landowners, or middle-income municipalities, may tolerate dramatic changes until they reach a “threshold” at which point they dramatically change their behavior and the municipality, or entire region, shifts into another development scenario.²⁹ The hyperstability may stem from a collective decision to resist or tolerate fracking development. Meanwhile, local actors may face a prisoner’s dilemma in which the individual calculations of each landowner or municipality encourage fracking development, despite the fact that collective resistance could protect the community or the region from unwanted fracking impacts.³⁰ Indeed, the decision of a landowner or even an entire municipality to permit fracking development may leave their neighbors with land that receives none of the benefits of fracking development still subject to all the nuisances and impacts that fracking development brings.³¹

This local-regional dynamics approach “is not causal, at least not in the usual sense of the term.”³² It typifies scenarios, like the four described in Part I.

[The dynamics approach] describes the patterns of interaction, between boundedly rational actors with imperfect information facing high transaction costs for coordinating their strategies, that can account for the scenarios. The dynamics approach does not explain the initial configuration of material circumstances, preferences, and strategic biases that is the precondition for the unfolding of the particular dynamic that occurs.³³

²⁷ *Id.*

²⁸ *Id.* at 76.

²⁹ *Id.*

³⁰ This dynamic also falls under the label “race to the bottom” and, in certain circumstances, “beggar-thy-neighbor.”

³¹ See, e.g., Jared B. Fish, *The Rise of Hydraulic Fracturing: A Behavioral Analysis of Landowner Decision-Making*, 19 BUFF. ENVTL. L.J. 219, 247–58 (2011–12).

³² Kennedy, *supra* note 16, at 76.

³³ *Id.*

Despite its incomplete ability to predict causality, this dynamics approach does offer insight into the way that law can contribute to the tendency of particularly situated municipalities and entire regions to fall into the different scenarios of fracking development. And it sheds light on how at-risk or controlled development at a local or regional level could quickly slip into either the uncontrolled development scenario or the complete exclusion scenario.

III. THE LEGAL CONTEXT OF FRACKING

The law plays a large role in determining the outcomes of local actors' negotiations by defining the strength of their bargaining tools and the quality of their alternatives. Indeed, whether a municipality succumbs to uncontrolled development, becomes at-risk to uncontrolled development, controls fracking development, or completely excludes it depends, in large part, upon the structure of the law.

With fracking, the relevant legal structure has three layers. The first layer consists of *private rights*, which may be augmented or restricted by contracts and which are enforced almost exclusively by landowners, tenants, and neighbors through civil lawsuits or alternative dispute resolution mechanisms like arbitration. Police, prosecutors, and criminal law operate in the background as deterrents against blatant misconduct by errant parties. The second layer is the *regulatory overlay* of rules governing the powers of state and local bodies to intervene in matters of environmental protection, drilling safety, health standards, infrastructural requirements, zoning, mitigation of the direct and indirect effects of fracking development, etc. The third layer I label broadly as *local government law*.³⁴ It is the constellation of state laws that either enable or prevent municipalities from exercising powers like the regulation of land use, the provision of public services, and the levying of taxes.

Of particular importance are the legal regimes' provision of "legal cards" which local actors may "play [] along with other cards, such as sheer economic power, [control of and] access to information, political clout," irrational behavior, and criminal threats, in the pursuit of their particular interests and objectives.³⁵

A. *Private Rights*

Private actors, such as landowners, tenants, and neighbors, may enforce their rights through civil actions in court or alternative dispute resolution mechanisms — assuming that they have not contracted away the relevant rights, and that they possess the resources and know-how to do so. If a private actor

³⁴ By local government law, I mean the laws that empower local governments to exercise legislative and police powers. For an introduction, see generally GERALD E. FRUG ET AL., *LOCAL GOVERNMENT LAW: CASES AND MATERIALS* (5th ed. 2010).

³⁵ Kennedy, *supra* note 16, at 77; see *infra* Part V.

prevails, courts will either award her damages to be paid by the perpetrator for the rights violation, issue an injunction ordering the perpetrator to cease its unlawful conduct in the future, or both.

Civil lawsuits regarding fracking arise under either the common laws of torts or contracts. Under tort law, private actors may vindicate their rights under the doctrines of trespass and nuisance either to exclude others from their property, or to limit others' actions if they are causing the rights holder harm, respectively. Contract law, on the other hand, governs the transfer of property from one owner to another or from an owner to a tenant. It also allows for the creation, between contractual parties, of specific duties that are generally independent of rights or duties that existed beforehand (e.g., the duty to develop property leased for oil and gas operations).³⁶

Courts play a large role in determining the specific rights of parties and thus the power dynamics between them. They draw upon and interpret both particular rules and general principles, and then apply those rules to the facts found during litigation. State governments — and local governments to a much lesser extent — may also create, nullify, and alter the rights of private actors. Unless inconsistent with either the state constitution or the federal Constitution, this legislative law overrides prior judge-made law.

In the fracking context, the ability of rights holders to recover compensation for potential nuisances like air and water pollution should be a major consideration in negotiations with fracking companies. In the absence of clear legislation, the often attenuated nature of links between fracking, pollution, and latent health effects create ample room for courts to make distributive decisions as they interpret existing law, apply it to new situations, and ultimately decide the rules.³⁷

State courts and legislatures have already begun to shape the rights of fracking companies and landowners in disputes over split estates, subterranean trespass, and rights pooling. Regarding split estates (properties which have been split into mineral rights and surface rights), most state courts have decided that, barring any particular legislation or contractual language, mineral rights holders have an implied right to access the surface land to exploit the minerals beneath — an implied easement by necessity.³⁸ Regarding subterranean trespass, courts have modified the property right of absolute exclusion to allow fracking companies to extract the oil and gas from underneath a non-consenting party's property in the name of economic efficiency, known as the capture doctrine.³⁹ Finally, under contract law, mineral rights holders may “pool” (or combine) their rights to prevent unfair capture and inequitable mineral extraction.

³⁶ See David E. Pierce, *Developing a Common Law of Hydraulic Fracturing*, 72 U. PITT. L. REV. 685, 697–98 (2011) (discussing role of technological innovations in expanding contractual duties of oil and gas lessees to develop).

³⁷ See *id.* at 696–97.

