

Local Government Fracking Regulations: A Colorado Case Study

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The recent unconventional oil and gas development boom, better known as the “fracking” boom, is rapidly transforming communities nationwide. Substantial scholarly attention has focused on state and federal fracking regulations, but little has focused on local regulations. Articles that have addressed local government regulation have generally considered only whether local governments can regulate fracking and not how they should do so.

But while scholars continue to debate which level of government should regulate fracking, local governments nationwide have already begun enacting regulations. Accordingly, this Article explores how local governments may regulate fracking under state preemption law, using Colorado as a case study. Colorado has a longstanding legal framework for local government oil and gas regulation due to the industry’s continuous presence in the state prior to the recent fracking boom. Some eastern states have recently adopted Colorado’s approach. But lingering questions remain about the details of local authority, and conflict is brewing as many local governments begin to regulate fracking in their communities.

This Article addresses how the fracking boom presents unique challenges to local governments, their regulatory authority under Colorado law, and how they can approach regulation in a manner most likely to survive judicial review. It begins by explaining fracking’s socioeconomic and environmental impacts, focusing on impacts in rural Western communities. It emphasizes fracking’s socioeconomic impacts, which have

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been largely overlooked by other legal scholarship, yet constitute the strongest ground for local government regulation. The Article then addresses the legal basis for local government fracking regulation under Colorado law. It highlights that Colorado local governments, especially home rule municipalities, enjoy broad authority over land use matters. Next, the Article critically examines four frameworks for local government regulation—guides published by two organizations, and ordinances already enacted in several Colorado cities. It concludes by advocating that Colorado local governments regulate the fracking boom through land use ordinances targeting the boom’s socioeconomic impacts, rather than ordinances that directly regulate fracking or that target the fracking boom’s environmental impacts.

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I. INTRODUCTION

On July 17, 2012, the City of Longmont, Colorado passed an ordinance updating its zoning code to ban a specific industrial activity in residential zones, and requiring the activity to meet basic criteria or obtain a special use permit in commercial and industrial zones.¹

Nearly a century has passed since the Supreme Court first recognized local government authority to separate residential and industrial land uses in a case familiar to nearly every first year law student—*Euclid*.² But Longmont’s routine exercise of its land use authority set off a firestorm. The State of Colorado sued it 13 days later.³

1. *Draft Oil and Gas Regulations—Supplement*, CITY OF LONGMONT (July 17, 2012), http://www.ci.longmont.co.us/city_council/agendas/2012/documents/071712_8A-SupplementInfo.pdf; see also Scott Rochat, *Longmont Council Approves Oil/Gas Rules 5-2*, LONGMONT TIMES-CALL, July 17, 2012, http://www.timescall.com/news/longmont-local-news/ci_21098770/longmont-council-approves-oil-gas-rules-5-2.

2. *Vill. of Euclid, Ohio v. Ambler Realty Co.*, 272 U.S. 365, 389-90 (1926).

3. Scott Rochat, *State Sues Longmont Over Oil and Gas Drilling Regulations*, LONGMONT

The reason? Longmont's ordinance regulated the oil and gas industry at a time when local governments nationwide have begun regulating the unconventional oil and gas boom, better known as the fracking boom.⁴ Longmont adopted its ordinance against the backdrop of a pair of 20-year-old Colorado Supreme Court cases, *La Plata County* and *Voss*, that establish the boundaries for local government regulatory authority over oil and gas.⁵ As other states begin adopting Colorado's *La Plata/Voss* rule,⁶ local governments in Colorado and across the nation are closely watching how Longmont's ordinance fares in court.

Despite public curiosity about the legality of ordinances like Longmont's, legal academia to date has focused on state and federal regulation,⁷ mentioning the potential for local regulation only in passing.⁸ Those articles that have addressed local

TIMES-CALL (July 30, 2012), http://www.timescall.com/news/longmont-local-news/ci_21193961/colorado-files-lawsuit-against-longmont-oil-gas-drilling?source=pkg.

4. See *Local Actions Against Fracking*, FOOD & WATER WATCH, www.foodandwaterwatch.org/water/fracking/fracking-action-center/local-action-documents (last visited Nov. 28, 2013) (listing local governments that have passed fracking bans and moratoria, other oil and gas regulations, and resolutions supporting federal and statewide bans and/or moratoria).

5. *Bd. of Cnty. Comm'rs v. Bowen/Edwards Assocs.*, 830 P.2d 1045, 1060 (Colo. 1992); *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1069 (Colo. 1992).

6. See, e.g., *Huntley & Huntley Inc. v. Borough Council of Borough of Oakmont*, 965 A.2d 855, 865-66 (Pa. 2009); *accord Range Res. Appalachia, LLC v. Salem Twp.*, 964 A.2d 869, 877 (Pa. 2009).

7. See generally, e.g., Robin Kundis Craig, *Hydraulic Fracturing (Fracking), Federalism, and the Water-Energy Nexus*, 49 IDAHO L. REV. 241 (2013) (advocating an increased federal role in water-related regulations); Francis Gradijan, *State Regulations, Litigation, and Hydraulic Fracturing*, 7 ENVTL. & ENERGY L. & POL'Y J. 47 (2012) (providing an overview of state regulations); Hannah Wiseman, *Fracturing Regulation Applied*, 22 DUKE ENVTL. L. & POL'Y F. 361 (2012) (reviewing state regulations); Stephanie Scott, Comment, *Who "Shale" Regulate the Fracking Industry?*, 24 VILL. ENVTL. L.J. 189, 217-23 (2013) (advocating state level regulation); Matt Willie, Comment, *Hydraulic Fracturing and "Spotty" Regulation: Why the Federal Government Should Let States Control Unconventional Onshore Drilling*, 2011 BYU L. REV. 1745 (2011) (advocating state level regulation).

8. See, e.g., Nicole R. Snyder Bagnell, *Environmental Regulation Impacting Marcellus Shale Development*, 19 PENN. ST. ENVTL. L. REV. 177, 191 (2011) (referencing recent Pennsylvania Supreme Court decisions about regulatory authority of local governments); Elizabeth Burleson, *Cooperative Federalism and Hydraulic Fracturing: A Human Right to a Clean Environment*, 22 CORNELL J.L. & PUB. POL'Y 289, 325-27 (2012) (noting that the role of local governments should be considered by states developing regulations); Sorell E. Negro, *Fracking Wars: Federal, State and Local Conflicts over the Regulation of Natural Gas Activities*, 35 ZONING & PLANNING L. REP. 1, pt. IV (2012) (noting the ability of local governments to regulate natural gas development); Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 199, 257 (2013) (referencing local government regulatory attempts while advocating for state level regulation); David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV.

government regulation have generally considered only *whether* local governments can regulate fracking, and not *how* they should do so.⁹ Questions about what mechanisms local governments can use to regulate fracking, the scope of local authority over fracking, and which aspects of the fracking boom local government regulations can and should target remain largely unanswered.

This Article tackles the “how” question, using Colorado as a case study. Legal scholarship that has addressed local government fracking regulation to date has focused on the eastern states overlying the Marcellus and Antrim Shales.¹⁰ A few articles have

431, 480-82 (2013) (using examples of local government regulations in Pennsylvania and New York to advocate for state, rather than federal level regulations); Hannah Wiseman, *Regulatory Adaptation in Fractured Appalachia*, 21 VILL. ENVTL. L.J. 229, 289-90 (2010) [hereinafter Wiseman, *Fractured Appalachia*] (describing Texas local governments adopting “closed loop” regulations); Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 156 (2009) [hereinafter Wiseman, *Untested Waters*] (referencing Texas local governments’ nuisance-based regulations); Gianna Cricco-Lizza, Comment, *Hydraulic Fracturing and Cooperative Federalism: Injecting Reality into Policy Formation*, 42 SETON HALL L. REV. 703, 736-40 (2012) (advocating a cooperative federalist model for groundwater protection regulations protecting groundwater involving both state and local governments); Joseph A. Dammel, Note, *Notes from the Underground: Hydraulic Fracturing in the Marcellus Shale*, 12 MINN. J. L. SCI. & TECH. 773, 795 (2011) (referencing Pittsburgh’s fracking ban); Jason T. Gerken, Comment, *What the Frack Shale We Do? A Proposed Environmental Regulatory Scheme for Hydraulic Fracturing*, 41 CAP. U. L. REV. 81, 128-29 (2013) (referencing local government regulation in passing while advocating federal level regulation); Patrick Siler, Note, *Hydraulic Fracturing in the Marcellus Shale: The Need for Legislative Amendments to New York’s Mineral Resources Law*, 86 ST. JOHN’S L. REV. 351, 384 (2012) (arguing that New York oil and gas law should be amended to address, among other things, the scope of local government regulatory authority).

9. See, e.g., Patrick C. Mcginley, *Regulatory Takings in the Shale Gas Patch*, 19 PENN ST. ENVTL. L. REV. 193, 229-30 (2011) (discussing vulnerability of local government hydraulic fracturing regulations to takings suits); Emily C. Powers, Note, *Fracking and Federalism: Support for an Adaptive Approach that Avoids the Tragedy of the Regulatory Commons*, 19 J.L. & POL’Y 913, 917-18 (2011) (advocating local hydraulic fracturing regulation); Laura C. Reeder, Note, *Creating a Legal Framework for Regulation of Natural Gas Extraction from the Marcellus Shale Formation*, 34 WM. & MARY ENVTL. L. & POL’Y REV. 999, 1007, 1009 (2010) (discussing the advantages and limitations of local government regulation).

10. See, e.g., Joseph Iole, *May Two Laws Occupy the Same Space at the Same Time? Understanding Pennsylvania Preemption Law in the Marcellus Shale Context*, 6 APPALACHIAN NAT. RESOURCES L.J. 39 (2012); Michelle L. Kennedy, *The Exercise of Local Control over Gas Extraction*, 22 FORDHAM ENVTL. L. REV. 375 (2011); Gregory R. Nearpass & Robert J. Brenner, *High Volume Hydraulic Fracturing and Home Rule: The Struggle for Control*, 76 ALB. L. REV. 167, 170 (2013); John R. Nolon & Steven E. Gavin, *Hydrofracking: State Preemption, Local Power, and Cooperative Governance*, 63 CASE W. RES. L. REV. 995, 1013-39 (2013) (discussing local government fracking preemption issues in New York, Pennsylvania, Ohio, and West Virginia); John R. Nolon & Victoria Polidoro, *Hydrofracking: Disturbances both Geological and Political: Who Decides?*, 44 URB. LAW. 507 (2012); John M. Smith, *The Prodigal Son Returns: Oil and Gas Drillers Return to Pennsylvania with a Vengeance Are Municipalities Prepared?*, 49 DUQ. L. REV. 1 (2011); Dan Raichel, *Between Huntley and Salem: The Current*

addressed local government fracking regulation in Western states, which have unique legal, ecological, and socioeconomic issues, and also a better-developed oil and gas jurisprudence.¹¹ But no articles have comprehensively addressed local government authority to regulate fracking in Colorado,¹² or indeed local government regulation of oil and gas in Colorado in general since the advent of the fracking boom.¹³

State of Municipal Authority in Pennsylvania to Affect Gas Drilling Through Zoning, 19 BUFF. ENVTL. L.J. 141 (2012); Ford J.H. Turrell, *Frack Off! Is Municipal Zoning a Significant Threat to Hydraulic Fracturing in Michigan*, 58 WAYNE L. REV. 279 (2012); Emery L. Lyon, Comment, *Northeast Natural Energy, LLC v. City of Morgantown*, 57 N.Y.L. SCH. L. REV. 971 (2013); W. Devin Wagstaff, Student Essay, *Fractured Pennsylvania: An Analysis of Hydraulic Fracturing, Municipal Ordinances, and the Pennsylvania Oil and Gas Act*, 20 N.Y.U. ENVTL. L.J. 327 (2013); Powers, *supra* note 9; Reeder, *supra* note 9.

11. See, e.g., Robert H. Freilich & Neil M. Popowitz, *Oil and Gas Fracking: State and Federal Regulation Does Not Preempt Needed Local Government Regulation: Examining the Santa Fe County Oil and Gas Plan and Ordinance as a Model*, 44 URB. LAW. 533 (2012); Alan Romero, *Local Regulation of Mineral Development in Wyoming*, 10 WYO. L. REV. 463 (2010); R. Marcus Cady, II, Comment, *Drilling into the Issues: A Critical Analysis of Urban Drilling's Legal, Environmental, and Regulatory Implications*, 16 TEX. WESLEYAN L. REV. 127 (2009); Timothy Riley, Note, *Wrangling with Urban Wildcatters: Defending Texas Municipal Oil and Gas Development Ordinances Against Regulatory Taking Challenges*, 32 VT. L. REV. 349, 350 (2007).

12. A few articles have referenced Colorado oil and gas preemption law while making broader legal arguments. See William J. Brady & James P. Crannell, *Hydraulic Fracturing Regulation in the United States: The Laissez-Faire Approach of the Federal Government and Varying State Regulations*, 14 VT. J. ENVTL. L. 39, 68 (2012) (referencing Longmont's ban in an article surveying state regulations nationwide); Jean Feriancek, *Local Regulation of Mineral Extraction in Colorado*, 24 NAT. RESOURCES & ENV'T. 51, 51 (2010) (describing how Colorado's oil and gas preemption jurisprudence applies to hard rock mining); Shaun A. Goho, Commentary, *Municipalities and Hydraulic Fracturing: Trends in State Preemption*, PLAN. & ENVTL. L., July 2012, at 3 (including a section on Colorado in a nationwide survey); Debra S. Kalish, Gerald E. Dahl & Christopher Price, *The Doctrine of Preemption and Regulating Oil and Gas Development*, 38 COLO. LAW. 47 (2009) (using oil and gas cases to illustrate preemption doctrine in Colorado); Thomas A. Mitchell, *The Future of Oil and Gas Conservation Jurisprudence: Past as Prologue*, 49 WASHBURN L.J. 379, 399-401 (2010) (arguing that Colorado's existing oil and gas preemption law forces compromise between state and local governments); Dave Neslin, *Colorado Oil and Gas Update*, 19 TEX. WESLEYAN L. REV. 299, 305-06 (2013) (discussing pending preemption cases in Longmont and Gunnison County); Jarit C. Polley, *Uncertainty for the Energy Industry: A Fractured Look at Home Rule*, 34 ENERGY L.J. 261, 276-77 (2013) (summarizing Colorado's oil and gas preemption law, and mentioning Longmont and Fort Collins' bans, while surveying preemption law in a number of states); Rachel A. Kitze, Note, *Moving Past Preemption: Enhancing the Power of Local Governments Over Hydraulic Fracturing*, 98 MINN. L. REV. 385, 405-09 (2013) (describing Colorado's oil and gas preemption law and the failure of measures designed to limit the conflict between the state and local governments in the advent of the fracking boom); Lyon, *supra* note 10, at 986 nn.4-5 (referencing Longmont ban).

13. Several articles written before the advent of the unconventional oil and gas boom addressed Colorado local governments' regulatory authority over oil and gas development. See Bruce M. Kramer, *Local Land Use Regulation of Extractive Industries: Evolving Judicial and Regulatory Approaches*, 14 UCLA J. ENVTL. L. & POL'Y 41, 97-101 (1996) (discussing Colorado's preemption jurisprudence in the context of local government mineral

Although the *La Plata/Voss* doctrine remains the baseline for local government regulatory authority, the fracking boom presents novel issues for local governments. Additionally, Colorado land use law has changed over the past 20 years.¹⁴ But recent, non-academic resources available to local officials tend to be highly one-sided, and may be of little use to local officials attempting to discern what they can and cannot regulate. The Colorado Department of Local Affairs (“DOLA”) has published a guide to local government regulation that takes a very narrow view of local authority.¹⁵ And the Community Environmental Legal Defense Fund (“CELDF”) has published its own guide taking a very broad view of local authority that is unlikely to be upheld by a court.¹⁶

This Article fills the gap in descriptions of how Colorado local governments can regulate the fracking boom by arguing that they should pass flexible, land use-based ordinances that target the boom’s socioeconomic impacts, rather than its environmental impacts. Part II summarizes these impacts, emphasizing their socioeconomic aspects. Part III summarizes local government regulatory authority in Colorado and examines the *La Plata/Voss* doctrine in light of recent jurisprudence expanding local government land use authority. Part IV explains how Colorado local governments can regulate fracking. It critically considers four models for local government regulation, and advocates a framework based on land use regulations, targeting the boom’s socioeconomic impacts. Part V specifically advocates adopting a flexible, point-based system to address aspects of the fracking

regulations nationwide); Angela Neese, Comment, *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 (2005) (advocating for legislative intervention to clarify local government regulatory authority over oil and gas); Nicole R. Ament, Note, *A Perplexing Puzzle: The Colorado Oil and Gas Commission Versus Local Government*, 27 COLO. LAW. 73 (1998) (tracing the history of oil and gas regulation in Colorado and describing the division of power between state and local governments following the *La Plata County* and *Voss* decisions); Kathryn M. Mutz, Note, *Home Rule City Regulation of Oil and Gas Development*, 23 COLO. LAW. 2771, 2774 (1994) (concluding that 1994 amendments to the Colorado Oil and Gas Conservation Act (“COGCA”) did not preempt home rule municipalities from enacting stricter regulations on oil and gas development).