³⁸ *Id.* at 687–88 (“This implied easement by necessity gives the mineral owner the right to make ‘reasonable use’ of the surface to explore for, develop, and produce oil and gas from the mineral estate.”).

³⁹ *Id.* at 690–93; see also Fish, *supra* note 31, at 249–58.

Many states have passed “forced pooling” laws, which force landowners to pool their rights if a gas company has obtained the rights to enough surrounding land.⁴⁰

Private rights also bind public entities. State and federal statutes, state constitutions, and the federal constitution all create rights of action against state and local governments. For instance, fracking companies may vindicate their property rights in a regulatory takings claim if a state or local government regulates mineral rights so as to make them effectively worthless. A local government may sue a state for mandating misuse of its constitutionally bound police powers.⁴¹

Federal statutes and the U.S. Constitution create rights of action against the federal government. Should Congress or the U.S. Environmental Protection Agency (“EPA”) choose to act, their actions would be open to federal suits analogous to state suits.

B. *The Regulatory Overlay*

The fracking companies, landowners, governments, interest groups, and economic institutions do not claim and negotiate their private rights within a vacuum of private interactions and civil lawsuits. These various private and public actors also face a complex web of overlapping regulations defined and enforced by local, state, and federal public bureaucracies.⁴² For instance, state environmental protection agencies regulate many different aspects of the natural gas drilling and extraction processes. They range from the setback requirements of gas wells, to the types of chemicals and well casings used in fracking, to the specifications and locations of wastewater storage pits.⁴³ Depending on their powers, local governments may regulate and tax many ancillary fracking activities. They might use particular zoning ordinances to limit the location of fracking activities, or require fracking companies to provide certain types of housing for its workers, or require fracking companies to pay special taxes for their use of municipal roads. However, just as within municipalities, the pervasive impacts of fracking spill out onto a regional landscape, often leaving municipalities powerless to exact compensation for the externalities caused by activities in neighboring municipalities.⁴⁴

⁴⁰ Fish, *supra* note 31, at 263–65.

⁴¹ See, e.g., *Robinson Twp. v. Commonwealth*, 52 A.3d 463, 484 (Pa. Commw. Ct. 2012) (holding partially that Pennsylvania statute requiring municipalities to permit oil and gas operations in all zoning districts violated substantive due process because “it allow[ed] incompatible uses in zoning districts and does not protect the interests of neighboring property owners from harm, alters the character of the neighborhood, and makes irrational classifications”).

⁴² The numerous exceptions to federal environmental law for fracking have made federal regulations largely irrelevant to date. See *Federal Law: Loopholes & Exemptions*, ENVTL. DEF. CTR., <http://perma.law.harvard.edu/0x8YPC7pD2V/>.

⁴³ See, e.g., 58 PA. CONS. STAT. §§ 3215, 3217(b), 3304(b) (2013).

⁴⁴ See Christopherson & Rightor, *supra* note 4, at 360–61.

C. Local Government Law

As “creatures of the state,” local governments depend on state constitutions and statutes for the entirety of their powers.⁴⁵ Depending on the state, a municipality⁴⁶ has either more general powers confined to local issues — Home Rule⁴⁷ — or only powers expressly granted by state law — Dillon’s Rule.⁴⁸ Because Home Rule often provides more leeway to municipalities while Dillon’s Rule confines them to the letter of state law, whether municipalities operate under one rule or the other may have serious consequences for political and legal battles over the extent of their power to regulate fracking.

Regardless of the state’s enabling rules, however, local governments venturing outside of their conventional powers run up against a judiciary that usually favors the limitation of municipal power. Under Dillon’s Rule, courts strictly interpret the language of state law.⁴⁹ Under Home Rule, courts broadly construe the confinement of municipal powers to “purely local” issues,⁵⁰ effectively nullifying any semblance of local government autonomy.⁵¹ And if a local ordinance touches upon matters already regulated by the state (e.g., state oil and gas laws), courts may rule that state law preempts and thus invalidates the local law.⁵²

Nonetheless, in their small spheres of authority, municipalities often do have immense power. Two examples are particularly relevant to fracking. First, most states grant municipalities broad land-use zoning powers that receive strong judicial deference despite their prevalent role in social and economic exclusion.⁵³ Second, local tax bases provide substantial resources to wealthy municipalities that then offer both low tax rates and premium services to their residents.⁵⁴ Notably, the former sphere provides immense power against uncontrolled fracking development while the latter, municipalities’ reliance on local taxes, *promotes* uncontrolled fracking development as they compete with one

⁴⁵ GERALD E. FRUG, CITY MAKING: BUILDING CITIES WITHOUT BUILDING WALLS 17 (1999) (“States have absolute power over cities.”).

⁴⁶ See *supra* note 19.

⁴⁷ FRUG, *supra* note 45, at 50–51.

⁴⁸ *Id.* at 47.

⁴⁹ *Id.*

⁵⁰ Historically, the confinement to local issues excludes local regulation of “crime, domestic relations, wills and administration, mortgages, trusts, contracts, real and personal property, insurance, banking, [and] corporations.” HOWARD LEE MCBAIN, THE LAW AND THE PRACTICE OF MUNICIPAL HOME RULE 673–74 (1916).

⁵¹ FRUG, *supra* note 45, at 51 (“Given the fact that virtually every city action affects people who live in neighboring cities, as well as nonresident visitors, any [city action] can easily be seen as frustrating state objectives.”).

⁵² The three types of preemption are express preemption (state statute expressly bans local laws in a particular context), conflict preemption (local law would undermine the state law’s purpose), and field preemption (the state has regulated the area of law to such an extent that any local ordinance would conflict with the state’s powers). See Shaun A. Goho, *Municipalities and Hydraulic Fracturing: Trends in State Preemption*, 64 PLANNING & ENVTL. L. 3, 5 (2012). For an analysis of preemption cases regarding fracking regulation across multiple states, see *id.* at 5–7.

⁵³ See FRUG, *supra* note 45, at 144.

⁵⁴ See *infra* Part IV.B.

another, attempting to attract fracking development for the increased local tax revenues.