14. See generally, e.g., *Town of Telluride v. San Miguel Valley Corp.*, 185 P.3d 161 (Colo. 2008) (en banc) (taking a broad view of home rule municipality’s authority over land use).

15. COLO. DEP’T OF LOCAL AFFAIRS, OIL AND GAS DEVELOPMENT: A GUIDE FOR LOCAL GOVERNMENTS (2010), <http://www.springsgov.com/units/boardscomm/OilGas/DOLA%20O&G%20Guide%20for%20Local%20Governments.pdf>.

16. CMTY. ENVTL. LEGAL DEF. FUND, BANNING FRACKING IN COLORADO COMMUNITIES, http://www.celdf.org/downloads/Banning_Fracking_in_Colorado_Communities.pdf (last visited Oct. 26, 2013).

boom already regulated by state law, and passing traffic ordinances to protect infrastructure from damage by the trucking-intensive fracking boom.

II. ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS OF THE FRACKING BOOM

A. Analytical Framework

To analyze the fracking boom's impacts, it is first necessary to define "fracking." Fracking is an abbreviation of "hydraulic fracturing," the process of creating small fractures in nonporous geologic formations (most notably shales) by injecting them with pressurized fluids, chemicals, and sand.¹⁷ A combination of economic, technological, and regulatory factors precipitated an unprecedented boom in unconventional oil and gas production over the past decade.¹⁸ These factors include advances in high-volume, slick-water hydraulic fracturing, horizontal drilling, and multi-well pad drilling techniques; natural gas price spikes; and a permissive regulatory landscape.¹⁹ Since "the mid-2000s high-volume slick-water hydraulically- fractured multi-pad horizontally-drilled oil and gas boom" is somewhat of a mouthful, the boom is commonly referred to as the "hydraulic fracturing" or "fracking" boom.²⁰ For simplicity's sake, this article will follow this popular convention. This Article will similarly refer to the entire oil and gas exploration, production, gathering, and processing phases for hydraulically fractured wells as "fracking."

Lenient federal regulations and state regulations of varying

17. COLORADO OIL AND GAS CONSERVATION COMMISSION ("COGCC"), INFORMATION ON HYDRAULIC FRACTURING 1 (2012), available at <http://cogcc.state.co.us> (select "Library" from menu on left, and select "Hydraulic Fracturing Information" under "Miscellaneous" header); see also Wiseman, *Fractured Appalachia*, *supra* note 8, at 236-39.

18. Wiseman, *Untested Waters*, *supra* note 8, at 142-47.

19. See *Ctr. for Biological Diversity v. Bureau of Land Mgmt.*, No. 11-06174, 2013 WL 1405938, at *1 (N.D. Cal. Mar. 31, 2013) (describing slick-water fracking); *Anschutz Exploration Corp. v. Town of Dryden*, 940 N.Y.S.2d 458, 464 (N.Y. Sup. Ct. 2012) (describing high-volume hydraulic fracturing); Jim Ladlee & Jeffrey Jacquet, *The Implications of Multi-Well Pads in the Marcellus Shale*, 43 CORNELL DEP'T. RURAL & DEV. SOC. RES. & POL'Y BRIEF SERIES 1, 1-2 (2011), available at <http://cardi.cornell.edu/cals/devsoc/outreach/cardipublications/research-and-policy-brief-series.cfm> (follow "The Implications of Multi-Well Pads in the Marcellus Shale" hyperlink); Spence, *supra* note 8, at 449-53 (describing federal regulatory gaps); Wiseman, *Untested Waters*, *supra* note 8, at 120-21 (describing horizontal drilling).

20. Cf. Evan J. House, *Fractured Fairytales: The Failed Social License for Unconventional Oil and Gas Development*, 13 WYO. L. REV. 5, 45-47 (2013) (describing the difficulty of defining "fracking").

stringency have allowed the fracking boom's substantial negative impacts to go largely unchecked.²¹ Legal scholars have long argued about what level of government should regulate environmentally-harmful activities, including fracking.²² Rather than rehash that debate, this Article assumes that local governments should be able to control the fracking boom as they see fit, because they must provide services to mitigate its negative impacts while enjoying relatively few of its benefits.²³ This Article's goal is not to advocate that local governments exceed their regulatory authority under state law. Rather, it is to clarify the scope of local government authority in the fracking context and to determine effective methods of exercising that authority.

B. *Environmental Impacts: Surveying an Evolving Science*

Although significant unknowns remain, fracking's impacts on air quality, water quality, water quantity, and wildlife habitat are well-documented.

Fracking creates significant air pollution problems from hydrocarbon emissions throughout the production process,²⁴ especially during well completion.²⁵ Numerous studies have documented that oil and gas development can create significant

21. See Wiseman, *Fractured Appalachia*, *supra* note 8, at 241-49.

22. See generally, e.g., Craig, *supra* note 7 (advocating an increased federal role in water-related regulations); Freilich & Popowitz, *supra* note 11, at 535 (advocating increased local control over fracking); Powers, *supra* note 9, at 917-18 (advocating local hydraulic fracturing regulation to complement state and federal regulations); Scott, *supra* note 7, at 217-23 (advocating state level regulation).

23. See Spence, *supra* note 8, at 463-64 (explaining that when externalities from economic activities primarily impact local communities, local governments often lack the resources to address them); cf. *Counties and Municipalities*, COLO. DEP'T OF LOCAL AFFAIRS (DOLA), <http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251593244436> (last visited Oct. 28, 2013) (explaining the shares of Colorado's severance tax and mineral leasing revenues allocated to local governments).

24. See Anna Karion et al., *Methane Emissions Estimate from Airborne Measurements over a Western United States Natural Gas Field*, 40 GEOPHYSICAL RES. LETTERS, 4393, 4393 (2013) (documenting methane leak rates of 6% to 12%); Jim Wedeking, *Up in the Air: The Future of Environmental Management for Hydraulic Fracturing will be About Air, Not Water*, 49 IDAHO L. REV. 437, 438 (2013) (arguing that fracking's air pollution impacts will ultimately be a greater concern than its water pollution impacts); see also Gabrielle Pétron et al., *Hydrocarbon Emissions Characterization in the Colorado Front Range: A Pilot Study*, 117 J. GEOPHYSICAL RES. D04304, at 18 (2012) (documenting high emission rates).

25. EPA, *Regulatory Impact Analysis: Final New Source Performance Standards and Amendments to the National Emissions Standards for Hazardous Air Pollutants for the Oil and Natural Gas Industry 3-5 to 3-6* (2012) (estimating that fracking emissions are 230 times greater than conventional oil and gas production emissions at the well completion stage).

ozone pollution in rural areas,²⁶ and worsen ozone pollution in urbanized areas like Colorado's Front Range.²⁷ Fracking operations emit many known and likely carcinogens, which public health officials have concluded increase cancer and other health risks.²⁸ Fracking also emits methane, a greenhouse gas 105 times more powerful than carbon dioxide, at rates that may eliminate the climate benefits that natural gas has over coal.²⁹

26. See, e.g., UTAH DEP'T OF ENVTL. QUALITY, 2012 UINTAH BASIN WINTER OZONE & AIR QUALITY STUDY: FINAL REPORT 1-2 (Seth Lyman & Howard Shorthill eds., 2013), available at rd.usu.edu/files/uploads/ubos_2011-12_final_report.pdf; Dan Jaffe & John Ray, *Increase in Surface Ozone at Rural Sites in the Western US*, 41 ATMOSPHERIC ENVT. 5452, 5461-62 (2007); Susan Kembal-Cook et al., *Ozone Impacts of Natural Gas Development in the Haynesville Shale*, 44 ENVTL. SCI. TECH. 9357 (2010); Pétron et al., *supra* note 24; Marco A. Rodriguez et al., *Regional Impacts of Oil and Gas Development on Ozone Formation in the Western States*, 59 J. AIR & WASTE MGMT. ASS'N 1111, 1111 (2009); Russell C. Schnell et al., *Rapid Photochemical Production of Ozone at High Concentrations in a Rural Site During Winter*, 2 NATURE GEOSCIENCE 120, 120 (2009); AL ARMENDARIZ, EMISSIONS FROM NATURAL GAS PRODUCTION IN THE BARNETT SHALE AREA AND OPPORTUNITIES FOR COST-EFFECTIVE IMPROVEMENTS 6-9 (Jan. 26, 2009); see also, e.g., John McChesney, *The New Western Fugitives: Ozone Ingredients from Oil and Gas*, BILL LANE CTR. FOR THE AM. WEST, STANFORD UNIV. (Apr. 24, 2013), <http://vimeo.com/64620950> (video explaining how oil and gas contribute to ozone formation in rural areas of the West).

27. Jessica B. Gilman et al., *Source Signature of Volatile Organic Compounds from Oil and Natural Gas Operations in Northeastern Colorado*, 47 ENVTL. SCI. TECH. 1297, 1303 (2013); see also EPA, COLORADO AREA DESIGNATIONS FOR THE 2008 OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS 6 (2012), available at http://www.epa.gov/ozonedesignations/2008standards/documents/R8_CO_TSD_Final.pdf (noting the contribution of oil and gas to the Front Range's air quality); Pétron et al., *supra* note 24, at 18 (concluding that oil and gas contributes to ozone problems on the Front Range). The Colorado Air Quality Control Commission and Air Pollution Control Division are in the process of developing stricter air pollution regulations to better control the oil and gas industry's impact on Front Range ozone nonattainment. See Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards, 77 Fed. Reg. 30,088, 30,110 (May 21, 2012) (to be codified at 40 C.F.R. pt. 81) (concluding that the Colorado Front Range is in nonattainment for the 75 ppb eight-hour ozone standard); 2013 Rulemaking Effort, COLO. DEP'T OF PUB. HEALTH & ENV'T, <http://www.colorado.gov/cs/Satellite/CDPHE-AP/CBON/1251635574914> (last visited Oct. 28, 2013).

28. Lisa M. McKenzie et al., *Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources*, 424 SCI. TOTAL ENV'T. 79, 80 (2012) (citing COLO. DEP'T OF PUB. HEALTH & ENV'T, GARFIELD COUNTY AIR TOXICS INHALATION: SCREENING LEVEL HUMAN HEALTH RISK ASSESSMENT (2010)); TERESA A. COONS ET AL., COMMUNITY HEALTH RISK ASSESSMENT OF OIL AND GAS IMPACTS IN GARFIELD COUNTY (2008); COLO. DEP'T OF PUB HEALTH & ENV'T, GARFIELD COUNTY AIR TOXICS INHALATION: SCREENING LEVEL HUMAN HEALTH RISK ASSESSMENT (2007), available at <http://www.garfield-county.com/publichealth/documents/Working%20Draft%20CDPHE%20Screeing%20Level%20Risk%20Air%20Toxics%20Assessment%2012%2020%2007.pdf>; AMY MALL ET AL., DRILLING DOWN: PROTECTING WESTERN COMMUNITIES FROM THE HEALTH AND ENVIRONMENTAL EFFECTS OF OIL AND GAS PRODUCTION at v-vi (2007) [hereinafter NRDC, *Drilling Down*].

29. See Ramón A. Alvarez et al., *Greater Focus Needed on Methane Leakage from Natural Gas Infrastructure*, 109 PROC. NAT'L ACAD. SCI. U.S. AM. 6435, 6437 (2012) (explaining how

Fracking can contaminate surface water and groundwater through several pathways. The main pathway is spills. There were 513 reported spills in Colorado in 2011 alone, 26% of which contaminated surface or groundwater.³⁰ The flash floods that devastated Colorado's Front Range in September 2013 caused fourteen "notable" oil spills, with a total spill of over 48,000 gallons, and seventeen major produced water spills with a total spill of over 43,000 gallons.³¹ Fracking wastewater can also enter surface flows through unlined or poorly lined waste ponds.³² Fracking injects millions of gallons of water, sand and chemicals through a narrow wellbore, separated from the surrounding groundwater-bearing formations by only a few inches of cement casing.³³ Unsurprisingly, several studies have found that fracking causes groundwater contamination,³⁴ although these results

natural gas can lose climate benefits compared to coal at leak rates higher than 3.2%); Robert W. Howarth, et al., *Methane and the Greenhouse-gas Footprint of Natural Gas from Shale Formations*, 106 CLIMATIC CHANGE 679 (2011) (finding high methane leak rates); Patrick Parenteau & Abigail Barnes, *A Bridge Too Far: Building Off-Ramps on the Shale Gas Superhighway*, 49 IDAHO L. REV. 325, 334-38 (2013) (explaining fracking's methane emissions); Pétron et al., *supra* note 24, at 17-18 (documenting high methane leak rates); Drew T. Shindell et al., *Improved Attribution of Climate Forcing to Emissions*, 326 SCI. 716, 717 (2009) (calculating methane's 20-year warming potential, which is 105 times more powerful than carbon dioxide's); Jeff Tollefson, *Methane Leaks Erode Green Credentials of Natural Gas*, NATURE (Jan. 2, 2013), <http://www.nature.com/news/methane-leaks-erode-green-credentials-of-natural-gas-1.12123?nc=1359235303992> (noting preliminary study results showing 9% leakage rate).

30. See Wiseman, *Fractured Appalachia*, *supra* note 8, at 258-59 (describing the potential for spills and various state efforts to regulate them); EARTHWORKS, BREAKING ALL THE RULES: THE CRISIS IN OIL & GAS REGULATORY ENFORCEMENT: STATES ARE BETRAYING THE PUBLIC BY FAILING TO ENFORCE OIL & GAS DEVELOPMENT RULES 20 (2012), *available at* <http://www.earthworksaction.org/files/publications/FINAL-US-enforcement-sm.pdf>.

31. COLO. OIL & GAS CONSERVATION COMM'N ("COGCC"), COGCC 2013 FLOOD RESPONSE 1 (2013), http://cogcc.state.co.us/Announcements/Hot_Topics/Flood2013/COGCC2013FloodResponse.pdf (last visited Nov. 28, 2013) (documenting the number of spills).

32. Sally Entekin et al., *Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters*, 9 FRONTIERS ECOLOGY & ENV'T 503, 508 (2011).

33. House, *supra* note 20, at 22, 25, 27-28 (describing the cementing process, wellbore dimensions, volume of water used in hydraulic fracturing, and the use of sand in fracturing fluid); see also Hannah Wiseman, *Beyond Coastal Oil v. Garza: Nuisance and Trespass in Hydraulic Fracturing Litigation*, 57 ADVOC. 8, 8 (2011) (explaining the process of cementing the wellbore).

34. See, e.g., Stephen G. Osborn et al., *Methane Contamination of Drinking Water Accompanying Gas-well Drilling and Hydraulic Fracturing*, 108 PROC. NAT'L ACAD. SCI. U.S. AM. 8172, 8172 (2011) (finding methane contamination in wellwater attributable to fracking, but no contamination from fracking chemicals or brine contamination); INVESTIGATION OF GROUNDWATER CONTAMINATION NEAR PAVILLION, WYOMING 33 (EPA, Draft Report, 2011), *available at* http://www2.epa.gov/sites/production/files/documents/EPA_ReportOnPavillion_Dec-8-2011.pdf.

remain controversial.³⁵

Beyond its impacts on water quality, fracking also uses extraordinary volumes of water. The Colorado Oil and Gas Conservation Commission (“COGCC”) estimates fracking will use 32 billion gallons of water in Colorado between 2010 and 2015 alone.³⁶ This water is usually brought to the well pad one truckload at a time, increasing the total number of truck trips and the associated noise, dust, and air pollution, and traffic accident risk.³⁷ Scholars and scientists increasingly focus attention on the quantity of water that fracking requires, especially in dry Western states.³⁸

The infrastructure necessary for fracking—well pads, wastewater storage pits, storage tanks, pipelines, compressors, and access roads—fragments wildlife habitat.³⁹ Wastewater pits can kill birds and mammals that drink toxic water.⁴⁰ Fracking may pose significant threats to endangered, threatened, and unlisted rare species in Colorado.⁴¹ Endangered species are not the only ones at

35. See, e.g., Jeffrey C. King, Jamie Lavergne Bryan & Meredith Clark, *Factual Causation: The Missing Link in Hydraulic Fracture-Groundwater Contamination Litigation*, 22 DUKE ENVTL. L. & POL’Y F. 341, 350-58 (2012); Terry W. Roberson, *Environmental Concerns of Hydraulically Fracturing a Natural Gas Well*, 32 UTAH ENVTL. L. REV. 67, 117-21 (2012).

36. COLO. OIL & GAS CONSERVATION COMM’N, WATER SOURCES AND DEMAND FOR THE HYDRAULIC FRACTURING OF OIL AND GAS WELLS IN COLORADO FROM 2010 THROUGH 2015 2 (2012), available at http://cogcc.state.co.us/Library/Oil_and_Gas_Water_Sources_Fact_Sheet.pdf (calculations to convert acre-feet to gallons on file with author).

37. See Spence, *supra* note 8, at 444-45 (describing the high amounts of construction activity and truck traffic required for fracking operations).

38. See Carolyn F. Burr et al., *Water: The Fuel for Colorado Energy*, 15 U. DENV. WATER L. REV. 275, 291-96 (2012) (documenting pressures around the quantity of water used for fracking in Colorado and proposing solutions); Kenneth J. Warren, *Water Supply for Shale Gas Production: Lessons from the River Basin Commission Management in the Mid-Atlantic States*, 58 ROCKY MTN. MIN. L. INST. 9-1, 9-2 to 9-4 (2012); see also Bruce Finley, *Fracking of Wells Puts Big Demands on Colorado Water*, DENVER POST (Nov. 23, 2011), http://www.denverpost.com/news/ci_19395984 (discussing attempts by oil and gas companies to acquire water from municipal governments, among others).

39. See Roberson, *supra* note 35, at 127; see also Carlos R. Romo, *Rethinking the ESA’s “Orderly Progression” Recovery System Credits and Energy Development on Public Lands*, 49 IDAHO L. REV. 471, 478-80, 488 (2013) (discussing methods to protect endangered species habitat from oil and gas development on BLM lands).

40. See also Andrew L. Askew, Case Comment, *Environmental Law—Endangered Species: Interpreting the Migratory Bird Treaty Act and Its Prohibition Against the “Taking” of Protected Birds*, 88 N.D. L. REV. 843, 844-46 (2012). See generally *United States v. Brigham Oil & Gas, L.P.*, 840 F. Supp. 2d 1202, 1203-05 (D.N.D. 2012) (explaining the alleged death of migratory birds at a shale oil wastewater pit in North Dakota).

41. See, e.g., Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Ipomopsis polyantha* (Pagosa skyrocket), *Penstemon debilis* (Parachute beardtongue), and *Phacelia submutica* (DeBeque phacelia), 76 Fed. Reg. 45078, 45096 (proposed July 27, 2011) (to be codified at 50 C.F.R. pt. 17); Endangered and Threatened

risk—fracking and its attendant infrastructure development can reduce deer and elk habitat and populations, harming hunting-based tourism.⁴² As a result, hunters and other wildlife advocates have called for stronger rules to protect wildlife habitat from fracking.⁴³

C. Socioeconomic Impacts: Boomtown Sociology Revisited

Socioeconomic impacts describe how an activity changes a community's social fabric—a more qualitative measure—and its economic status—a quantitative measure.⁴⁴ Socioeconomic impact analysis is a well-established practice required in federal and some state environmental impact analyses.⁴⁵ But to date, legal academia has focused on fracking's environmental impacts, rather than the ways in which a fracking boom impacts daily life in the communities where it occurs.⁴⁶ Many legal scholars that have

Wildlife and Plants; Endangered Status for Gunnison Sage-Grouse, 78 Fed. Reg. 2486, 2498, 2510-2512, 2516 (proposed Jan. 11, 2013) (to be codified at 50 C.F.R. pt. 17).

42. Mary M. Rowland et al., *Effects of Roads on Elk: Implications for Management in Forested Ecosystems*, in THE STARKEY PROJECT: A SYNTHESIS OF LONG-TERM STUDIES OF ELK AND MULE DEER 42-52 (M.J. Wisdom ed., 2005), available at http://www.fs.fed.us/pnw/lagrande/starkey_na/PDFs_Preprints/ms-04_Rowland.pdf.

43. SPORTSMEN FOR RESPONSIBLE ENERGY DEVELOPMENT, RECOMMENDATIONS FOR RESPONSIBLE OIL AND GAS DEVELOPMENT 15 (2009), available at http://sfred.org/images/uploads/pdf/S4RED_Recommendations_Final-3.pdf.

44. See Jacquelyn L. Smith, Comment, *Consideration of Socioeconomic Effects Under NEPA and the EC Directive on Environmental Impact Assessment*, 1992 U. CHI. LEGAL F. 355, 358, 358 nn. 17-18 (1992).

45. See *Hanly v. Kleindienst*, 471 F.2d 823, 830-31 (2d Cir. 1972) (finding that the National Environmental Policy Act requires consideration of social and economic factors); *Chinese Staff & Workers Ass'n v. City of New York*, 502 N.E.2d 176, 180 (N.Y. 1986) (affirming that New York state impact analysis law requires assessment of socioeconomic impacts, including impacts on “community character”).

46. A large number of articles, including many cited above, have assessed fracking's environmental impacts. See generally, e.g., Bagnell, *supra* note 8; Burlson, *supra* note 8; Craig, *supra* note 7; Parenteau & Barnes, *supra* note 29; Spence, *supra* note 8; ; Wiseman, *Fractured Appalachia*, *supra* note 8; Wedeking, *supra* note 24; Wiseman, *Fracturing Regulation Applied*, *supra* note 7; Wiseman, *Untested Waters*, *supra* note 8. Fewer articles have analyzed fracking's socioeconomic impacts, and they have been limited in scope and targeted to specific areas. See generally, e.g., Joshua P. Fershee, *The Oil and Gas Evolution: Learning from the Hydraulic Fracturing Experiences in North Dakota and West Virginia*, 19 Tex. Wesleyan L. Rev. 23, 25-30 (2012) [hereinafter Fershee, *The Oil and Gas Evolution*] (assessing positive and negative social and economic impacts of the North Dakota oil fracking boom and the West Virginia gas fracking boom); Joshua P. Fershee, *North Dakota Expertise: A Chance to Lead in Economically and Environmentally Sustainable Hydraulic Fracturing*, 87 N.D. L. Rev. 485, 492-95 (2011) [hereinafter Fershee, *North Dakota Expertise*] (assessing both positive and negative social and economic impacts of North Dakota's fracking boom); Peter J. Kiernan, *An Analysis of Hydrofracturing Gubernatorial Decision Making*, 5 ALB. GOV'T L. REV. 769, 806-07 (2012) (discussing socioeconomic impacts analysis in New York).

addressed the socioeconomic impacts of fracking have declared the impacts to be unqualifiedly positive, often based on how they impact the entire American economy, without exploring actual changes in community members' lives.⁴⁷

But daily life in communities where fracking occurs is often negatively impacted.⁴⁸ Fracking tends to proceed in a "boom" and "bust" cycle. Technological advances and high natural gas prices triggered a rapid expansion in fracking during the past decade, causing many isolated, rural communities throughout the United States to undergo sudden population "booms" due to a sudden influx of oil and gas workers.⁴⁹ Although the fracking boom is recent, the challenges of "boomtown" life are hardly new. Rural sociologists have developed a robust literature assessing the social and economic tolls of what is known as the "Boom & Bust" cycle in rural communities.⁵⁰

47. See, e.g., Wes Deweese, *Fracturing Misconceptions: A History of Effective State Regulation, Groundwater Protection, and the Ill-Conceived Frac Act*, 6 OKLA. J.L. & TECH. 49, 80-81 (2010) (asserting that fracking will have an unqualifiedly beneficial impact on the American economy and international relations); Fershee, *The Oil and Gas Evolution*, *supra* note 46 at 25-26 (2012) (emphasizing the positive socioeconomic impacts of the fracking boom in North Dakota and West Virginia); Kent Holsinger & Peter Lemke, *Water, Oil, and Gas: A Legal and Technical Framework*, 16 U. DENV. WATER L. REV. 1, 2 (2012) (describing the positive economic impacts of hydraulic fracturing as "tremendous" and asserting that the Rocky Mountain West could produce as much oil and gas as Saudi Arabia); Roberson, *supra* note 35 at 67-68, 115 ("[d]espite the economic benefits, environmental groups continue to attack the industry with allegations of environmental harm").

48. See, e.g., Chip Brown, *North Dakota Went Boom*, N.Y. TIMES (Jan. 31, 2013), http://www.nytimes.com/2013/02/03/magazine/north-dakota-went-boom.html?_r=2&; Sierra Crane-Murdoch, *The Other Bakken Boom: America's Biggest Oil Rush Brings Tribal Conflict*, HIGH COUNTRY NEWS (Apr. 16, 2012), http://www.hcn.org/issues/44.6/on-the-fort-berthold-reservation-the-bakken-boom-brings-conflict/article_view?b_start:int=0&-C=; Francisco Tharp, *Boom! Boom!*, HIGH COUNTRY NEWS (May 12, 2008), <http://www.hcn.org/issues/370/17687>.

49. FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT: CASES AND MATERIALS (3e) 454-58 (2010) (describing the history of natural gas price fluctuations); ENERGY INFO. ADMIN., *U.S. Natural Gas Wellhead Price*, <http://www.eia.gov/dnav/ng/hist/n9190us3m.htm> (last updated May 31, 2013) (providing historic natural gas price data); Wiseman, *Untested Waters*, *supra* note 8, at 122, 123-24 (documenting the advent of the boom); Wiseman, *Fractured Appalachia*, *supra* note 8, at 240-41 (describing the Marcellus shale boom).

50. See, e.g., Stan L. Albrecht, *Socio-cultural Factors and Energy Resource Development in Rural Areas in the West*, 7 J. ENVTL. MGMT. 73 (1978); John S. Gilmore, *Boom Towns May Hinder Energy Resource Development: Isolated Rural Communities Cannot Handle Sudden Industrialization and Growth Without Help*, 191 SCI. 535 (1976); see also generally Kathryn J. Brasier et al., *Residents' Perceptions of Community and Environmental Impacts from Development of Natural Gas in the Marcellus Shale: A Comparison of Pennsylvania and New York Cases*, 26 J. RURAL SOC. SCI. 32, 34-37 (2011) (surveying this literature).

1. *Socioeconomic benefits at the federal, state, and local level.*

At the state and national level, the fracking boom has a number of fiscal, social, and economic benefits. Fracking booms can also have economic benefits at a local level, but these benefits are often outweighed by the boom's socioeconomic costs.

Total federal revenues from all onshore and offshore oil and gas operations in fiscal year 2012 were \$10 billion.⁵¹ Half of federal mineral leasing revenues are allocated to the states where mineral development occurs, an amount totaling just under \$2 billion in 2011.⁵² Most states with oil and gas production also levy a severance tax.⁵³ Colorado has one of the lowest severance taxes in the country, allowing oil and gas producers to deduct their property taxes from their severance tax, so many oil and gas producers pay no severance tax whatsoever, and the effective statewide severance tax has historically been as low as 1.3%.⁵⁴ Colorado's 2011 severance tax revenue was only \$114.9 million,⁵⁵ meaning the effective tax rate was as low as 0.25%.⁵⁶

Fiscal policy aside, fracking directly benefits many higher education institutions. Since 2002, nationwide enrollment in Petroleum Engineering undergraduate programs has tripled, and the master's program enrollment has doubled.⁵⁷ Schools ranging from the University of South Dakota to the Colorado School of

51. CONG. BUDGET OFFICE, POTENTIAL BUDGETARY EFFECTS OF IMMEDIATELY OPENING MOST FEDERAL LANDS TO OIL AND GAS LEASING 5 (2012), *available at* http://www.cbo.gov/sites/default/files/cbofiles/attachments/08-09-12_Oil-and-Gas_Leasing.pdf.

52. GOV'T ACCOUNTABILITY OFFICE, GAO-13-45R, MINERAL RESOURCES: MINERAL VOLUME, VALUE, AND REVENUE 42, 44 (2012), *available at* <http://www.gao.gov/assets/660/650122.pdf>.

53. Distinct from mineral lease fees, which are levied by the federal government, severance taxes are taxes on mineral extraction levied by states, with Pennsylvania being a notable exception. See Kristen Allen, *The Big Fracking Deal: Marcellus Shale—Pennsylvania's Untapped Resource*, 23 VILL. ENVTL. L.J. 51, 74-82, 85-87 (2012) (describing political controversy around enacting the tax and advocating for its creation).

54. JOEL MINOR & RICH JONES, BELL POLICY CTR., COLORADO'S SEVERANCE TAX AND AMENDMENT 58 at 1 (2008), *available at* <https://bellpolicy.org/sites/default/files/PUBS/IssBrf/2008/Amendment58.pdf>.

55. COLO. GOVERNOR'S OFFICE OF STATE PLANNING AND BUDGETING, THE COLORADO OUTLOOK: ECONOMIC AND FISCAL REVIEW 22 (2012), *available at* <http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251843184456&ssbinary=true>.

56. Calculations on file with author.

57. Jeremy Miller, *Oil Boom Spurs a Rush on Extractive Education Programs*, HIGH COUNTRY NEWS (Jan. 21, 2013), <https://www.hcn.org/issues/45.1/oil-boom-spurs-a-rush-on-extractive-education-programs>.

Mines have received millions in industry funding for research and new facilities.⁵⁸

Further, because natural gas is a regional, rather than a global commodity,⁵⁹ the fracking boom dramatically increased the supply and lowered the wellhead price of natural gas in the continental United States.⁶⁰ Natural gas sold to residential and commercial consumers is a regulated monopoly, so consumer prices will not respond to the new market conditions until individual utilities' next ratemaking cycle.⁶¹ But low natural gas prices have contributed to an overall shift away from coal-generated electric power, which has potentially significant long- and short-term benefits to public health in communities near coal-fired electrical generation facilities. Scholars have also noted that low natural gas prices have similarly undercut the renewable energy industry, potentially reversing socioeconomic gains related to any climate benefits natural gas may have over coal.⁶²

Jobs created by the fracking boom are its most frequently discussed economic benefit. According to the Bureau of Labor Statistics, the oil and gas extraction sector employed 195,000 people in July 2013.⁶³ These workers are relatively well paid—the median annual income for a roustabout (a well pad laborer) was \$33,900 in 2012, which is relatively high among comparable positions.⁶⁴ By contrast, the American Petroleum Institute (“API”) claims the oil and gas sector supports 9.2 million jobs.⁶⁵ This

58. *Id.*

59. See BOSSELMAN ET AL., *supra* note 49, at 542, 545-46 (describing the difficulties inherent in natural gas import and export); see also Simon Bonini, *Special Report: Is LNG a Global Commodity . . . Yet?*, OIL & GAS J., Mar. 7, 2011, available at <http://www.ogj.com/articles/print/volume-109/issue-10/transportation/special-report-is-lng-a-global-commodity.html> (explaining the current state of the global natural gas commodity market).

60. U.S. *Natural Gas Wellhead Price*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/dnav/ng/hist/n9190us3m.htm> (last updated Sep. 30, 2013); see also Spence, *supra* note 8, at 433, 439 (describing price declines).

61. BOSSELMAN ET AL., *supra* note 49, at 507-529 (describing the natural gas restructuring process and the current status of the industry as a partially regulated monopoly).

62. See Parenteau & Barnes, *supra* note 29, at 342-49.

63. *Industries at a Glance: Oil and Gas Extraction: NAICS 211*, BUREAU LAB. STAT., <http://www.bls.gov/iag/tgs/iag211.htm#iag211empl.f.P> (last updated June 21, 2013).

64. *Id.*; cf. *Industries at a Glance: Construction of Buildings: NAICS 236*, BUREAU LAB. STAT., <http://www.bls.gov/iag/tgs/iag236.htm> (last updated June 21, 2013) (providing that median annual income for a construction laborer was \$30,990).

65. *America's Oil and Natural Gas Industry Supports over 9 Million Jobs*, AM. PETROLEUM INST. 3 (2010), available at http://www.api.org/policy/americanatowork/upload/jobs_america.pdf.

discrepancy of 9 million between the Bureau of Labor Statistics' number and the API's claim exists because API's estimate includes "spillover" jobs—jobs in service industries that support oil and gas workers, including janitors, daycare providers, librarians, cashiers, cooks, retail clerks, pharmacists, and bank tellers.⁶⁶ It is unclear how many of these jobs would not exist but for the fracking boom. Nevertheless, service sector employment gains in communities impacted by the fracking boom are undeniably substantial.

A related benefit to increased service-sector activity is increased sales tax revenue for local governments.⁶⁷ One recent analysis attributed a nearly nine-fold increase in sales tax revenues in several Texas counties to the Eagle Ford shale boom.⁶⁸ Such dramatic sales tax gains can substantially boost local government purchasing power, especially for goods and services purchased outside the government's immediate vicinity.⁶⁹ But these dramatic gains must be viewed in the broader context of fracking's fiscal impact on local governments. Price volatility in the natural gas market means that the gains can evaporate as quickly as they manifest.⁷⁰ And, as will be described in greater detail below, the costs of providing additional services to oil and gas workers and to replace infrastructure damaged by heavy truck traffic can quickly outpace even the most substantial gains in sales tax revenue.⁷¹

66. *Id.* at 4.