D. *The Background Rules Thesis*

The background rules thesis claims that the matrix of private rights, governmental regulations, and local government laws fundamentally shape the powers and interactions of the various actors at play in fracking development.⁵⁵ For instance, the decision by a court to allow fracking companies to drill with impunity underneath the property of non-consenting landowners has real consequences for the bargaining outcomes between fracking companies, landowners, and communities. And the decisions by state courts and legislatures regarding the extent of municipalities' powers to regulate fracking, in large part, structure how local governments respond to fracking development. Furthermore, when states define the powers of local governments, they roughly determine the distribution of people, power, wealth, and commerce across the counties and municipalities that are encountering potential fracking development, as discussed in Part IV.

However, the law's provision of powers does not determine every single action by every single actor. Instead, it determines the patterns of interactions. As explained by Kennedy:

we do not assume that the legal system as a whole deliberately decrees one thing or another Rather, we conceptualize the network as providing background rules that constitute the actors, by granting them all kinds of powers under all kinds of limitations, and then regulating interaction between actors by banning and permitting, encouraging and discouraging particular tactics of particular actors in particular circumstances.⁵⁶

Therefore, when a landowner interacts with a gas company, she considers not only her own legal cards — the right to exclude, the right to hold out for more money, and other economic opportunities — but also how her neighbors, her local government, and the gas company will play their legal cards and the relative impact of those moves on hers. These calculations extend to and vary with each actor, and create the broader trends posited in the following Part.

IV. THE DISTRIBUTION OF FRACKING ACROSS LOCAL JURISDICTIONS

Thus far, this Note has described the four basic scenarios of fracking development, the macro factors and local dynamics influencing how local actors may interact to produce these scenarios, and the legal regimes structuring these actors' powers and interactions. This Part combines those ideas with broader

⁵⁵ See KENNEDY, *supra* note 10, at 89–100.

⁵⁶ Kennedy, *supra* note 16, at 80.

theories about the law's role in distributing wealth across local jurisdictions. In doing so, it posits a framework to describe how fracking development will interact with and be distributed across low-income, middle-income, and upper-income municipalities.

A. *Geographic Limitations*

Two primary layers of geographic limitations dictate the broader distribution of fracking. On a national scale, the discrete locations of large shale deposits limit fracking to the regions lying over the top of these geological formations.⁵⁷ Within these regions, dense urban infrastructure in and around cities limits fracking to mid-to-low-density suburban and rural areas with enough open land to accommodate fracking operations.⁵⁸ Lack of adequate infrastructure (such as roads suitable for transporting equipment and pipes for transporting the extracted gas) in particular localities may further limit the areas amenable to fracking.

B. *The Distribution of Wealth Across Local Jurisdictions*

Over the past century, macro factors like the globalization of trade and rapid technological developments have caused a decline in traditional rural industries (e.g., farming, mining, and manufacturing) and a consequent population shift from the countryside into metropolitan regions.⁵⁹ Localities have had little to no influence over these broader trends. More importantly, state laws have often left local governments with little economic power to adapt to these changes. And declining populations, income levels, and property values have slowly degraded rural municipalities' most important source of revenue — their tax base.⁶⁰

The strong reliance of local governments on their shrinking tax bases has only reinforced this impoverishment of rural municipalities.⁶¹ As their constituents have become more desperate for economic development, rural municipalities have lost their ability to provide the kinds of services and local conditions that generate and attract economic opportunity.⁶² The requisite resources for modern development — “efficient transportation networks [to connect busi-

⁵⁷ For a description and a map, see U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 1, at 14–16.

⁵⁸ For instance, state regulations require natural gas wells to be, at least, specific distances — setback requirements — from buildings, parks, ecological systems (e.g., water bodies, wetlands, protected forests), and the like. See *supra* Part II.B; see also *infra* Part IV.B.

⁵⁹ See MYRON ORFIELD, KENTUCKY'S RURAL/METROPOLITAN FISCAL DIVIDE: A STATEWIDE AGENDA FOR SUSTAINABLE COMMUNITIES (2000).

⁶⁰ See *id.* at 6.

⁶¹ *Id.* (“Thus, the ability of a community to generate sufficient revenue ultimately depends on characteristics of its residents — their population, the market value of their property, and the amount of money they make at their jobs. The more favorable these characteristics are in a community (large population, high property values, high-paying jobs), the better able it is to generate the revenues necessary to pay for public infrastructure and services without raising the tax rate.”).

⁶² *Id.* at 6.

nesses to] customers throughout the world, a highly educated and skilled workforce [] to attract new employers, and quality schools [to attract] families with children” — slip further and further out of reach as these rural municipalities decline into poverty.⁶³

Meanwhile, wealthier suburban and exurban municipalities benefit from the ample tax revenues they receive from larger populations, economic activity, and property values.⁶⁴ With relatively lower needs and more taxable resources, these municipalities have the luxury of lower tax rates.⁶⁵ The lower tax rates and higher quality services tend to attract individuals and families from across the region, and as competition for homes in these low-tax, high-service municipalities increases, the resulting rises in property values, property taxes, and rents slowly push poorer households out.⁶⁶ Over time, the wealth divide between municipalities deepens and ossifies.⁶⁷ While high-income municipalities continue to provide the low tax levels and high quality services that attract wealthy, well-educated workers and economic development, the low-income municipalities remain burdened with high taxes, a population in need of relatively more services, and inadequate funds to establish the kinds of programs and infrastructure that would provide opportunities to their citizens and attract significant economic activity to their jurisdictions.⁶⁸

This broader pattern between rural and metropolitan areas also manifests among suburban and exurban municipalities on the edges of metropolitan regions.⁶⁹ Far from the vision of suburbia as a monolithic land of plenty, American suburbs have become increasingly divided by race and class. While unexplored, it would not be surprising to find similar dynamics at play between the municipalities within rural regions.

At the regional scale, it is this distributional landscape of wealth and economic power, fluctuating across rural and suburban municipalities, in which fracking companies are operating.⁷⁰ The distribution is a complicated spectrum. However, to explore the bargaining interactions between fracking companies and municipalities, I simplify this spectrum by grouping municipalities into three categories: low-income municipalities, middle-income municipalities, and upper-income municipalities.

⁶³ *Id.* at 3, 6–7.

⁶⁴ *Id.* at 7.

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.* at 9.