67. See, e.g., N.Y. DEP'T OF ENVTL. CONSERVATION, FACT SHEET: ECONOMIC IMPACTS OF HIGH-VOLUME HYDRAULIC FRACTURING IN NEW YORK STATE 2 (2011), available at http://www.dec.ny.gov/docs/materials_minerals_pdf/econimpact092011.pdf (noting that local governments "could experience a substantial increase in sales tax receipts from the additional economic activity in the region" due to oil and gas development).

68. Michael Marks, *A Tale of Two Counties: How Drilling Makes Some Flush with Cash*, NAT'L PUB. RADIO STATEIMPACT: TEXAS, June 27, 2013, <http://stateimpact.npr.org/texas/2013/06/27/a-tale-of-two-counties-how-drilling-makes-some-flush-with-cash>.

69. But see Fershee, *The Oil and Gas Evolution*, *supra* note 46 at 26; John McChesney, *Oil Boom Puts Strain on North Dakota Towns*, NAT'L PUB. RADIO, Dec. 2, 2011, www.npr.org/2011/12/02/142695152/oil-boom-puts-strain-on-north-dakota-towns (explaining that fracking booms can cause significant inflationary pressure at the local level, potentially eliminating gains in local purchasing power).

70. See Joseph Spector, *Once a Beneficiary of Fracking, Chemung County Has Decline in Sales-Tax Revenue*, POL. ON THE HUDSON (Jan. 14, 2013, 3:48 PM), <http://polHUDSON.lohudblogs.com/2013/01/14/once-a-beneficiary-of-fracking-chemung-county-has-decline-in-sales-tax-revenue> (describing how sales tax revenue in a New York County that provided services to oil and gas workers in neighboring Pennsylvania initially grew, then declined in response to a boom and decline in oil and gas production in Pennsylvania).

71. Jennifer Oldham, *North Dakota Fracking Boom Leaves Oil Hub a Bust: Muni Credit*, BLOOMBERG (Feb. 26, 2013, 5:01 PM), <http://www.bloomberg.com/news/2013-02-27/north-dakota-fracking-boom-leaves-oil-hub-a-bust-muni-credit.html> (describing a fiscal

2. *Direct socioeconomic impacts at the local level.*

a. *Employment and labor.*

More relevant to local governments than the *number* of jobs is the *distribution* of those jobs—who gets high-paying oilfield jobs, and who gets a new shift at a gas station staying open late to serve overnight fracking operations. Contrary to popular belief, most jobs in the oil and gas industry do not go to local residents.⁷² Oil and gas jobs require substantial training, and operations are highly mobile. It is not economically viable for companies to invest in training local workers when they will quickly move to a new area and have to train new workers.⁷³ The jobs created for boomtown residents themselves thus are lower-wage jobs in the service sector.

Although nearly all oil and gas sector workers are transplants from other locations, they are a part of the community where they live and work during a boom, and as a result, the economic conditions of their employment are relevant to the socioeconomic picture of the community as a whole. It thus bears noting that oilfield jobs are incredibly dangerous. The workplace mortality rate for the oil and gas sector is 27.5 deaths per 100,000 workers, seven times higher than the rate for the United States as a whole.⁷⁴ The sector reported 716 fatalities between 2003 and 2009.⁷⁵ By comparison, there were 886 American military casualties in the war in Afghanistan in the same time period.⁷⁶ 1.2% of oil and gas sector workers reported a nonfatal workplace-related injury in 2010.⁷⁷ By comparison, only 0.6% of nuclear power plant workers—a profession often thought to be very dangerous—reported a nonfatal workplace-related injury during the same

crisis and credit rating decrease in Williston, North Dakota, at the heart of the Bakken shale oil boom, where rapidly expanding sales tax revenue was unable to keep pace with the city's need to provide additional services and infrastructure).

72. Brasier et al., *supra* note 50, at 35.

73. *See id.* (citing Stephen B. Lovejoy & Ronald L. Little, *Energy Development and Local Employment*, 16 SOC. SCI. J. 27 (1979)).

74. NIOSH Program Portfolio: Oil and Gas Extraction: Occupational Safety and Health Risks, CTR. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/niosh/programs/oilgas/risks.html> (last updated Dec. 13, 2012).

75. *Id.*

76. *Operation Enduring Freedom/Afghanistan*, IRAQ COALITION CASUALTY COUNT, <http://icasualties.org> (last visited Oct. 28, 2013).

77. BUREAU LAB. STAT., INCIDENCE RATES OF NONFATAL OCCUPATIONAL INJURIES AND ILLNESSES BY INDUSTRY AND CASE TYPES 1 (2010), *available at* <http://www.bls.gov/iif/oshwc/osh/os/ostb2813.pdf>.

year.⁷⁸ These fatalities and injuries are unevenly distributed. Workers employed by small companies are five times more likely to be killed on the job than workers at large companies.⁷⁹ Contractors have a 1.5 to 3 times greater risk of mortality than employees.⁸⁰

b. *Public health costs.*

On-the-job mortality is far from the only health-related cost of a fracking boom. Public health risks associated with residential proximity to fracking operations are better documented. Many homes are located very close to wells—COGCC recently increased its setback requirement to 500 feet from houses, replacing the old standard of 150 feet in rural areas.⁸¹ Residents living within one half mile of a well have high exposure rates to both carcinogenic and other hazardous air toxics.⁸² Fracking also causes more broadly dispersed air pollution issues, notably ozone formation,⁸³ which causes asthma, respiratory illness, and premature mortality.⁸⁴

The fracking boom is too recent for any longitudinal studies examining health risks to oil and gas workers to have completed, so the exact magnitude of such risks is presently unknown. However, since it is known that living in close proximity to well pads drives health risks, it is reasonable to assume that workers, who are even closer to well pads than nearby homeowners, face health risks from exposure to toxics used in fracking.⁸⁵

These health impacts can be costly. For example, the average person who develops asthma due to fracking-related air pollution can expect to spend \$3259 a year on treatment.⁸⁶ Sickness and

78. *Id.* at 24.

79. R.D. HILL ET AL., INJURY RISK AMONG OIL AND GAS EXTRACTION WORKERS BY COMPANY TYPE AND SIZE 1 (2009), available at <http://www.onepetro.org/mslib/app/Preview.do?paperNumber=SPE-121056-MS&societyCode=SPE>.

80. *Id.*

81. 2 COLO. CODE REGS. § 404-1-604(a)(1); see also Mark Jaffe, *Colorado Oil and Gas Well Setback Fight Headed to State Legislature*, DENVER POST (Feb. 11, 2013), www.denverpost.com/breakingnews/ci_22566166/colorado-oil-and-gas-commission-votes-500-foot (describing the regulatory change).

82. McKenzie et al., *supra* note 28, at 83-85

83. See *supra* notes 26-27.

84. See *Ground Level Ozone: Health Effects*, EPA, <http://www.epa.gov/air/ozonepollution/health.html> (last updated Nov. 1, 2012).

85. McKenzie et al., *supra* note 28, at 83-85 (describing health risks for people living close to wellpads).

86. Sarah Beth L. Barnett & Tursynbek A. Nurmagambetov, *Costs of Asthma in the United States: 2002-2007*, J. ALLERGY ASTHMA & CLINICAL IMMUNOLOGY 145, 147 (2011).

caring for sick family members can cause missed days of work and school, adding further costs in the form of missed wages, opportunity costs from missed learning opportunities, and productivity losses for employers.⁸⁷ Trips to medical facilities can be particularly time consuming and costly in rural areas, where health care access is a long-standing problem.⁸⁸ Finally, ozone and cancer-related premature mortality imposes both quantitative and qualitative costs.⁸⁹ Adding to this expense, most oil and gas sector workers are contractors, often lacking healthcare benefits.⁹⁰ The increased expenditures on healthcare can slow economic growth, and, at a local level, may channel revenue to larger state and national healthcare companies located in faraway cities. Moreover, the need to provide additional healthcare facilities, and to subsidize additional treatment for beneficiaries of public health benefits systems can impose further stress on local government and state budgets.

c. Quality of life.

Fracking also impacts the overall quality of life for people living close to drilling operations. As noted above, drilling operations may be as close as 500 feet to a residence in Colorado.⁹¹ Drilling often proceeds twenty-four hours a day and can be incredibly noisy.⁹² Colorado's recently-revised regulations allow sound levels ranging from eighty decibels during the day in industrial areas to fifty decibels at night in residential, rural, and agricultural areas.⁹³ For reference, 80 decibels is the sound level in a single-rotor

87. EPA, *supra* note 84; accord EPA, National Ambient Air Quality Standards for Ozone, 75 Fed. Reg. 2,938, 2,952 (Jan. 19, 2010).

88. See, e.g., John McChesney, *Bakken Boom Fractures North Dakota Health Care*, BILL LANE CTR. FOR THE AM. W., STANFORD UNIV., (Oct. 1, 2012, 10:34), <http://www.stanford.edu/group/ruralwest/cgi-bin/drupal/content/bakken-boom-fractures-north-dakota-health-care> (describing strains on health care systems in rural North Dakota caused by the fracking boom).

89. See Michelle L. Bell, Roger D. Peng & Francesca Dominici, *The Exposure-response Curve for Ozone and Risk of Mortality and the Adequacy of Current Ozone Regulations*, 114 ENVTL. HEALTH PERSP. 532, 535 (2006).

90. Ian Graham, *Working Conditions of Contract Workers in the Oil and Gas Industries* 10-18, INT'L LABOUR OFFICE, WORKING PAPER NO. 276 (2010), available at http://www.ilo.org/wcmsp5/groups/public/-ed_dialogue/-sector/documents/publication/wcms_161194.pdf (describing global trend of the oil and gas sector using contractors, rather than hiring employees).

91. See Jaffe, *supra* note 81 (describing Colorado's setback rules).

92. See Reeder, *supra* note 9, at 1009.

93. 2 COLO. CODE REGS. § 404-1(802)(b) (2013).

helicopter, and unprotected exposure to steady noise at ninety decibels for just a few hours can cause temporary hearing impairment.⁹⁴

In jurisdictions where flaring—burning off excess natural gas at the wellhead—is allowed, flares can be a nuisance.⁹⁵ A flare burning just a few hundred feet from a home can cause substantial light pollution.⁹⁶ Although flaring controls pollution better than directly venting methane into the atmosphere,⁹⁷ the image of fires burning across a landscape is nevertheless alarming.⁹⁸ And it is a particular nuisance to those who live close by.⁹⁹

3. *Indirect socioeconomic impacts at the local level.*

a. *Boomtown blues: Crime, violence, and substance abuse.*

The fracking boom has a wide range of indirect socioeconomic impacts on local communities, better known as “Boomtown Effects.” They stem from the pace and scope of fracking—the “boom”—and the fact that fracking employs a mobile workforce, rather than local residents. Fracking booms bring a rapid influx of well-paid newcomers (mostly young men) working dangerous jobs in a profession known to cause high levels of depression and substance abuse into usually rural areas with limited housing and recreational opportunities.¹⁰⁰ This is a perfect recipe for many social ills.

Rural sociologists have long documented that the influx of oil and gas workers can cause upswings in issues including substance

94. FED. AVIATION ADMIN., HEARING AND NOISE IN AVIATION 2 (2011), *available at* http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/hearing_brochure.pdf.

95. *See* OHIO ENVTL. PROT. AGENCY, UNDERSTANDING THE BASICS OF GAS FLARING 1 (2012), *available at* <http://www.epa.state.oh.us/portals/0/General%20pdfs/gas%20flaring.pdf>; *see also* 2 COLO. CODE REGS. § 404-1(912)(a) (2013) (banning unnecessary flaring).

96. *See* Edwin Dobb, *The New Oil Landscape*, NAT'L GEOGRAPHIC (Mar. 2013), <http://ngm.nationalgeographic.com/2013/03/bakken-shale-oil/dobb-text> (discussing the nuisance posed by flares located close to homes in North Dakota's Bakken shale).

97. Fershee, *The Oil and Gas Evolution*, *supra* note 46, at 27.

98. *See, e.g.*, Clifford Krauss, *In North Dakota, Flames of Wasted Natural Gas Light the Prairie*, N.Y. TIMES (Sept. 26, 2011), http://www.nytimes.com/2011/09/27/business/energy-environment/in-north-dakota-wasted-natural-gas-flickers-against-the-sky.html?pagewanted=all&_r=2&.

99. *See, e.g.*, Charlie Brennan, *Jared Polis Sues to Stop Fracking next to His Weld County Property*, BOULDER DAILY CAMERA (June 25, 2013), http://www.dailycamera.com/news/boulder/ci_23733454/jared-polis-sues-stop-fracking-next-his-weld.

100. *See* Dobb, *supra* note 96.

abuse, crime, the sex trade, and domestic violence in rural areas.¹⁰¹ Today's fracking boom bears out that trend. In the first few years of the fracking boom in western Colorado's Piceance Shale, the Garfield County Sheriff's Department had to hire fifteen new deputies, and total offenses per year increased from 100 to 600, with assaults, DUIs, and drug-related crimes becoming especially problematic.¹⁰²

Because oil and gas workers are mostly male, the social issues and crimes associated with the fracking boom tend to be gendered in nature.¹⁰³ The large influx of young men results in increased sex work, with sex workers sometimes coming to the community from far away.¹⁰⁴ The gender imbalance in boomtowns has been linked to overall increases in sexual assault and sex crimes.¹⁰⁵ And while the increased crime rate is keeping some prosecutors busy, in Indian Country the fact that most of the oil and gas workers moving to reservations are not enrolled members of a tribe has made prosecuting alleged perpetrators in tribal court impossible.¹⁰⁶ Until the 2013 Violence Against Women Act goes into effect in 2015, tribal prosecutors will be unable to prosecute non-tribal members for any crimes. This has created a severe disparity in sexual assault and rape prosecution on and off

101. See generally Charles F. Cortese & Bernie Jones, *The Sociological Analysis of Boomtowns*, 8 W. SOC. R. 75, 84 (1977); Covey & Menard, *Crime in the Region of Colorado Affected by Energy Resource Development*, 20 J. RES. IN CRIME & DELINQUENCY 110, 116-23 (1983).

102. Tharp, *supra* note 48.

103. See William R. Freudenburg, *Women and Men in an Energy Boom Town: Adjustment, Alienation, and Adaptation*, 46 RURAL SOC. 220, 220-40 (1981) (finding that women in energy boomtowns are unlikely to receive direct economic benefits from energy development, raising concerns about female "newcomers" to energy boomtowns, and considering gendered nature of energy boomtown life in general); accord Sierra Crane-Murdoch, *The Bakken Oilfields: 'No Place for a Woman'*, HIGH COUNTRY NEWS (Aug. 5, 2013), <http://www.hcn.org/issues/45.13/the-bakken-oilfields-no-place-for-a-woman> (describing the experience of a female truck driver working in the Bakken shale in North Dakota).

104. See John Eligon, *An Oil Town Where Men are Many and Women Are Hounded*, N.Y. TIMES (Jan. 15, 2013), http://www.nytimes.com/2013/01/16/us/16women.html?pagewanted=all&_r=0 (describing gender imbalance in North Dakota's Bakken shale).

105. See Joel Berger & Jon P. Beckmann, *Sexual Predators, Energy Development, and Conservation in Greater Yellowstone*, 24 CONSERVATION BIOLOGY 891, 894 (2010) (finding that sex offender registries increased more rapidly in towns with energy development).

106. See *Oliphant v. Suquamish Indian Tribe*, 435 U.S. 191, 195 (1978) (holding that tribal courts lack criminal jurisdiction over non-Indians); see also *United States v. Lara*, 541 U.S. 193, 207 (2004) (upholding federal statute extending tribal criminal jurisdiction to members of other tribes).

reservations.¹⁰⁷

b. *Growing pains: Housing and traffic.*

The rapid influx of workers does more than just alter a community's demographic profile. The need to shelter a large number of new residents is often impossible, especially in smaller rural towns.¹⁰⁸ Most oil and gas workers live in "man camps"—clusters of mobile homes, RVs and trucks, often located without formal land use approval.¹⁰⁹ Man camps often lack electricity, running water, sewage, or adequate heat, creating a positive feedback loop with the high rates of depression, substance abuse, and crime discussed above.¹¹⁰ Not all workers live in man camps. Many move into hotels, competing with the tourism industry critical to many rural Western communities.¹¹¹ Those oil and gas workers who are able to secure rental properties tend to displace the poorest residents in rural communities, causing widespread eviction, and potentially homelessness for the original residents.¹¹²

Fracking booms also strain physical infrastructure by causing extreme traffic problems. One state estimates fracking requires 2000 truck trips per well, with the need to transport drilling rigs, workers, fracking fluids, millions of gallons of water, and remove wastewater.¹¹³ Some estimates have put the number closer to

107. Sierra Crane-Murdoch, *On Indian Land, Criminals Can Get Away with Almost Anything*, THE ATLANTIC (Feb. 22, 2013), <http://www.theatlantic.com/national/archive/2013/02/on-indian-land-criminals-can-get-away-with-almost-anything/273391> (documenting the inability of the tribal courts at the Ft. Berthold Reservation in North Dakota's Bakken shale to prosecute non-tribal members); Winter King & Sara Clark, *Navigating VAWA's New Tribal Court Jurisdictional Provision*, INDIAN COUNTRY TODAY (Mar. 31, 2013), <http://indiancountrytodaymedianetwork.com/opinion/navigating-vawas-new-tribal-court-jurisdictional-provision-148458> (explaining that most VAWA amendments do not come into effect until 2015).

108. See Brasier et al., *supra* note 50, at 36.

109. See Tharp, *supra* note 48; Brown, *supra* note 48; A.G. Sulzberger, *Oil Rigs Bring Camps of Men to the Prairie*, N.Y. TIMES, Nov. 25, 2011, <http://www.nytimes.com/2011/11/26/us/north-dakota-oil-boom-creates-camps-of-men.html?pagewanted=all>; Nathaniel Gronewold, *'Man Camps' Go Upscale in Response to 'Absolutely Abhorrent' Housing Situation*, E&E NEWS, July 2, 2012, <http://www.eenews.net/energywire/stories/1059966723>.

110. See Brown, *supra* note 48; Tharp, *supra* note 48.

111. Tharp, *supra* note 48.

112. See Evelyn Nieves, *The North Dakota Oil Fracking Boom Creates Clash of Money and Devastation*, ECONOMIC HARDSHIP REPORTING PROJECT (Oct. 1, 2012), <http://economichardship.org/the-north-dakota-oil-fracking-boom-creates-clash-of-money-and-devastation> (describing such an eviction crisis on the Ft. Berthold reservation).

113. Brown, *supra* note 48.

4000.¹¹⁴ Rural communities are rarely equipped to handle this traffic, with many having only a few paved roads and no options to bypass residential areas.¹¹⁵ Traffic accidents are also a major problem. One recent study of traffic accidents in Pennsylvania's oil and gas producing region found a 2% increase in traffic accident risk per additional well drilled per month, controlling for changes in population and traffic accident patterns over time.¹¹⁶ As with chemical exposure-related public health hazards, oil and gas workers are most at risk. Between 2002 and 2012, 300 oil and gas workers were killed in work-related traffic accidents, a problem often attributed to truck drivers working very long shifts, and to frequent violations of federal traffic safety laws restricting truck-driving hours.¹¹⁷ Two-thirds (thirty-three out of fifty-five) of traffic fatalities in North Dakota between January and June 2013 occurred in the remote Bakken Shale, where the high number of traffic fatalities involving oil and gas industry trucks has caused an outcry by tribal members residing on the Fort Berthold Indian Reservation.¹¹⁸ Spills associated with truck accidents are a major public safety hazard.¹¹⁹ Local governments can incur substantial emergency services-related costs responding to the increased number of traffic accidents and health risks associated with spills, so it is hardly surprising that traffic issues have been a major focal

114. HEATHER COOLEY & KRISTINA DONNELLY, PACIFIC INSTITUTE, *HYDRAULIC FRACTURING AND WATER RESOURCES: SEPARATING THE FRACK FROM THE FICTION* 26 (2012), available at http://www.pacinst.org/wp-content/uploads/2013/02/full_report35.pdf.

115. Fershee, *The Oil and Gas Evolution*, *supra* note 46, at 26.

116. Lucija Muehlenbachs & Alan J. Krupnick, *Shale Gas Development Linked to Traffic Accidents in Pennsylvania*, RES. FOR THE FUTURE (Sept. 27, 2013), <http://common-resources.org/2013/shale-gas-development-linked-to-traffic-accidents-in-pennsylvania>.

117. See Ian Urbina, *Deadliest Danger Isn't at the Rig but on the Road*, N.Y. TIMES (May 14, 2012), http://www.nytimes.com/2012/05/15/us/for-oil-workers-deadliest-danger-is-driving.html?_r=2&adxnnl=1&pagewanted=1&adxnnlx=1384999458-6S2V0EvI8d5mkkYUgiUIZQ.

118. Dustin Monke, *An Enlightening 12-hour Drive around the Bakken*, DICKINSON PRESS (June 9, 2013), <http://www.thedickinsonpress.com/content/monke-enlightening-12-hour-drive-around-bakken> (documenting the traffic fatality rate in the Bakken oil shale region); see also Raymond Cross, *Development's Victim or its Beneficiary?: The Impact of Oil and Gas Development on the Fort Berthold Indian Reservation*, 87 N.D. L. REV. 535, 546-47 (2011) (describing impacts of traffic on the Reservation); Eloise Ogden, *Three Affiliated Tribes Ask BIA for Help with Highway Safety Issues*, MINOT DAILY NEWS (Feb. 22, 2011), <http://www.minotdailynews.com/page/content.detail/id/552162.html> (describing a hearing over a large number of traffic fatalities associated with oil and gas trucks on the Ft. Berthold Reservation); NORTH DAKOTA FLIGHT SPARKS DISCUSSION ON IMPACT OF OIL BOOM, LIGHTHAWK (Sept. 2010), <http://www.lighthawk.org/WayPoint/Waypoint%20September%202010.pdf> (documenting traffic problems at Ft. Berthold).

119. See Wiseman, *Fractured Appalachia*, *supra* note 8, at 258-60.

point of local government attempts to regulate oil and gas.¹²⁰

c. Building the bust: Traditional economic drivers suffer.

The numerous socioeconomic changes in fracking boomtowns create significant net harm to the industries that typically sustain local economies. Agriculture and natural resource-based tourism are the primary economic sectors in the modern rural West.¹²¹ Fracking booms harm both, which is especially problematic because the oil and gas sector's price volatility makes it prone to "busts."¹²² Further, because the natural gas commodity market is regional, rather than global, the fracking boom has begun to saturate the North American natural gas market sufficiently, which substantially slows the nationwide boom and causes "busts" in some areas.¹²³ Damage to traditional economic sectors makes "busts" more severe and longer lasting.¹²⁴

Fracking makes tourism less desirable and less affordable. Drilling rigs disrupt scenic vistas and harm wildlife, particularly deer and elk, which discourages hunting.¹²⁵ The loss of birds and other rare and endangered species may deter tourists seeking charismatic fauna.¹²⁶ And as discussed above, housing shortages often result in low hotel vacancy rates, raising prices for tourists, if rooms are available at all.¹²⁷

Fracking harms agriculture by competing for the limited water supply available in the West.¹²⁸ Ozone pollution suppresses vegetation growth and reduces yield, harming crop farming and

120. See, e.g., *Bd. of Cnty. Comm'rs v. Bowen/Edwards Assocs.*, 830 P.2d 1045, 1050 n.3 (Colo. 1992); Riley, *supra* note 11, at 383 (discussing traffic-based regulations in the City of Deer Park, TX).

121. WALTER E. HECOX, *THE ROCKIES REGION: A REGION CONTINUALLY DEFINED AND REDEFINED BY RESOURCES AND ENVIRONMENT* 11-13 (2011), available at www.coloradocollege.edu/dotAsset/92d3f9cc-4169-45a8-bc38-65c05892c592.pdf.

122. See BOSSELMAN ET AL., *supra* note 49, at 454-58 (tracing history of natural gas price volatility in the early 2000s); see also *U.S. Natural Gas Wellhead Price*, ENERGY INFO. ADMIN., <http://www.eia.gov/dnav/ng/hist/n9190us3m.htm> (last updated May 31, 2013) (providing historic natural gas price data).

123. Will Bunch, *Pa. Fracking Boom Goes Bust*, PHIL. DAILY NEWS (Sept. 12, 2013), http://articles.philly.com/2013-09-12/news/41974274_1_fracking-boom-penn-state-marcellus-center-marcellus-shale.

124. See Brasier et al., *supra* note 50, at 34.

125. See *supra* notes 42-43 and associated text.

126. See *supra* notes 41-42 and associated text.

127. Tharp, *supra* note 48.

128. See *supra* notes 36-38 and associated text.

grazing operations.¹²⁹ One study found that fracking's footprint directly displaces agricultural land use.¹³⁰ Anecdotal evidence also confirms that fracking booms can displace farmers and ranchers.¹³¹ Spills and unfenced or poorly-fenced wastewater pits can kill cattle and other livestock who drink contaminated water.¹³² Organic and natural food niche farms may be unable to obtain the certification necessary for their business model if their farms are exposed to unknown chemicals.¹³³

Finally, fracking impacts both outdoor-recreation-based tourism and agriculture because methane emissions accelerate climate change.¹³⁴ In Colorado, climate change harms both industries by decreasing the amount and timing of precipitation and snowmelt, exacerbating water shortage problems.¹³⁵ This will make recovery from fracking's short-term impacts more difficult for farmers and outdoor-recreation-based tourism operations facing a "permanent" drought increased in magnitude by fracking.¹³⁶

d. *Pigs in a parlor: Community character impacts.*

"Community character" is a term scholars employ to describe citizens using local self-governance to create the sort of community in which they want to live.¹³⁷ Local government authority to enact

129. Fitzgerald Booker et al., *The Ozone Component of Global Change: Potential Effects on Agricultural and Horticultural Plant Yield, Product Quality and Interactions with Invasive Species*, 51 J. INTEGRATIVE PLANT BIOLOGY 337, 342-43 (2009).

130. E.T. SLONECKER ET AL., U.S. GEOLOGICAL SURVEY, LANDSCAPE CONSEQUENCES OF NATURAL GAS EXTRACTION IN ALLEGHENY AND SUSQUEHANNA COUNTIES, PENNSYLVANIA, 2004-2010 at 19-20 (2013), available at http://pubs.usgs.gov/of/2013/1025/OFR2013_1025.pdf.

131. See, e.g., Rosemary Bilchak, *How We Lost Our Ranch to Gas Drilling*, HIGH COUNTRY NEWS (Aug. 21, 2006), <https://www.hcn.org/issues/328/16489>.

132. Roberson, *supra* note 35, at 127.

133. Mary Esch, *Fracking Poses Mixed Bag for Farmers in New York*, ASSOCIATED PRESS (May 21, 2012), <http://pipeline.post-gazette.com/index.php/news/archives/24545-fracking-poses-mixed-bag-for-farmers-in-new-york>.

134. See *supra* note 29 and associated text.

135. ANDREA J. RAY ET AL., CLIMATE CHANGE IN COLORADO: A SYNTHESIS TO SUPPORT WATER RESOURCES MANAGEMENT AND ADAPTATION 41 (2008), available at <http://cwcb.state.co.us/publicinformation/publications/Documents/ReportsStudies/ClimateChangeReportFull.pdf>.

136. See Quirin Schiermeier, *Mega-drought Threat to US Southwest*, NATURE (Feb. 23, 2011), <http://www.nature.com/news/2011/110223/full/news.2011.120.html> (describing studies finding long-term drying in the Southwest due to climate change).

137. GERALD E. FRUG, RICHARD T. FORD & DAVID J. BARRON, LOCAL GOVERNMENT: CASES AND MATERIALS 619 (5th ed. 2010).

zoning ordinances to shape community character has been universally recognized since the Supreme Court decided *Euclid*.¹³⁸ Fracking booms can change that character, decreasing a community's cohesion as it struggles with the issues that arise from the influx of a large group of outsiders.¹³⁹ Fear of increasing crime rates creates stress among both the original residents and the migrants who arrived with the "boom."¹⁴⁰ Sharp divides can arise between formerly friendly neighbors over whether to promote or fight fracking.¹⁴¹ While some community members, especially those who own mineral rights, may benefit financially from a fracking boom, many others do not and must face the boom's impacts while enjoying few of its benefits.¹⁴²

4. *Fiscal impacts: Providing more services with less revenue.*

The disparity between the fracking boom's beneficiaries and those who must bear its costs exists not only at the individual level, but also between levels of government.¹⁴³ Local governments are faced with regulating booms that change their communities' character and harm the health, safety and welfare of their citizens.

To deal with the fracking boom's impacts, county governments must provide social and health services to address new housing problems, substance abuse, and crime,¹⁴⁴ and likely will need to hire more social workers, law enforcement, and emergency response personnel.¹⁴⁵ Hiring these staff can be difficult, because housing shortages in communities experiencing a fracking boom¹⁴⁶ make living costs unaffordable on entry-level government salaries.

138. See Brief for Bell Acres Borough et al. as Amici Curiae supporting Appellees at 2-4, 11-15, *Robinson Twp. v. Pennsylvania*, 52 A.3d 463, 493 (Pa. Commw. Ct. 2012) (defining community character and discussing local government authority over it).

139. Brasier et al., *supra* note 50, at 36.

140. Lori M. Hunter, Richard S. Krannich & Michael D. Smith, *Rural Migration, Rapid Growth and Fear of Crime*, 67 RURAL SOC. 71, 71 (2002).

141. See, e.g., Hal Herring, *The Rocky Mountain Front Blues*, HIGH COUNTRY NEWS (June 24, 2013), http://www.hcn.org/issues/45.11/the-rocky-mountainfrontblues/article_view?b_start:int=0 (describing such tensions in Augusta, Montana).

142. *Id.*

143. See Spence, *supra* note 8, at 481-82 (explaining that the externalities from oil and gas development primarily impact local communities, but local governments often lack the resources to address them).

144. See *id.*

145. Brasier et al., *supra* note 50, at 36, 47.

146. See Tharp, *supra* note 48 (describing difficulties in hiring and retaining teachers in Garfield County, CO).

Cities and counties also must also repair roads damaged by heavy truck traffic. The cost of improving roads to deal with increased fracking-related truck traffic in one rural county was over 16 times its annual budget.¹⁴⁷ And planning commissions must make tough decisions ranging from where to locate wells and man camps to whether to allow permanent housing construction, despite the risk that houses will sit empty in the event of a bust.¹⁴⁸

Despite the substantial costs borne by local governments, the primary government revenues from fracking—mineral leasing revenues and severance taxes—go to federal and state governments, not to local governments. A few states, including Colorado, transfer some of those funds to local governments.¹⁴⁹ But these transfers are very low compared to fracking's costs. In Colorado, transfers totaled \$94 million in fiscal year 2012.¹⁵⁰ For perspective, the annual revenues of just one city, Denver, are an order of magnitude higher—\$945 million in 2013.¹⁵¹ And state transfer policies do not take into account disparities caused by Colorado's property tax exemption, so communities with lower tax bases, like southwest Colorado's San Juan Basin, end up financing severance tax grants to wealthier communities on the Front Range.¹⁵²

Local governments derive revenue primarily from two sources: property taxes and sales taxes.¹⁵³ Of the two, property taxes tend to provide the primary revenue stream, especially for county governments.¹⁵⁴ As noted above, fracking booms can provide limited gains in sales tax revenue, as population increases boost retail sales.

But property taxes are another story. Fracking depresses nearby property values¹⁵⁵ due to its noise and light pollution and potential health impacts. And although fracking creates a housing shortage,

147. Freilich & Popowitz, *supra* note 11, at 534.

148. See Tharp, *supra* note 48 (describing how Rifle, Colorado, became a “modern day ghost town” following the oil shale bust in the early 1980s).

149. See DOLA, *supra* note 23; see also Charles Ashby, *\$62 Million in Royalties, Energy Taxes Distributed*, GRAND JUNCTION DAILY-SENTINEL, Sept. 5, 2012, <http://tinyurl.com/cjvvnv6>.

150. Ashby, *supra* note 149. The \$94 million total includes \$62 million in severance taxes and \$32 million in federal leasing revenues. *Id.*

151. CITY & CNTY. OF DENVER, VOL. 1, MAYOR'S BUDGET 2013 at 4 (2012), available at http://www.denvergov.org/Portals/9/documents/budget_2013/2013_Budget.pdf.

152. MINOR & JONES, *supra* note 54, at 9.

153. FRUG, FORD, & BARRON, *supra* note 137, at 688-89.

154. *Id.*

155. Powers, *supra* note 9, at 928.

under the property tax lag model, it takes several years for property tax assessments to catch up to changing property values, by which time the fracking boom likely will be over and demand for housing back to normal.¹⁵⁶ The lag is exacerbated by residents who live close to fracking operations and who try to sell their properties to escape the nuisance of fracking. Their devalued properties become a disproportionate number of new assessments.

III. STATE AND LOCAL REGULATORY AUTHORITY OVER FRACKING IN COLORADO

A. *Background: The Nature of Local Governments in Colorado*

There are five types of local governments in Colorado: home rule municipalities, statutory municipalities, home rule counties, statutory counties, and special districts.¹⁵⁷ This Article addresses how each of the first four can regulate fracking. It first describes the overall scope of their powers.