⁶⁸ *Id.*

⁶⁹ See MYRON ORFIELD, *AMERICAN METROPOLITICS: THE NEW SUBURBAN REALITY* 15–17, 33–42, 59 (2002). For a study particular to one metropolitan region facing fracking development, southwestern Pennsylvania, see MYRON ORFIELD, *PITTSBURGH METROPOLITICS: A REGIONAL AGENDA FOR COMMUNITY AND STABILITY* (1999).

⁷⁰ For striking visuals of these patterns on a national scale and in two fracking regions, consult the following three maps: *Poverty in the United States*, HOUS. ASSISTANCE COUNCIL, <http://perma.cc/0wQCqryAWHx> (mapping poverty by county in the United States using data from the 2010 census); *Pittsburgh Region: Tax Capacity per Household by Municipality, 2008*, INST. ON METROPOLITAN OPPORTUNITY, <http://perma.cc/0ffyN3wH6CP>; and *Cincinnati Region: Market Value of Property Per Capita by Municipality and County Unincorporated Area, 2008*, INST. ON METROPOLITAN OPPORTUNITY, <http://perma.cc/0SLQRBFnW9s>.

C. Bargaining Power and Fracking Development Scenarios Revisited

Local governments are inevitably the actors who must confront fracking development and its impacts because individual landowners have private interests that dictate against collective interests. Indeed, when state laws provide fracking companies the privilege of creating pervasive environmental risks, invading subterranean property, and posing unmitigated demands on local resources and services (public and private), landowners tend to lease out their land rather than hold out in the hopes that others will hold out too.⁷¹ Furthermore, in countless municipalities, fracking companies acquire drilling rights before landowners even have a chance to consider the risks or consult their neighbors or communities.⁷² In countless more municipalities, many landowners may not even live on or nearby the property they own.⁷³

The bargaining power of municipalities depends upon such factors as (1) the extent of the municipality's power to regulate fracking development; (2) the scarcity of natural gas-rich land in the region; (3) the municipality's strategic position (e.g., the amount of natural gas underneath the locality; the municipality's location relative to roads and pipelines); (4) the municipality's bargaining resources (e.g., the amount of wealth that allows it to hold out instead of giving in); (5) the municipality's bargaining skills; (6) the municipality's understanding of what it stands to gain, to lose, and to risk;⁷⁴ (7) the municipality's internal solidarity; (8) the municipality's cooperation with others in the region; and (9) the municipality's alternatives to fracking development.

As explored above in Part III, state and federal laws largely determine many of these factors. The extent of local governments' power to regulate fracking and impose taxes or fees on drilling companies derives directly from state statutes, state constitutions, and the U.S. Constitution, all as interpreted by state and federal courts. State and federal laws govern how much information companies must generate and disclose about fracking operations and their impacts on localities. Finally, state laws define the general financial powers of local governments,⁷⁵ and determine the segregation of wealth across jurisdictions. In turn, this distribution of wealth strongly influences localities' bargaining resources, their willingness to cooperate with surrounding localities (with which they normally compete), and their alternatives to fracking development.

The way in which the constellation of state — and, to a lesser extent, federal — law shapes these bargaining powers reveals the law's role in rendering *low-income municipalities* generally more vulnerable to an uncontrolled de-

⁷¹ See *supra* Parts II and III; see also Fish, *supra* note 31, at 247–48, 253.

⁷² Matthew Philips, *A Fracking Pioneer Abandons One of its Earliest Land Grabs*, BUSINESS-WEEK.COM (Sept. 10, 2013), <http://perma.law.harvard.edu/ODDKh1ysC1U/>.

⁷³ See TIMOTHY W. KELSEY, ALEX METCALF & RODRIGO SALCEDO, PENN STATE CTR. FOR ECON. AND CMY. DEV., MARCELLUS SHALE: LAND OWNERSHIP, LOCAL VOICE, AND THE DISTRIBUTION OF LEASE AND ROYALTY DOLLARS 12–13 (2013), available at <http://perma.cc/0N7k7KwA9gR>.

⁷⁴ Interesting analysis remains to be done on this issue. For instance, how do scientific, economic, and sociological discourses influence both the information that local actors receive and the way in which they interpret it?

⁷⁵ See *supra* Part IV.B.

velopment scenario. Low-income municipalities need the development that oil and gas can bring, but when negotiating with fracking companies, they have few resources and few to no alternatives. Because they are competing economically with other municipalities, they have less time — and thus often less information — for considering the costs and benefits. Furthermore, many municipalities face the potential costs of spillover impacts without standing to gain from the drilling that generates those impacts, and low-income municipalities possess fewer resources to mitigate those impacts.

In effect, the legal-economic system has created a structure of circumstances that coerces low-income municipalities into either accepting fracking development, accepting it on riskier terms than they would desire otherwise, or both.⁷⁶ Indeed, this analysis suggests that low-income municipalities will agree to a lower degree of regulation — and thus increased risks ranging from environmental contamination, to prohibitive rents, to a collapse in property values — and a lower degree of economic compensation.

On the other side of the spectrum, *upper-income municipalities* have the most resources to bargain and to mitigate spillover effects, more time to consider the costs and benefits, and more alternatives. They are more likely to decide that the benefits of fracking are not worth the risks and to exclude it altogether. And should they permit fracking, they are more likely to do it on terms that better protect them from the risks and impacts of fracking development. *Middle-income municipalities* fall somewhere in the middle, and their probabilistic fate remains more indeterminate. The specific development scenario in which a middle-income municipality may fall depends more on the local dynamics at play. Still, relative to low-income localities, they will likely establish more protections against fracking, should it be permitted.

D. Environmental Justice and Regional Alternatives

The vulnerability of low-income municipalities to an uncontrolled development scenario creates the clear likelihood — perhaps inevitability — of increased environmental, social, and economic risk across low-income communities. However, more insidious than this likely environmental and economic injustice is the idea that the low-income municipalities have a real choice in the matter. Indeed, the legal-economic system and the reasoning behind it often disguise inevitable outcomes of unequal bargaining as free choices within a free market when, in reality, it has created a system in which it is impossible to resist the pressures of economic need.⁷⁷ Though this Note does not encompass a re-imagining of our legal-economic system, it does reveal the desirability of an alternative that empowers local governments to cooperate

⁷⁶ See Robert Hale, *Coercion and Distribution in a Supposedly Noncoercive State*, 38 POL. SCI. Q. 470, 470–75, 478 (1923) (providing a general theory of state coercion that illustrates the more particular argument of this Part).