There are currently ninety-seven home rule municipalities in Colorado.¹⁵⁸ Two of them—Denver and Broomfield—are consolidated cities and counties.¹⁵⁹ Article XX, section 6 of the Colorado Constitution authorizes municipalities to approve charters granting themselves home rule powers.¹⁶⁰ It enumerates many broad powers, including eminent domain, taxation, and election holding.¹⁶¹ But home rule powers are broader than those listed in the Constitution. Section 6 also grants home rule municipalities “all other powers necessary, requisite or proper for the government and administration of its local and municipal matters,” and states that the enumeration of powers should not be construed to deny them “any right or power essential or proper to the full exercise of [self-government] right[s].”¹⁶² Section 6 provides that state law is superseded by ordinances passed

156. See generally Jerome F. Heavey, *Assessment Lags and Property Tax Impacts*, 37 AM. J. ECON. & SOC. 431 (1978).

157. Robert M. Linz, *Researching Colorado Local Government Law*, 38 COLO. LAW. 101, 101 (2009).

158. *Active Colorado Municipalities*, DOLA, <https://dola.colorado.gov/lgis/municipalities.jsf?jsessionid=3dc1c164503400e530df648300d4?jftfdi=&jffi=municipalities.jsf> (last visited Nov. 27, 2013) (on website, use “find” feature and search for “home rule”).

159. COLO. CONST. art. XX, § 1 (Denver); COLO. CONST. art. XX, § 10 (Broomfield).

160. COLO. CONST. art. XX, § 6.

161. *Id.* §§ 1, 6.

162. *Id.* § 6.

pursuant to home rule charters.¹⁶³ The Colorado Supreme Court recently held that “Article XX vests in home rule municipalities every power which the legislature could have conferred.”¹⁶⁴

In addition to home rule municipalities, Colorado also has 171 statutory municipalities.¹⁶⁵ Rather than holding all powers necessary and proper for local government, they have only those powers explicitly granted to them by Titles 29 and 31 of Colorado’s Revised Statutes. These powers are notably broad. They include general police powers,¹⁶⁶ zoning,¹⁶⁷ and water pollution control.¹⁶⁸ But they are limited to the powers enumerated by the General Assembly.

Like statutory municipalities, Colorado’s sixty statutory counties¹⁶⁹ hold similar enumerated powers under Title 29, including land use powers.¹⁷⁰ They are also granted county-specific powers under Title 30, including police powers,¹⁷¹ oil and gas leasing authority,¹⁷² and zoning authority.¹⁷³ But, like statutory municipalities, statutory counties are also limited to their enumerated powers and powers necessary to exercise them, and cannot exercise any powers not explicitly delegated to them by the General Assembly.¹⁷⁴

Unlike home rule municipalities, home rule counties are

163. *Id.*

164. *Town of Telluride v. San Miguel Valley Corp.*, 185 P.3d 161, 168 (Colo. 2008) (quoting *City & Cnty. of Denver v. Bd. of Comm’rs of Arapahoe Cnty.*, 156 P.2d 101, 103 (1945)) (internal quotation marks omitted).

165. DOLA, *supra* note 158 (on website, use “find” feature and search for “statutory”). Notably, the Town of Georgetown is neither a home rule city nor a statutory municipality. It is a territorial charter municipality that operates under a charter from the Territory of Colorado. *See* COLO. CONST. art. XIV § 13.

166. COLO. REV. STAT. ANN. § 31-15-401 (West 2013).

167. *Id.* § 31-23-301 (2013).

168. *Id.* § 31-15-710 (2013).

169. *See Colorado Counties*, DOLA, <https://dola.colorado.gov/lgis/counties.jsf?jftfdi=&jffi=counties.jsf> (last visited Oct. 28, 2013) (listing Colorado’s 64 counties); Colorado Counties, Inc., *Counties*, ccionline.org/counties (last visited Nov. 27, 2013) (noting that a total of four counties are organized as home rule counties or as combined cities and counties, which indicates that the remaining 60 counties are statutory counties).

170. COLO. REV. STAT. ANN. § 29-20-104 (West 2013).

171. *Id.* § 30-15-401.

172. *Id.* § 30-11-302.

173. *Id.* § 30-28-111.

174. *Colo. Mining Ass’n v. Bd. of Cnty. Comm’rs of Summit Cnty.*, 199 P.3d 718, 723-24 (Colo. 2009) (citing *Bd. of Cnty. Comm’rs of Douglas Cnty. v. Bainbridge, Inc.*, 929 P.2d 691, 699 (Colo. 1996)).

created pursuant to statute, and not the Colorado Constitution.¹⁷⁵ The General Assembly granted home rule counties narrower authority—only forty-six enumerated (albeit broad) powers, with no “necessary and proper” or non-enumerated powers clauses.¹⁷⁶ Perhaps because of this, relatively few counties have chosen to adopt home rule charters. Besides the aforementioned consolidated cities and counties of Denver and Broomfield, only Weld and Pitkin Counties have adopted home rule charters.¹⁷⁷

B. State Law Preemption of Local Ordinances

In addition to the explicit limitations set by the Colorado Constitution, General Assembly, and courts, local governments’ regulatory powers may also be preempted by other state statutes that grant the state authority to regulate in certain areas. Under Colorado state law, preemption analysis proceeds differently depending on the type of local government involved.¹⁷⁸

1. Home rule municipalities.

Because municipal home rule authority derives from the Colorado Constitution, courts use a four-part test to determine whether a home rule municipality’s ordinance that potentially conflicts with state law can survive: “[1] Whether there is a need for statewide uniformity of regulation; [2] whether the municipal regulation has an extraterritorial impact; [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.”¹⁷⁹

But courts do not subject every action taken by home rule municipalities to this preemption analysis. In 2008, the Colorado Supreme Court issued a landmark opinion affirming an expansive view of home rule municipalities’ powers. In *Telluride v. San Miguel*, a developer challenged the City of Telluride’s use of its eminent domain power to condemn an area outside the city’s boundaries

175. COLO REV. STAT. ANN. § 30-11-501 (West 2013).

176. *Id.* § 30-35-201.

177. *Colorado Counties Inc.*, *supra* note 169.

178. *Summit Cnty.*, 199 P.3d at 723-24.

179. *Id.* at 723 (citing *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1067 (Colo. 1992)). One scholar described this as more properly being understood to be a two-part test. The first three factors condense into a single inquiry as to whether an ordinance is a matter of statewide, local, or shared concern. Laurie Reynolds, *Home Rule, Extraterritorial Impact, and the Region*, 86 DENV. U. L. REV. 1271, 1287-88 (2009).

for parks, open space and recreational use.¹⁸⁰ The court distinguished inquiries into the powers granted to home rule municipalities by the Colorado Constitution from the preemption analysis courts apply regarding powers granted to home rule municipalities by statute.¹⁸¹ It explained that “[w]here the constitution specifically authorizes a municipal action which potentially implicates statewide concerns,” the municipality may exercise those powers, unconstrained by the “local purpose” inquiry of preemption analysis.¹⁸²

The court then considered whether exercising eminent domain power to acquire property for parks and open space constituted a “lawful, public, local, and municipal purpose” over which the Colorado Constitution grants home rule municipalities extraterritorial eminent domain powers. It concluded that Telluride’s use of its eminent domain power did indeed constitute a lawful municipal purpose because the General Assembly had previously authorized local governments to exercise eminent domain authority to acquire property for parks and open space purposes and because home rule authority includes all powers that the state has authority to grant.¹⁸³ The court affirmed that “land use policy traditionally has been a local government function.”¹⁸⁴ The court thus held that extraterritorial condemnation for parks and open space is a power expressly granted to home rule municipalities by the constitution, and upheld Telluride’s action.¹⁸⁵

Telluride v. San Miguel expanded home rule municipal authority in two ways.¹⁸⁶ First, it explicitly affirms that when home rule municipalities act under authority explicitly granted to them by the Colorado Constitution, ordinary preemption analysis does not apply. If a home rule municipality is exercising such a power, it need only show that its action conforms with the terms of that constitutional provision, irrespective of whether the power is more traditionally state or local in nature. The *Telluride v. San Miguel*

180. *Town of Telluride v. San Miguel Valley Corp.*, 185 P.3d 161, 163-64 (Colo. 2008).

181. *Id.* at 167.

182. *Id.*

183. *Id.* at 167-68.

184. *Id.* at 168 (citing *Town of Telluride v. Lot Thirty-Four Venture, L.L.C.*, 3 P.3d 30, 39 n.9 (Colo. 2000)).

185. *Id.* at 167-69.

186. *But cf.* Reynolds, *supra* note 179 at 1271 (criticizing the court for taking an overly broad view of home rule municipal authority).

court addressed whether the condemnation at issue was “local” in nature not because it was applying the preemption test, but because the constitution itself limits eminent domain authority to local purposes.

Second, the court “recognize[d] that land use policy traditionally has been a local government function,” and thus land use is an area of traditional local concern under Colorado law.¹⁸⁷ The court expanded on dicta from an earlier case in which it concluded that a rent control ordinance was a matter of economic policy, rather than land use policy, and thus a matter of mixed state and local concern under the fourth prong of the preemption test.¹⁸⁸ Although the *Telluride v. San Miguel* court was interpreting what constituted a “local” purpose under the constitution’s home rule eminent domain provision, it made clear that its reasoning was cross-applicable to its standard preemption analysis.¹⁸⁹ Accordingly, in future preemption inquiries, land use ordinances can be considered exclusively local under the fourth prong of the test.

2. *Statutory counties.*

Statutory counties only possess powers expressly granted by the state, including “implied powers reasonably necessary” to exercise them.¹⁹⁰ The extent of their powers is thus dictated by “the ordinary rules of statutory construction.”¹⁹¹

Preemption inquiry for statutory counties proceeds along the lines of federal/state preemption analysis, with courts determining whether a state law expressly, impliedly, or operationally preempts a local ordinance.¹⁹² “Express preemption arises when the express language of the statute indicates the state’s intent to preempt *all* local authority over the given subject matter,” and the legislature has “provided a clear and unequivocal statement of intent to prohibit the exercise of local government authority.”¹⁹³ Implied

187. *San Miguel*, 185 P.3d at 168-69.

188. *See Telluride v. Lot Thirty-Four*, 3 P.3d at 39 n.9.

189. *San Miguel*, 185 P.3d at 168.

190. *Colorado Mining Ass’n v. Bd. of Cnty. Comm’rs of Summit Cnty.*, 199 P.3d 719, 723-24 (Colo. 2009) (citing *Bd. of Cnty. Comm’rs of Douglas Cnty. v. Bainbridge, Inc.*, 929 P.2d 691, 699 (Colo. 1996)).

191. *Id.* at 724.

192. *Id.* at 723 (explaining that “[o]ur preemption methodology for resolving state and local legislative conflicts borrows from our cases involving federal preemption analysis.”).

193. *Bainbridge, Inc.*, 929 P.2d at 710-11 (citing *Bd. of Cnty. Comm’rs, La Plata Cnty.*

preemption exists if state law indicates local regulation would be impermissible, depending on whether the state law is “sufficiently dominant” to override the local ordinance.¹⁹⁴ Finally, operational preemption inquiries decide either that the state and local rules can be harmonized,¹⁹⁵ or that the local rule “materially impedes” or destroys state law, and must be struck down.¹⁹⁶

The Colorado Supreme Court has recognized that statutory counties have “broad land use authority,” and their zoning ordinances are presumptively valid.¹⁹⁷ But statutory counties’ land use authority is less broad than home rule municipalities’, and is constrained to those powers expressly delegated to them by the General Assembly through the Colorado Local Government Land Use Control Enabling Act (“Enabling Act”) and other statutes.¹⁹⁸

3. *Statutory municipalities.*

Statutory municipalities enjoy a legal status very similar to statutory counties, sharing the same authority over land use decisions under the Enabling Act.¹⁹⁹ Statutory municipalities also have enumerated powers distinct from those of counties, codified in Title 31.²⁰⁰ Fewer cases have applied preemption analysis to statutory municipality oil and gas ordinances, but one appellate court used the same express/implied/operational preemption analysis applied to statutory counties.²⁰¹

4. *Home rule counties.*

Because there are relatively few of them, and thus fewer cases involving them have come before state courts, home rule counties have a more ambiguous legal status than other Colorado local governments. Because county home rule authority is statutory and

v. Bowen/Edwards Assocs., 830 P.2d 1045, 1057 (Colo. 1992)).

194. *Summit Cnty.*, 199 P.3d at 724 (citing *Voss v. Lundvall Bros.*, 830 P.2d 1061,1068 (Colo. 1992)).

195. *Id.* at 730 (citing *Voss*, 830 P.2d at 1068-69).

196. *Town of Carbondale v. GSS Props., LLC*, 169 P.3d 675, 678 n.3 (Colo. 2007) (quoting *La Plata Cnty.*, 830 P.2d at 1059).

197. *Summit Cnty.*, 199 P.3d at 730 (citing Bd. of County Comm’rs of Boulder County v. Thompson, 493 P.2d 1358, 1361 (Colo. 1972)).

198. *Id.* at 729 (citing COLO. REV. STAT. ANN. §§ 29-20-101 to -108 (West 2013)).

199. *See, e.g.*, COLO. REV. STAT. ANN. §§ 29-20-104(1)(a)-(h) (West 2013) (granting statutory municipalities land use authority).

200. *Id.* § 31-15-103 (granting “municipalities” authority to enact ordinances to promote public safety, health, prosperity, morals, and convenience).

201. *Town of Frederick v. N. Am. Res. Co.*, 60 P.3d 758, 761 (Colo. App. 2002).

not constitutional, it may be less broad than the land use authority the Colorado Supreme Court recognized in *Telluride v. San Miguel*. Since home rule county powers are limited to the forty-six enumerated ones discussed above,²⁰² a court would likely apply the same preemption analysis to a home rule county as a statutory county.

C. *Preemption Jurisprudence in the Oil and Gas Context*

Many key cases shaping Colorado's preemption jurisprudence have involved local oil and gas ordinances. A pair of cases handed down by the Colorado Supreme Court on the same day in 1992 defines that jurisprudence: *La Plata County* and *Voss*.²⁰³

In *La Plata County*, the court upheld a statutory county's land use ordinance requiring oil and gas operations to obtain a special use permit from the County Commissioners or planning staff.²⁰⁴ The court first explained that the powers granted to statutory counties are narrower than home rule municipalities' constitutional powers.²⁰⁵ In the land use realm, those powers come from the Enabling Act, and the Title 30 provisions granting county-specific land use authority.²⁰⁶ The court concluded that the Enabling Act and Title 30 provisions left "no doubt" that La Plata County had land-use regulation powers, and that oil and gas development "involve[s] the use of land and undoubtedly ha[s] some impact on a county's interests in land use control."²⁰⁷ With this background, the court turned to whether the Colorado Oil and Gas Conservation Act ("COGCA") preempted the La Plata County ordinance.

First, the court found no basis for either express or implied preemption of local governments' land use authority over oil and gas development.²⁰⁸ It then applied the operational preemption test, and held that, based on the record before it, there was no conflict between the land use ordinance and state law.²⁰⁹ It reasoned that the ordinance was "designed to harmonize oil and

202. COLO. REV. STAT. ANN. § 30-35-201 (West 2013).

203. Bd. of Cnty. Comm'rs, *La Plata Cnty. v. Bowen/Edwards Assocs.*, 830 P.2d 1045, 1060 (Colo. 1992); *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1069 (Colo. 1992).

204. *La Plata Cnty.*, 830 P.2d at 1050-51.

205. *Id.* at 1055.

206. *Id.* at 1056.

207. *Id.*

208. *Id.* at 1058-59.

209. *Id.* at 1059-60.

gas developmental and operational activities with the county's overall plan for land-use and with the state's interest in those developmental and operational activities."²¹⁰

The court went on to list in dicta three areas of possible operational preemption: "safety regulations," "technical conditions," and "land restoration requirements."²¹¹ But these were not hard and fast rules—the court concluded by explaining that questions of operational preemption "must be resolved on an ad-hoc basis under a fully developed evidentiary record."²¹²

Voss addressed the validity of a ban on all oil and gas production and exploration in Greeley, a home rule city in Weld County.²¹³ The Colorado Supreme Court first extolled the broad powers of home rule municipalities, opening the case by distinguishing it from the statutory county preemption issue decided in *La Plata*, and finally enumerating in great detail the powers, land use and otherwise, enjoyed by home rule municipalities.²¹⁴ The court then laid out the four part test, described in Part III(B)(1) above, used in home rule preemption analyses to determine whether the matter being regulated was of purely local, purely state, or mixed state and local concern.²¹⁵

On the test's first three prongs, the court concluded that oil and gas regulation is an area of traditional state concern warranting statewide uniformity, in part because local regulations can have extraterritorial impacts since oil-bearing formations do not conform to municipal boundaries.²¹⁶ On the fourth prong, the court found that Greeley's total ban "substantially impedes" statewide regulations since it prohibited development altogether, and concluded that it was thus operationally preempted.²¹⁷

The court limited its holding to ordinances which completely banned oil and gas development. It stated that "we do not mean to imply that Greeley is prohibited from exercising any land-use

210. *Id.* at 1060.