⁷⁷ See *id.*

rather than to compete,⁷⁸ a system in which municipalities make development decisions in a setting that acknowledges the distributive aspects of our legal-economic system's foundations.⁷⁹

V. PLAYERS, LEGAL CARDS, ARGUMENTS, AND STAKES IN FRACKING⁸⁰

While the prior Part explores the behavior of municipalities within regional contexts, this Part maps out the powers and motivations of various players acting throughout the different levels of government. It aims to illuminate the political atmosphere that is shaping governmental responses to proposed and ongoing fracking development.

A. *The Players*

Property interests include “residential, commercial, industrial and institutional (governmental and non-profit) owners of land and buildings, and tenants from each of these categories.”⁸¹ Because they all face different variations of individual and community motivations, their interests are “complexly divided.”⁸² Different groups will gain or lose depending on whether fracking development enters the locality and on how it is managed.⁸³

Development interests include three distinct groups: those for fracking and for general economic development, those against fracking and for economic development, and those against both fracking and economic development. Although actors' positions are complicated by the degree to which they favor or disfavor fracking or development, all local actors — ranging from residents and commuters to businesses and fracking companies — fall into one of these groups. This category's all-inclusive nature encompasses a large portion of the local political battles. Many people in favor of fracking, such as landowners and local business owners, hope to receive their piece of the natural gas pie, and may be in direct or indirect competition with one another. Those against fracking (and either for or against general development) have other visions for the future of the locality. These complex, overlapping, and opposing interests span groups of actors and create the possibility of conflict between and within groups along lines of class and ideology.

⁷⁸ For one perspective on potential alternatives based on regional cooperation, see FRUG, *supra* note 45, at 54–112.

⁷⁹ See Felix S. Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809, 818–21 (1935) (explaining legal concepts as existing within their own independent system which masks and ostensibly ignores the true stakes of law).

⁸⁰ I base this Part on Part VI in Duncan Kennedy's *Legal Economics of U.S. Low Income Housing Markets in Light of “Informality” Analysis*, *supra* note 16, at 91. That article “proposes a general framework for understanding the phenomenon of neighborhood transitions [(e.g., gentrification)] in low income housing markets in large urban areas.” *Id.* at 71.

⁸¹ *Id.*

⁸² *Id.*

⁸³ See *id.*

Service providers include municipalities, non-profits, banks, mortgage companies, and insurance companies.⁸⁴ The interests of these groups vary along multiple axes and also fall within the other interest categories. The community-based interests of municipalities and non-profits may favor the short-term economic gains but question long-term impacts — economic, social, environmental, and infrastructural. Banks and mortgage companies, usually regional or national, care about local impacts only so much as those impacts may endanger either the ability of lenders to pay back loans, the local economy, or the local housing market.⁸⁵ Insurance companies often decline coverage for land accommodating fracking operations and may refuse coverage for activities ancillary to fracking.⁸⁶

Policy intellectuals exist as actors in all of the above categories, as local activists, professionals in local, state, and federal government, and academics. They are the ones who deliberately theorize the various aspects of fracking — economic, social, and environmental. There are three different categories of policy intellectuals described in this Note.⁸⁷ *Neoliberals* generally believe in the free market and its goals of competition, efficiency, and growth.⁸⁸ They disfavor governmental regulation, and trust that private actors will reach appropriate levels of economic development and risk.⁸⁹ *Public interest oriented actors* are those that strive for compromise, “based on the idea that all groups have valid interests.”⁹⁰ As Kennedy describes, “[t]heir goal is to attain harmony — without hurting anyone too much — while promoting long-term growth for the benefit of all.”⁹¹ Finally, *environmentalists* are wary of the risks and effects of fracking on the environment and public health. Their stances range from complete prohibition to sensible regulation. Within this category is a smaller group, *environmental justice advocates* who concern themselves with the distribution of environmental health impacts across populations — specifically the tendency of impacts to become concentrated among low-income and racial minority populations.

There are many areas of overlap and conflict among the above range of actors and interests. Individual actors in particular situations may find themselves fulfilling multiple roles that produce internal conflicts of interest and ambivalent relationships with other actors. As actors make decisions, the partic-

⁸⁴ *Id.*

⁸⁵ See Roger Drouin, *How the Fracking Boom Could Lead to a Housing Bust*, THE ATLANTIC: CITIES (Aug. 19, 2013), <http://perma.law.harvard.edu/022mzvJt9YP/>.

⁸⁶ *Id.*; see Mary Esch, *Nationwide Insurance: Fracking Damage Won't Be Covered*, HUFFINGTON POST (July 12, 2012), <http://perma.law.harvard.edu/OKjtoYZ9a3/>.

⁸⁷ These categories are loosely based on those described in Kennedy's article, *supra* note 16, at 92–93. Kennedy identifies three types of policy intellectuals: neoliberals, public interest oriented actors, and low income oriented actors. *Id.* For the purposes of this Note, “environmentalists” has replaced “low income oriented actors.”

⁸⁸ See Michael H. Finewood & Laura J. Stroup, *Fracking and the Neoliberalization of the Hydro-Social Cycle in Pennsylvania's Marcellus Shale*, 147 J. CONTEMP. WATER RES. & EDUC. 72, 74 (2012).

⁸⁹ *Id.*

⁹⁰ Kennedy, *supra* note 16, at 92–93.

⁹¹ *Id.*

ular arrangements of interests may quickly transform, disrupt any partial equilibrium, and either trigger the types of circular causation or threshold shifts discussed in Part II.

B. *The Legal Cards*

When an actor has influence in the policy-making processes, she may push for the passage of new laws — or the maintenance of old ones — to shape the various bargaining interactions between fracking companies, landowners, municipalities, and other actors. The actor may also push for inaction. At the local level, municipalities may use zoning to regulate the locations of fracking operations relative to other operations, to existing infrastructure and populations, or to environmentally sensitive areas. Depending on state law, they may go so far as to exclude all fracking within their jurisdictions.⁹² To minimize traffic congestion and maintain roads, municipalities may regulate trucking routes and charge fees for their use by fracking companies. To ensure availability of water resources, they may regulate fracking operations' use of local water resources. To provide adequate public services, they may require development agreements and assessments; or establish new fees, rates, or surcharges; or directly require or prohibit certain actions.

At the state level, state legislatures and executives — having delegated land-use powers to municipalities — may pass statutes and regulations to regulate the particular aspects of fracking: the drilling methods; the water and chemicals used; the storage and disposal of drilling fluids; on-site worker safety; and air, water, and noise pollution. State courts may invalidate local laws if preempted by state law or if beyond the scope of local government powers. State courts may alter tort and contract law to rearrange the rights of property owners and contracting parties. They may also require local governments to pay compensation for regulatory takings when local laws deprive property owners of the use and enjoyment of their property rights.

At the federal level, Congress and the Executive (e.g., EPA) may pass laws or regulations — similar to those of the states — to regulate the fracking processes under existing environmental laws or new ones. Federal courts may invalidate state and local law if preempted by federal law. Similar to state courts, they may require the federal government to pay compensation for regulatory takings.

At all levels, the inevitable existence of under-enforcement creates the corollary threat of increased enforcement by local, state, and federal bureaucracies. This provides another whole set of legal cards. Finally, there are the legal cards of those without access to the policy-making or enforcement processes. They may resort to criminal and tortious conduct to fight for their interests. Here, one extreme would be illegal intimidation of landowners, citizens, or

⁹² *E.g.*, *Norse Energy Corp. USA v. Town of Dryden*, 964 N.Y.S.2d 714, 716 (N.Y. App. Div. 2013).

government officials by fracking companies. The opposite extreme would be the illegal thwarting of fracking development (e.g., property destruction).

C. *The Arguments*

1. *Holders of Property Interests*

Holders of property interests who think fracking will be *good* for them argue that fracking operations will:

- bring large lease and royalty payments;
- increase local rents;
- increase the demand for — and value of — property sitting on top of shale deposits;
- increase funding for local government services.

Holders of property interests who think fracking will be *bad* for them argue that fracking operations will:

- pollute their air and water;
- bring other nuisances like noise, dust, and increased traffic to the area;
- overburden local government services with associated demographic changes;
- reduce property values in the long run;
- destroy the “character” of the locality because of either the industrial nature of fracking or expected demographic changes.

2. *Economic Development Interests*

The local actors in favor of fracking development adopt and expand upon the former property interest arguments. They argue that fracking development will bring jobs and money to the area and its residents. As people in need of housing, food, and services enter the area, local businesses will flourish. The local government will use increased tax flows to mitigate the impacts of fracking, provide higher quality public services, and create a strong local economy. They may argue that fracking is the only way to bring economic opportunity to an area suffering from larger macro trends like the decline of rural industry or the race and class segregation of suburban municipalities.⁹³ They may be divided, to an uncertain extent, about the appropriate role of state and local regulation in fracking development.

Some of those in favor of fracking may nonetheless warn of the potential for boom-and-bust cycles and the resource curse — phenomena common to extractive industries — and encourage slower more sustainable fracking development. They argue that improperly regulated fracking and the sudden influx of

⁹³ See *supra* Part V.B.

money and jobs will outcompete more sustainable local business. The increased demand for housing could push rents higher and force many tenants out of the area in favor of itinerant workers. This potential overdependence of the municipality on fracking could lead to an uncontrolled development scenario, and when the natural gas, its jobs, and its money dry up, the municipality will be left stranded without an economy or population to support it — a boom-and-bust cycle. In a similar vein, they will point to studies showing the slower economic development of resource-rich regions (i.e., resource curse), which develop their resource extraction sectors too quickly and without proper controls.

Pro-development opponents of fracking may adopt some of the economic-risk arguments, but they distrust the idea of sustainable fracking development. They are wary of the various impacts of fracking and question its costs relative to the supposed economic benefits. They argue that the locality should find more sustainable ways to stimulate its economy, attract jobs, and provide public services to those in need. Anti-development actors will seek to maintain the current character of the locality for various reasons.

3. Service Providers

Service providers face conflicting interests when considering whether to support fracking development, and if so, how it should be done. Municipalities must balance their interests in economic development and expanding their tax bases with their duty to protect the welfare of their constituents. The obvious solution is a compromise (e.g., controlled development); however, stories like Mt. Pleasant's reveal the possibility of power imbalances between municipalities and fracking companies.⁹⁴ Financially weak municipalities may argue that lax regulation is the only way to attract the desperately needed economic development. They may argue that the benefits of fracking development outweigh its costs and its risks.⁹⁵

The policies of insurance and mortgage companies will vary depending on their commitment to the locale in question. National insurance companies are becoming increasingly wary of fracking's risks and have begun denying coverage if the property in question hosts fracking operations.⁹⁶ National mortgage companies are beginning to follow suit. They may not only deny mortgages to those who have allowed drilling on their land, but also to those who happen to live nearby.⁹⁷ Meanwhile, local banks, which remain dependent on local development, may oppose fracking and the decline in property values that fracking

⁹⁴ Indeed, it has been suggested that Range Resources took a hard stance on Mt. Pleasant to send a message to other municipalities in which it was operating at the time. *This American Life*, *supra* note 11.

⁹⁵ Orfield argues the same with regard to the use of extravagant public subsidies to attract economic development. ORFIELD, *supra* note 59, at 8. With fracking, lax regulations function as public subsidies.

⁹⁶ See Esch, *supra* note 86.

⁹⁷ See Drouin, *supra* note 85.

often brings.⁹⁸ However, these local banks will have to cope with whatever financial risks ensue.

4. *Policy Intellectuals*

Policy intellectuals take the above arguments and abstract them into their various ideological positions:

Neoliberals generally denounce economic regulation as a paternalistic fetter on the naturally free market. They may concede a need for specific environmental regulations, but would prefer bargaining parties contract for them instead. They think it is best to let fracking companies and property owners carry out arm's-length transactions in pursuit of their interests. Their knowledge that wealthy communities will be able to exclude fracking supports their lack of concern for the potential environmental health effects.

Public interest intellectuals seek pragmatic compromise. They reason that fracking provides the fossil fuels that the country requires for the foreseeable future, but that the process must be done safely. However, the amount of fracking that is necessary and the meaning of "safely" ultimately come down to the various parties' bargaining powers. In effect, these intellectuals support maintaining the existing power balance while finding a utilitarian solution.