211. *Id.*

212. *Id.*

213. *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1062-63 (Colo. 1992). Foreshadowing the remarkably similar present day controversy over nearby Longmont's fracking ban, *see infra* Part IV(A)(3), Greeley in fact had two separate bans on hydrocarbon exploration—one passed by its City Council, and a substantively identical ban passed by popular referendum that also included criminal penalties.

214. *Id.* at 1064-65.

215. *Id.* at 1066-67.

216. *Id.* at 1067-68.

217. *Id.* at 1068.

authority over those areas of the city in which oil and gas activities are occurring or are contemplated,” and affirmed that its *La Plata County* conclusion about local government land-use authority applied to home-rule municipalities, as well.²¹⁸ Indeed, the Court overturned the appellate court’s finding that there was “no room” for local government oil and gas regulations, and laid out an explicit framework for future regulations by home-rule municipalities:

If a home-rule city, instead of imposing a total ban on all drilling within the city, enacts land-use regulations applicable to various aspects of oil and gas development and operations within the city, and if such regulations do not frustrate and can be harmonized with the development and production of oil and gas in a manner consistent with the stated goals of the Oil and Gas Conservation Act, the city’s regulations should be given effect.²¹⁹

Perhaps due to the court’s clarity in setting this framework, there have been relatively few cases involving local government oil and gas regulations in the intervening years.

In *La Plata County v. COGCC*, the Court of Appeals overturned a COGCC rule that state drilling permits “shall be binding with respect to any conflicting local governmental permit or land use approval process.”²²⁰ Because the rule’s purpose of interpreting the *La Plata/Voss* doctrine was outside COGCC’s area of expertise, the court found the agency was not entitled to judicial deference.²²¹ It reasoned that the rule’s use of the term “any conflicting” had a “much broader meaning” than the “operational conflicting” standard from *La Plata/Voss*.²²² Since the rule would “erode[] the delicate balance” established in *La Plata/Voss* by “preempt[ing] local government actions beyond those that materially impede or destroy the state interest,” and since it “would give oil and gas operators license to disregard local land use regulation,” the court struck down the rule.²²³

In *Frederick*, the Court of Appeals overturned parts of a statutory town’s ordinance allowing oil and gas development only

218. *Id.*

219. *Id.* at 1068-69.

220. Bd. of Cnty. Comm’rs, *La Plata Cnty. v. Colo. Oil & Gas Conservation Comm’n*, 81 P.3d 1119, 1122 (Colo. App. 2003).

221. *Id.* at 1125.

222. *Id.*

223. *Id.*

through a special-use permit approved by the town Board of Trustees, with a \$1000 application fee, and subject to setback, noise mitigation, aesthetic impact regulation, and other provisions.²²⁴ First, the court held that the 1994 COGCA Amendments did not impliedly preempt all local regulation of oil and gas development.²²⁵ Indeed, the court noted the COGCA Amendments explicitly stated that they did not prohibit local governments from charging fees “for inspection and monitoring for road damage and compliance with local fire codes, land use permit conditions, and local building codes.”²²⁶ The court then applied the *Voss* preemption analysis and held that the setback, noise abatement and visual impact provisions of the ordinance were invalid because they established “technical conditions” for well drilling in areas that the state already regulated.²²⁷ The court upheld Frederick’s authority to enforce its ordinance by obtaining injunctive relief against violators, noting that “[i]t is illogical to conclude that a local government retains the authority to regulate in certain areas relating to oil and gas operations, but has no ability to enforce such operations.”²²⁸

The *Frederick* decision is notable for two reasons. First, the court did not perform an extensive analysis of exactly why and how the setback, noise abatement, and visual impact provisions “materially impeded” the COGCC regulations addressing the same issue. Second, the court essentially ignored the fact that Frederick is a statutory town,²²⁹ a form of local government distinct from that of the defendants in *La Plata* and *Voss*.

The second and final Court of Appeals case assessing a local government regulation under the *La Plata/Voss* framework was a facial challenge to a Gunnison County ordinance that extensively regulated the oil and gas industry largely based on its environmental impacts.²³⁰ The court found that three parts of the

224. *Town of Frederick v. N. Am. Res. Co.*, 60 P.3d 758, 760 (Colo. App. 2002).

225. *Id.* at 763.

226. *Id.* (emphasis removed) (citing COLO. REV. STAT. ANN. § 34-60-106(15) (West 2013)).

227. *Id.* at 765.

228. *Id.* at 767.

229. The only reference to Frederick’s legal status is the court stating that “[a]s a statutory town, Frederick has the power to enact ordinances not inconsistent with state law that are necessary and proper to provide for the health, safety, prosperity, order, comfort, and convenience of the municipality.” *Id.* at 761.

230. *Bd. of Cnty. Comm’rs of Gunnison Cnty. v. BDS Int’l, LLC*, 159 P.3d 773, 777 (Colo. App. 2006) (noting that the ordinance regulated, among other things, wildlife and wildlife habitat analysis, vegetation, water quality, drainage and erosion control, livestock

ordinance (which assessed impact mitigation fees, mandated access to drilling company records, and required extra bonding) were preempted by state statutes and regulations addressing the same issues.²³¹ It then held that the ordinance provisions regulating water quality, soil erosion, wildlife and vegetation, livestock, geologic hazards, cultural and historic resources, wildfire protection, and recreation were not *per se* in conflict with state regulations, and remanded the issue to the trial court for further evidentiary hearings.²³² The court also upheld Gunnison's permit duration provision even though it was shorter than the state's.²³³

Although no other appellate-level cases have interpreted the *La Plata/Voss* framework for oil and gas, in 2009, the Colorado Supreme Court applied the *La Plata/Voss* preemption framework when it held that a county ordinance banning cyanide heap leaching was impliedly preempted by state law.²³⁴ Although the case involved a different statute, the court addressed both the *La Plata/Voss* preemption framework and the bounds of local government land use authority at length.²³⁵ Justice Hobbs, writing for the majority, synthesized the "common themes" of the *La Plata/Voss* standard: "(1) [T]he state has a significant interest in both mineral development and in human health and environmental protection, and (2) the exercise of local land use authority complements the exercise of state authority but cannot negate a more specifically drawn statutory provision the General Assembly has enacted."²³⁶

Summit County foreshadows how the Colorado Supreme Court might decide a preemption case in the oil and gas context. Since the court did not reach the issue of operational preemption (and land use-based oil and gas ordinances are neither expressly nor impliedly preempted by COGCA),²³⁷ *Summit County* would not

and livestock grazing, recreation impacts, water quality, waterbody setbacks, cultural and historic resources, wildlife hazards, geologic hazards, impact mitigation fees, access to records, financial guarantees, and permit duration).

231. *Id.* at 779-80.

232. *Id.* at 780-82.

233. *Id.* at 782.

234. *Colo. Mining Ass'n v. Bd. of Cnty. Comm'rs of Summit Cnty.*, 199 P.3d 718, 733 (Colo. 2009). Cyanide heap leaching is a common practice used in hard-rock mining, especially gold mining.

235. *Id.* at 723-25, 728-30.

236. *Id.* at 730.

237. *Voss v. Lundvall Bros.*, 830 P.2d 1061, 1066 (Colo. 1992) ("It is also settled, as evidenced by our decision in *Bowen/Edwards*, that nothing in the Oil and Gas Conservation Act manifests a legislative intent to expressly or impliedly preempt all aspects of a local

directly apply to local governments interested in regulating oil and gas. But the case affirms that at least Justices Hobbs and Rice, who remain on the court, are inclined to leave the *La Plata/Voss* framework in place, essentially unaltered.²³⁸ Another three Justices—Martinez, Eid, and Coats—believed that *Voss* should be limited to home rule municipalities. Justice Martinez, who has since retired from the bench, dissented on this basis and would have found the Summit County ordinance valid under the *La Plata County* framework.²³⁹ The court's two more conservative Justices, Eid and Coats, agreed with Martinez that *Voss* should be limited to home rule municipalities, but concurred with the majority in judgment on the basis that the Summit County ordinance was preempted because the state's mining reclamation law was more specific than the more general Enabling Act.²⁴⁰ How the court's three new Justices—Justice Márquez, who replaced Chief Justice Mullarkey (who had voted with the majority),²⁴¹ Justice Hood, who will replace Chief Justice Bender (who had also voted with the majority),²⁴² and Justice Boatright, who replaced Justice Martinez²⁴³—will treat the issue of *Voss*'s applicability to statutory counties and municipalities remains to be seen.

D. *Synthesizing a Rule for Local Government Oil and Gas Authority*

The *La Plata/Voss* doctrine remains the bedrock of Colorado's local government preemption doctrine with respect to oil and gas regulations.

Under *Voss*, home rule municipalities can enact any regulation that is not operationally preempted by state law, as determined by a four-part test: “[1] whether there is a need for statewide uniformity of regulation; [2] whether the municipal regulation has an extraterritorial impact; [3] whether the subject matter is one

government's land-use authority over land that might be subject to oil and gas development and operations within the boundaries of a local government.”).

238. *Summit Cnty.*, 199 P.3d at 721 (Hobbs, J. for the majority). Justices Eid and Coats concurred and Justice Martinez dissented, indicating that Chief Justice Bender and Justices Mullarkey and Rice joined the majority.

239. *Id.* at 741 (Martinez, J., dissenting).

240. *Id.* at 736 (Eid, J., concurring in judgment).

241. Felisa Cardona, *Ritter Picks Monica Marquez for Colorado Supreme Court*, DENVER POST (Sept. 9, 2010), http://www.denverpost.com/ci_16027263.

242. Jordan Steffen, *Hickenlooper Appoints Hood as New Colorado Supreme Court Justice*, DENVER POST (Oct. 25, 2013), www.denverpost.com/breakingnews/ci_24389795.

243. Jessica Fender, *Boatright Brings Family Law Expertise, “Intangibles” to Colorado Supreme Court*, DENVER POST (Oct. 27, 2011), http://www.denverpost.com/ci_19205348.

traditionally governed by state or local government; and [4] whether the Colorado Constitution specifically commits the particular matter to state or local regulation.”²⁴⁴ Outright bans on oil and gas development are operationally preempted under this framework.²⁴⁵ *Voss* also extended the *La Plata County* Court’s recognition of full local government land use-based regulatory authority to home rule municipalities.²⁴⁶ No later cases have addressed home rule municipalities’ regulatory powers.

The intervening decision in *Telluride v. San Miguel* adds another layer to this analysis—home rule municipalities have absolute authority over any function explicitly delegated to them by the Colorado Constitution, which includes, among other things, eminent domain, taxation, police powers, and any power which could have been granted to the municipality by the General Assembly.²⁴⁷ The *Telluride v. San Miguel* Court also concluded that matters of land use policy can be considered exclusively local under the third and fourth prongs of the preemption test.²⁴⁸

Under *La Plata County*, statutory counties can regulate oil and gas through land use ordinances, so long as they can be harmonized with state regulations and are not operationally preempted by “materially impeding” or “destroying” them.²⁴⁹ Ordinances involving “technical conditions” may be operationally preempted, but such a determination would have to be made on a case-by-case basis.²⁵⁰ Court of Appeals decisions have found impact fee assessments, recordkeeping requirements, financial assurances, setback requirements, noise abatement, and visual impact provisions stricter than similar state regulations to be such invalid technical conditions.²⁵¹ The Court of Appeals has also concluded

244. *Voss*, 830 P.2d at 1067.

245. *Id.* at 1068.

246. *Id.* (holding that “[w]hat we said in [*La Plata County*] concerning the land-use authority of a county applies to a home-rule city”).

247. *Town of Telluride v. San Miguel Valley Corp.*, 185 P.3d 161, 167 (Colo. 2008) (discussing the authority given to home rule municipalities under Article XX of the Colorado Constitution); *compare supra* notes 160-64 and accompanying text (discussing the authority of home rule municipalities under the Colorado Constitution), *with* 166-68 and accompanying text (describing the authority which the General Assembly has granted to statutory municipalities, which, under *Telluride v. San Miguel*, falls under the authority of home rule municipalities since the General Assembly has the power to grant it).

248. *San Miguel*, 185 P.3d at 167.

249. *Bd. of Cnty. Comm’rs, La Plata Cnty. v. Bowen/Edwards Assocs.*, 830 P.2d 1045, 1059-60 (Colo. 1992).

250. *Id.* at 1060.

251. *Bd. of Cnty. Comm’rs of Gunnison Cnty. v. BDS Int’l, LLC*, 159 P.3d 773, 779-80

that statutory county ordinances regulating water quality, soil erosion, wildlife and vegetation, livestock, geologic hazards, cultural and historic resources, wildfire protection, and recreation are not *per se* preempted by state regulations and, therefore, require case-by-case determinations.²⁵² It has not yet been resolved whether *Voss's* prohibition on outright bans also applies to statutory counties.²⁵³

No court has addressed the regulatory authority of either statutory municipalities or home rule counties, but based on their status under state law, it would presumably be very similar to the authority of statutory counties.²⁵⁴

E. State Authority: *The COGCA and COGCC's Regulations*

Understanding what powers local governments have to regulate the fracking boom also requires understanding what local governments cannot regulate—areas directly regulated by the state. Thus, a familiarity with Colorado's state oil and gas statutes and regulations is necessary to understand *how* Colorado local governments can and should regulate fracking.

The purpose statement of the COGCA makes clear that environmental protection is a priority, finding it to be in the public interest to foster responsible, balanced oil and gas development “consistent with protection of public health, safety, and welfare, including protection of the environment and wildlife resources.”²⁵⁵

The COGCA grants COGCC power to make and enforce regulations “reasonably . . . necessary” to implement it.²⁵⁶ It has relatively few other specific guidelines for the COGCC, emphasizing its role to prevent waste by granting it authority to

(Colo. App. 2006) (impact fees, recordkeeping, and financial assurances); *Town of Frederick v. N. Am. Res. Co.*, 60 P.3d 758, 765 (Colo. App. 2002) (setbacks, noise, and visual impacts).

252. *BDS Int'l, LLC*, 159 P.3d at 781-82.

253. *See Colorado Mining Ass'n v. Bd. of Cnty. Comm'rs of Summit Cnty.*, 199 P.3d 718, 737-38 (Colo. 2009) (Martinez, J., dissenting).

254. *See supra* Part III.B.3-4; *see also supra* note 229 and accompanying text (explaining that the *Frederick* court did not address whether the town's status as a statutory town was relevant to its regulatory authority). This issue may soon have to be resolved, as the City and County of Broomfield recently enacted a fracking moratorium. *See infra* notes 325 & 327 and accompanying text (noting that the City & County of Broomfield recently enacted a fracking moratorium, which might provide a unique test case to determine the scope of constitutionally-authorized counties' regulatory authority).

255. COLO. REV. STAT. ANN. § 34-60-102(1)(a)(I) (West 2013).

256. *Id.* § 34-60-105(1).

establish drilling and unitization agreements.²⁵⁷ It prohibits operators from wasting oil and gas,²⁵⁸ and directs them to “accommodate[] the surface owner by minimizing intrusion upon and damage to the surface of the land.”²⁵⁹ The 2007 COGCA Amendments added provisions directing COGCC to minimize adverse impacts on wildlife and to enact rules for permit-specific habitat conservation plans, use best management practices, and minimize surface disturbances.²⁶⁰

By contrast, COGCC’s 2008 implementing regulations are extremely specific and cover a large number of areas. The 300 Series covers well drilling requirements,²⁶¹ including bonding and financial assurance,²⁶² mechanical integrity testing,²⁶³ groundwater protection,²⁶⁴ and varying well spacing requirements by production field.²⁶⁵ The 600 Series covers health and safety requirements, including fire prevention,²⁶⁶ statewide groundwater baseline sampling and monitoring,²⁶⁷ and setback and mitigation requirements for various types of buildings.²⁶⁸ The 800 Series covers nuisance mitigation, including noise abatement,²⁶⁹ light pollution,²⁷⁰ visual impact mitigation,²⁷¹ and odor and dust control.²⁷² The 900 Series extensively regulates all aspects of waste management,²⁷³ requiring liners for waste pits,²⁷⁴ allowing the establishment of centralized waste disposal facilities,²⁷⁵ and banning “unnecessary” venting and flaring.²⁷⁶ Finally, the 1200

257. *Id.* §§ 34-60-116, 118.

258. *Id.* § 34-60-117.

259. *Id.* § 34-60-127(1)(a).

260. *Id.* §§ 34-60-128(2), (3)(b)-(c), (3)(d)(III).

261. 2 COLO. CODE REGS. § 404-1.317 (2013).

262. *Id.* § 404-1.304; *see also id.* § 404-1.709.

263. *Id.* § 404-1.326.

264. *Id.* § 404-1.324A.d.

265. *See, e.g., id.* § 404-1.318A (spacing requirements for Greater Wattenberg Field).

266. *Id.* § 404-1.606A.

267. *Id.* § 404-1.609.

268. *Id.* § 404-1.604.

269. *Id.* § 404-1.802.