Environmentalists also recognize the continued need for fossil fuels but want to shift the bargaining powers in their favor through various political maneuvers. They would prefer to limit fracking development while making it as safe as possible. While they try to stall fracking and other fossil fuel development, they continue to push for more sustainable energy sources.

Environmental justice advocates must walk a fine line. Because they represent the interests of low-income and minority communities, they must grapple with both the potential economic benefits and the environmental health risks that fracking development can bring. Indeed, they must weigh the economic benefits that a community may receive against the disproportionate impacts that the community will face. And if they decide that the benefits of fracking outweigh its risks, they must consider the ability of less powerful and more financially distressed communities to effectively bargain with those more powerful.

D. *The Stakes*

The futures of communities, localities, and regions hang in the balance as these various actors negotiate their interests. Fracking infrastructure — the wells, the piping, the new roads for trucks, the new housing for workers, etc. — may, and in many cases, already has, come to define certain American landscapes and will exist for decades to come. The local reverberations of potential social, economic, environmental, and public health effects may be felt even longer, for better or for worse.

⁹⁸ See *id.*

In the short-term, local businesses and family farms may depend on the money that fracking development offers. Parents may see it as the only way to offer their children better opportunities (e.g., sending them to college or graduate school). Aging adults may see it as the only way to retire comfortably. Those facing financial crises may see it as the only way out. But these groups will also pay the price of fracking development, absorbing all the positive and negative impacts that fracking can bring.

How the array of interests, alliances, and strategies will play out in any given municipality is impossible to know without particulars. How various legal interventions at the federal, state, or local levels will disrupt existing patterns of dynamics and equilibriums in a specific municipality can be completely unknowable. Nonetheless, as illustrated in Part IV above and Part VI below, the framework laid out here provides the tools to think through proposed and potential changes in the law and predict their effects upon the broader patterns of power and distribution.

VI. FRACKING, PA: A BRIEF CASE STUDY⁹⁹

This Part deploys the frameworks of Parts IV and V to analyze a recently enacted — though still legally disputed — Pennsylvania oil and gas statute, Act 13.¹⁰⁰ While the statute regulates everything from the exaction and distribution of drilling fees, to the location and technical specifics of drilling operations, to underground gas and drilling-fluids storage, it is Act 13's limitations on local regulation which have proven the most controversial and which lie at the heart of ongoing litigation, *Robinson Township v. Commonwealth*.¹⁰¹ At issue is whether the state, through section 3304 of Act 13, can legally require municipalities to permit oil and gas operations in *all* of their land use zones: industrial, commercial, and residential.¹⁰²

Notably, none of the parties' arguments before the Pennsylvania Supreme Court touches upon the complicated political and distributional implications of

⁹⁹ This Part is an adapted version of a blog post: Ben Apple, *Fracking, PA: The Legal, the Political, and the Negotiable*, HARV. ENVTL. L. REV. BLOG (Sept. 4, 2013, 12:02 PM), <http://perma.law.harvard.edu/0yNTcT8zomW/>.

¹⁰⁰ 58 PA. CONS. STAT. §§ 2301–3504 (2013).

¹⁰¹ In the final stages of this Note's publication, the Supreme Court of Pennsylvania held that section 3304 of Act 13 is unconstitutional under the Environmental Rights Amendment (Article 1, Section 27) of the Pennsylvania Constitution. *Robinson Twp. v. Commonwealth*, No. J-127A-D-2012, slip op. at 122–29, 161 (Penn. Dec. 19, 2013). Although the Court does cite “disparate effects” as a factor in rendering section 3304 unconstitutional, it does not perform any analysis like that included in this Note. *See id.* at 122–29. Therefore, the analysis in this Part remains unchanged.

¹⁰² More specifically, all operations — excluding drilling fluid-impoundment areas, compressor stations, and processing plants — must be permitted in all zoning districts under conditions no more stringent than those imposed on other industrial uses in the municipality. 58 PA. CONS. STAT. § 3304 (2013). The three excluded activities must be permitted on conditions of setback and noise requirements. *Id.*

the enactment and enforcement of section 3304.¹⁰³ Instead, the parties' briefs focus solely upon the legalistic particulars of substantive due process.¹⁰⁴ A description of the political reality has been left to the dozen or so amicus briefs submitted to the Pennsylvania Supreme Court by interested parties including industry, unions, consultants, environmentalists, property owners, Democratic state legislators, and local governments — all actors within the framework set out above.

However, even the amicus briefs fall flat in their limited analysis of what is at stake. On the pro-section 3304 side of the dispute, the industry hails the benefits of a more uniform and predictable jurisdictional landscape over which it can wander freely.¹⁰⁵ Oil and gas-related unions and consultants praise the plentiful jobs that will come with an industry unhindered by local regulation.¹⁰⁶ An alliance of property owners requests protection from “unreasonable” local zoning and regulation.¹⁰⁷ On the other side of the dispute, municipal officials deplore their potential loss of power “to determine . . . the long-term character of their local communities” and to protect themselves from the risks and impacts of fracking development.¹⁰⁸ Environmentalists paint section 3304 as arbitrary, stressing that the revocation of local zoning powers is completely unnecessary for successful oil and gas development.¹⁰⁹

The snapshot arguments in these amicus briefs miss the ongoing processes of public and private negotiations and local lawmaking that form the nucleus of fracking development.¹¹⁰ If upheld, section 3304 will do more than just take away regulatory options for municipalities and render the fracking landscape more uniform and predictable; it will dramatically shift the balance of bargaining powers between drilling companies, landowners, and local governments as they negotiate so many other aspects of development.

In this bargaining context, section 3304 theoretically leads to four consequences. The first and potentially most salient feature is the provision's forced

¹⁰³ See Brief of Appellants, *Robinson Twp.*, (No. 63 MAP 2012); Brief of Appellees, *Robinson Twp.*, (No. 63 MAP 2012).

¹⁰⁴ See Brief of Appellants, *supra* note 103; see also Brief of Appellees, *supra* note 103. While I acknowledge that legal issues are a large part of what lawyers and courts consider and argue in appellate cases, they also usually address policy considerations. Here, I am arguing that important policy implications are missing from the arguments.

¹⁰⁵ See Brief of Amicus Curiae Civil & Env'tl. Consultants, Inc. at 2–3, *Robinson Twp.*, (No. 63 MAP 2012); Brief of Amicus Curiae Duquesne Light Holdings at 1, *Robinson Twp.*, (No. 63 MAP 2012).

¹⁰⁶ Brief of Amicus Curiae Int'l Union of Operating Eng'rs, Local No. 66, Int'l Union of Operating Eng'rs – Local 542, Metro. Dist. Council of Carpenters, United Ass'n of Plumbers and Steamfitters – Local 47, and Int'l Bhd. of Elec. Workers – Local 712 at 1–3, *Robinson Twp.*, (No. 63 MAP 2012).

¹⁰⁷ Brief of Amicus Curiae N. Wayne Prop. Owners Alliance at 2, *Robinson Twp.*, (No. 63 MAP 2012).

¹⁰⁸ Brief of Amicus Curiae Pa. State Ass'n of Twp. Supervisors at 3, *Robinson Twp.*, (No. 63 MAP 2012).

¹⁰⁹ Brief of Amicus Curiae Berks Gas Truth et al. at 5–6, *Robinson Twp.*, (No. 63 MAP 2012).

¹¹⁰ Again, fracking development as discussed here encompasses not just drilling and extraction, but everything that supports it, including trucks, pipelines, compressor stations, roads, short- and long-term housing, local businesses, and public safety and health services.

opening of large amounts of municipal land to fracking operations, crippling any strategic position that landowners and local governments may currently gain from the relative scarcity of drilling lands. Second, the consequent rise in the number of landowners capable of leasing their land will likely intensify the dynamics and uncertainty of local fracking development. One possible outcome is that increased competition for leasing will increase local divisions and reduce property owners' chances of negotiating reasonable regulation and risk-management through organization and cooperation. Third, where municipalities could usually step in to remedy this sort of collective action problem (i.e., passing regulations to mitigate fracking's impacts), section 3304 will revoke their powers to do so. Fourth, municipalities will lose the leverage that comes with threats of imposing strict zoning regulations on fracking operations.

The analysis, however, is complicated by the fact that, in many areas of the state, drilling companies have already bought up most of the mineral rights years before fracking had even become a publicly discussed issue. This relatively advanced stage of private land negotiations in Pennsylvania often leaves municipalities as the sole actors in local and regional negotiations with fracking companies. It also arms fracking companies who have mineral rights with the threat of takings claims should municipalities "go too far" in regulating the siting of fracking operations.

All in all, section 3304 does not just prevent Pennsylvania municipalities from barring fracking outright; it leaves them with fewer bargaining tools to fight for responsible and safe development. And considering the poor economic conditions that still plague so many suburban and rural municipalities in the United States, it seems that many Pennsylvania municipalities have few, if any, alternatives.¹¹¹ Furthermore, in light of distributive implications of Part IV, it is the low-income and middle-income municipalities that will hurt the most.

This insight reveals the true danger of section 3304. If upheld, it will not just radically limit municipal powers over fracking development; it will leave oil and gas companies holding all the cards.

CONCLUSION

This Note described the constellation of laws, actors, interactions, and dynamics that constitute fracking development in the United States. It illustrated how this constellation produces specific patterns of behavior and the consequent fracking development scenarios at local and regional scales.

Part I presented four typified fracking development scenarios. Part II outlined the interactive dynamics between local and regional actors who produce the four development scenarios and the macro factors working behind those

¹¹¹ See Melissa Daniels, *Study: 'Recession Still Haunts' PA Business Pwners*, PA INDEP. (Sept. 30, 2013), <http://perma.law.harvard.edu/0pbTUPRDqoj/>; see also *Unemployment Rates by County in Pennsylvania, August 2013*, BUREAU OF LABOR STAT. (Oct. 22, 2013), <http://perma.law.harvard.edu/0R4rZGnRSJX/>.

actors. And Part III described the three layers of the legal structure — private rights, governmental regulation, and local government law — in which the actors operate. Together, these Parts formed a general framework advancing a specific theory: Landowners, municipalities, businesses, drilling companies, and the myriad other actors are not free agents, independent of their context, but rather largely rational actors responding to a complex system that ultimately determines the range of their options.

Part IV deployed this framework to examine municipal responses to fracking development, and to conclude that the totality of laws tends to structure local and regional interactions in a way that foists the risks of fracking disproportionately on those with less bargaining power — low-income municipalities — while failing to compensate equitably for those risks.

Part V further developed the first three Parts' framework with a rough characterization of the relevant players, their interests, their arguments, and their legal cards. Finally, Part VI deployed the Note's theoretical framework to analyze the stakes of an ongoing dispute in the Pennsylvania Supreme Court, stakes that the case's "legal" issues ignore.

As mentioned in the introduction, the general framework of this web of laws, actors, and interactions, is not unique to fracking development. I adapted it from its distant parallel in Duncan Kennedy's theorization of urban housing markets, and without its fracking particularities, the framework should be applicable to other specific forms of local development processes. Regarding fracking, what remains to be done is analysis of state-specific legal doctrine¹¹² and empirical observations of past and ongoing development in discrete regions.

Finally, because of the theoretical nature of this Note, I must recognize "the necessary violence that comes with abstraction."¹¹³ As much as this Note's framework incorporates the complexity and indeterminacy of the interactions constituting fracking development, it cannot escape the fact that its broader perspectives and conclusions come at the expense of particularity. Thus, while I hope that Part IV's analysis is illustrative of the difficult fracking development dynamics faced by rural and suburban municipalities across the nation, I also recognize that there is much to be explored and incorporated into this understanding of the subject. More importantly, I hope the Note demonstrates the potential of the framework's explanatory power and the possibility of its use in future legal and policy analysis of fracking and other development processes.

¹¹² For a survey of state-by-state case law regarding local government law and local fracking regulation, see Jeffrey A. Smith, Danielle Sugarman, & Preetha Chakrabarti, *Home Rule: The Grass Roots Story That Will Shape the Hydraulic Fracturing Map*, BLOOMBERG LAW, Oct. 30, 2013, <http://perma.cc/Z7VR-LL39>. See also Goho, *supra* note 52, at 3–8.

¹¹³ DAVID HARVEY, *PARIS, CAPITAL OF MODERNITY* 18 (2003).