270. *Id.* § 404-1.803.

271. *Id.* § 404-1.804.

272. *Id.* § 404-1.805.

273. *Id.* § 404-1.907.

274. *Id.* § 404-1.904.

275. *Id.* § 404-1.908.

276. *Id.* § 404-1.912(a).

Series establishes a comprehensive wildlife protection system.²⁷⁷

Accordingly, these aspects of oil and gas development can be regulated by Colorado local governments only if the local government regulations can be harmonized with state regulations and would not “materially impede” or “destroy” the state regulation.²⁷⁸ Notably, nearly all of the state level regulations address “technical conditions” of the sort that the *La Plata* Court indicated might be inappropriate for local governments to regulate.²⁷⁹ Many legal questions remain about the exact boundaries of local government authority over aspects of oil and gas drilling regulated by the state. But it is safe to conclude that local government regulations that address aspects of oil and gas development already regulated by the state are more likely to be preempted than those that are not already regulated.

IV. HOW CAN COLORADO LOCAL GOVERNMENTS REGULATE FRACKING?

Despite the remaining legal questions about the exact scope of local government authority to regulate oil and gas drilling in Colorado, many local governments have enacted ordinances, and a few groups have attempted to define the authority in publicly available reports. As the first step in determining how local governments can regulate fracking, this Article will assess two such reports, as well as the regulatory approaches taken by several Colorado local governments.

A. *Analysis of Potential Approaches to Local Government Authority*

1. *Colorado Department of Local Affairs.*

The Colorado Department of Local Affairs (“DOLA”) published a guide in 2010, synthesizing the legal and factual basis for local government oil and gas regulations. But it emphasizes the limitations of local authority, which might cause local officials to underestimate the scope of their regulatory powers. Specifically, the DOLA guide offers a questionable reading of key cases, eliding the important differences between the scope of authority afforded to statutory and home rule municipalities. Thus, although the

277. *Id.* §§ 404-1.1201-1205 (requiring operators to identify impacted wildlife and creating area-specific restrictions).

278. *See* Bd. of Cnty. Comm’rs, *La Plata Cnty. v. Bowen/Edwards Assocs.*, 830 P.2d 1045, 1059 (Colo. 1992).

279. *Id.* at 1058.

guide seeks to give local governments a comprehensive understanding of their regulatory authority over oil and gas operations, its conservative description of the scope of local government authority makes it a much less valuable tool than it might otherwise be.

First, DOLA collapses the distinction between home rule municipalities and statutory counties into the single preemption test for statutory counties established in *La Plata*, claiming the test is applicable to all local governments.²⁸⁰ Its only reference to home rule municipalities having distinct authority from statutory counties is to emphasize how *Voss* limited their authority to enact total bans.²⁸¹ Further, it does not explain *Telluride v. San Miguel*'s broad interpretation of home rule municipality control over land use, instead referencing it only once for the proposition that "land use planning has long been established as a matter of local concern."²⁸²

Second, DOLA leans heavily on the Court of Appeals ruling in *Frederick* as support for its narrow view of local authority.²⁸³ Indeed, the guide goes so far as to include 14 references to the relatively restrictive ruling in *Frederick*, with several including the word "not" in boldface.²⁸⁴ But DOLA stretches *Frederick* too far. *Frederick* involved a statutory town, not a home rule municipality. And the *Frederick* court only held that a few specific regulations in the town's ordinance were preempted. Making DOLA's reliance even more suspect, *Gunnison County*, not *Frederick* is the most recent Court of Appeals case addressing local government authority, and it took a much broader view. Yet DOLA cites *Gunnison County* only four times.

As the Court of Appeals noted in *La Plata v. COGCC*, COGCC's interpretation of the scope of local government regulatory authority is neither binding nor subject to judicial deference.²⁸⁵ It is the role of the courts, not the executive branch, to determine the scope of local government regulatory authority over fracking based on Colorado's Constitution, statutes, and cases interpreting

280. COLO. DEP'T OF LOCAL AFFAIRS, *supra* note 15, at 11-12.

281. *See, e.g., id.* at 12 (framing the case as if it establishes a bright-line rule).

282. *Id.* at 17.

283. *Id.* at 20; *see also supra* notes 220-33 and accompanying text (discussing the relative precedential value of *Frederick*, *La Plata County v. COGCC*, and *Gunnison County*, and the extent to which the three decisions comply with the *La Plata/Voss* framework).

284. *See, e.g., id.* at 21.

285. Bd. of Cnty. Comm'rs, *La Plata Cnty. v. Colo. Oil & Gas Conservation Comm'n*, 81 P.3d 1119, 1125 (Colo. App. 2003).

them. Although DOLA's narrow reading of *La Plata County* and strong emphasis on *Frederick* may inform the agency's own actions and decisions, DOLA's legal opinions are in no way binding upon local governments. Local governments that read those cases more broadly than DOLA are as justified in their interpretations as DOLA itself, and it is up to courts, not DOLA, to determine which interpretation is correct. Accordingly, local government officials seeking to regulate fracking should not read the DOLA guide as an authoritative source defining the scope of their authority, and rather should rely on their own legal counsel's interpretation of the relevant case law.

2. *Community Environmental Legal Defense Fund.*

CELDF has successfully organized citizens and officials in nineteen communities to enact ordinances recognizing a right to a healthy environment and banning all fossil fuel development.²⁸⁶ These ordinances use exceptionally broad language and ban a wide range of activities. Such ordinances represent the exact sort of outright ban on oil and gas development the Colorado Supreme Court struck down as unlawful for home rule municipalities in *Voss*. Further, the broad language of the CELDF ordinances could have unintended consequences, such as inviting takings challenges.²⁸⁷

CELDF is certainly aware of these challenges, and it acknowledges each of them in its "Guide to Banning Fracking for Colorado Communities."²⁸⁸ CELDF's guide, though, takes the opposite approach to DOLA's guide—it provides such an expansive view of Colorado local governments' regulatory authority that it may lead local officials and citizens groups to believe they have authority that they very likely lack under state law. For example, it claims that enacting a charter amendment that

286. See *Ordinances*, CELDF, <http://www.celdf.org/section.php?id=39> (last visited Nov. 7, 2013) (listing the local governments that have passed CELDF-drafted ordinances: Pittsburgh, West Homestead, Baldwin, Wilkinsburg, Forest Hills Borough, State College Borough, Ferguson Township, and Highland Township, Pennsylvania; Wales, New York; Yellow Springs, Broadview Heights, and Mansfield, Ohio; Sugar Hill, Plymouth, Easton, and Grafton, New Hampshire; Mountain Lake Park, Maryland, and Las Vegas and Mora County, New Mexico); Yellow Springs, Ohio, Ordinance #2012-17 (2012), available at <http://www.yso.com/uploads/ordinances-2012/2012-17.pdf> (last visited Nov. 7, 2013) (exemplifying a CELDF rights-based ordinance barring oil and gas extraction, oil and gas development infrastructure, and underground injection wells within the Village).

287. See generally McGinley, *supra* note 9, at 229-30 (discussing vulnerability of local government hydraulic fracturing regulations to takings suits).

288. CMTY. ENVTL. LEGAL DEF. FUND, *supra* note 16.

recognizes a community right to a healthy environment and bans all fossil fuel extraction would not be preempted by state law because it “does not regulate any activity,” and rather “asserts an already-existing right to local self-government.”²⁸⁹ Rather than delving into the nuances of the *La Plata/Voss* doctrine to justify this view, though, the CELDF guide argues:

The larger strategy behind organizing locally to assert rights has zero to do with relying on the courts. The courts might not vindicate our rights; they might, on behalf of the corporations, strip them, as they have done for many years. Community Rights Ordinances force them to do so publicly, clearly, and not in a quiet blizzard of legal mumbo-jumbo hidden away from public attention or interest.²⁹⁰

CELDf’s approach may have long term benefits from focusing public attention on legal restrictions of local government authority, potentially creating political pressure for change. But for local governments in the short term, CELDF’s advice is less helpful. Indeed, CELDF implicitly acknowledges the likelihood of its regulations being overturned in court, albeit through a “quiet blizzard of legal mumbo-jumbo.”²⁹¹ Communities hoping their fracking regulations will survive judicial scrutiny would do well to avoid a CELDF rights-based approach, and instead focus on their narrower regulatory authority under current law.

3. Longmont’s regulatory ordinance and fracking amendment.

One Colorado local government has already followed this approach. The City of Longmont, a home rule municipality, made headlines in July 2012 when its City Council passed a comprehensive set of oil and gas regulations.²⁹² COGCC immediately sued Longmont over the ban,²⁹³ and the Colorado Oil and Gas Association (“COGA”), the main oil and gas trade association in Colorado, moved to intervene in support of COGCC. No decision has been issued at the time of this Article’s writing.

289. *Id.* at 1.

290. *Id.* at 4.

291. *Id.*

292. See Rochat, *supra* note 1.

293. Mark Jaffe, *Gov. Hickenlooper Says Longmont Drilling Rules Must be Challenged*, DENVER POST (Aug. 15, 2012), http://www.denverpost.com/breakingnews/ci_21319130/gov-hickenlooper-says-longmont-drilling-rules-must-be.

In November 2012, Longmont voters went further than the City Council, and passed Ballot Measure 300, which banned fracking altogether.²⁹⁴ Ballot Measure 300 specifically banned both the “use [of] hydraulic fracturing to extract oil, gas or other hydrocarbons within the City of Longmont,” and the storage of fracking fluids in waste pits.²⁹⁵ COGA sued Longmont over Ballot Measure 300.²⁹⁶ COGCC joined the suit, supporting COGA, eight months later.²⁹⁷ Four environmental groups have intervened in the lawsuit on Longmont’s behalf.²⁹⁸ The case has not yet been argued, although the venue was recently changed from Weld to Boulder County.²⁹⁹

Longmont’s carefully written Ordinance highlights a path that local governments can follow to regulate fracking and likely prevail against any preemption challenges. But its Charter Amendment’s fate is less certain.

The Ordinance was written carefully to survive preemption analysis. Its purpose is to “facilitate the exploration and production of oil and gas in a responsible manner.”³⁰⁰ It stresses that it was enacted to preserve mineral owners’ rights “while ensuring the health, safety, and general welfare” of Longmont’s residents.³⁰¹ It is explicitly grounded in the City’s land use and police powers, and for its authority cites the Colorado Constitution’s home rule provisions, the Enabling Act, and statutes governing local government oil and gas regulation and land use

294. *Boulder County Election Results: Local, Statewide Races and Ballot Measures*, BOULDER DAILY CAMERA (Nov. 7, 2012), www.dailycamera.com/ci_21940200/election-results-boulder-county (noting that Measure 300 passed with 60% of the vote); *see also* Bruce Finley, *Longmont Drill Ban Flames Anti-Frack Forces on Eve of “Prosper” Rally*, DENVER POST (Nov. 13, 2012), www.denverpost.com/ci_21983880/longmont-drill-ban-flames-anti-frack-forces-eve (noting that the Longmont measure was an outright ban).

295. CITY OF LONGMONT, COLORADO CITY CHARTER art. XVI, § 16.3, *available at* <http://ourlongmont.org/charter-amendment>.

296. Bruce Finley, *Colorado Oil and Gas Association Sues to Kill Longmont Fracking Ban*, DENVER POST (Dec. 17, 2012), http://www.denverpost.com/environment/ci_22211514/colorado-oil-and-gas-industry-sues-kill-longmont.

297. Mark Jaffe, *Colorado Joins Suit to Knock Down Longmont Fracking Ban*, DENVER POST (July 11, 2013), http://www.denverpost.com/breakingnews/ci_23643679/state-joins-suit-knock-down-longmont-fracking-ban.

298. Tony Kindelspire, *Longmont Granted Change of Venue in Fracking Ban Lawsuit*, LONGMONT TIMES-CALL (Mar. 11, 2013), http://www.timescall.com/news/longmont-local-news/ci_22766862/longmont-granted-change-venue-frackingbanlawsuit?source=pkg.

299. *Id.*

300. Longmont, Colo., Ordinance O-2012-25 at 2 (July 24, 2012), *available at* http://www.ci.longmont.co.us/pwww/oil_gas/documents/CA_20120724_125237.pdf.

301. *Id.*

planning.³⁰²

Beyond its purpose statements, the Ordinance operates as a zoning ordinance that is clearly targeted to avoid preemption issues.³⁰³ It allows oil and gas development in all zones except residential and mixed-use residential zones.³⁰⁴ It requires varying levels of review for oil and gas activities based on their potential to disturb residents' quality of life.³⁰⁵ Wells conforming to the Ordinance's minimum and recommended standards are subject to minimal, administrative review.³⁰⁶ It requires conditional use permitting and public hearings for more dangerous and potentially disruptive activities, including wells meeting minimum standards but not recommended standards.³⁰⁷ It uses separate minimum and recommended standards to regulate several areas subject to COGCC regulations: setbacks, noise, light pollution, waste disposal, air quality, visual impact mitigation, wildlife impact mitigation, watershed protection, reclamation, and signage.³⁰⁸ The minimum standards generally match COGCC's rules. Thus, to obtain a special use permit, operations need only comply with state law, and compliance with extra "recommendations" will be decided in case-by-case Special Operation Permit review.³⁰⁹ The ordinance's only outright prohibition is on temporary worker

302. *Id.*

303. Notably, it includes an express savings clause for any provisions that are operationally conflicted. *Id.* at 7-8. Operators can request a special exception based on a perceived operational conflict, which will be adjudicated by a quasi-judicial decision-making body, where the applicant will have the burden of proving an operational conflict. *Id.* at 7. Should the applicant do so, the decision-making body will grant a special exception, which does not itself operationally conflict with state law, as appropriate to protect the health and welfare of Longmont residents. *Id.* at 8. Final decisions can be appealed in state court. *Id.*

304. *Id.* at 3. The Ordinance specifically permits oil and gas development in the Commercial, Central Business District, Regional Commercial, Business Light Industrial, Mixed Industrial, General Industrial, "Public" (parks and open space), Agricultural, and Regional Parks Zones. *Id.* at 42; *see also* CITY OF LONGMONT, COLORADO, ZONING DISTRICT MAP (Nov. 7, 2011), www.ci.longmont.co.us/planning/maps/documents/zoning_revised_112011.pdf (providing a legend explaining the abbreviations used to describe zones in the Ordinance).

305. Longmont, Colo., Ordinance O-2012-25, *supra* note 300, at 4-5. Oil and gas facilities must also obtain standard building permits and sales tax and use licenses. *Id.* at 9.

306. *Id.* at 4.

307. *Id.* Requested variances similarly require conditional use permitting and public hearings. Additional guidelines for variance requests are found in Section (m) of the Ordinance. *Id.* at 6-7.

308. *Id.* at 18-19.

309. *Id.* at 18.

housing—man camps—which are not regulated by COGCC.³¹⁰

The COGCC complaint objected to the ordinance on eight grounds.³¹¹ Longmont has not yet responded to the merits of these claims,³¹² but has moved to dismiss the case on procedural grounds.³¹³ Longmont has also opposed COGA's Motion to Intervene.³¹⁴ The court has not yet reached a decision. Although a complete analysis of the case is beyond the scope of this Article, two of COGCC's grounds for objection are noteworthy: Longmont's ban on development in residential zones and its requirements for visual impact mitigation.

Longmont's ban on development in residential zones is a clear example of a land use-based rule, which falls within local government authority under *La Plata County*, and certainly within the more expansive view of Home Rule municipality land use authority in *Telluride v. San Miguel*. Local government authority to determine that industrial uses are inappropriate in residential areas has been clear since *Euclid*, and if anything, was expanded by *La Plata County* and *Telluride v. San Miguel*. Indeed, the General Assembly has explicitly delegated local governments with zoning authority through the Enabling Act.³¹⁵ Under the reasoning of *Telluride v. San Miguel*, this raises local government zoning authority to a constitutional level.

COGCC's strongest argument is its challenge to Longmont's visual impact rule. COGCC already regulates visual impacts, requiring operators to paint facilities to match the landscape.³¹⁶

310. *Id.* at 4; *see also supra* notes 108-112 (describing the housing shortage caused by the fracking ban and the "man camps" in which many workers live).

311. Complaint at ¶¶ 42-107, *Colo. Oil & Gas Conservation Comm'n v. City of Longmont*, No. 2012-cv-702 (Colo. Dist. Ct. Boulder Cnty. July 30, 2012).

312. City of Longmont's Motion to Dismiss Complaint for Declaratory Relief for Lack of Subject Matter Jurisdiction and Failure to State a Claim at 4, *Colo. Oil & Gas Conservation Comm'n v. City of Longmont*, No. 2012-cv-702 (Colo. Dist. Ct. Boulder Cnty. Sept. 7, 2012).

313. *Id.* at 5-7. COGCC has responded to the motion, but not with any substantive arguments relevant to this Article. *See Colo. Oil and Gas Conservation Comm'n Response in Opposition to City of Longmont's Motion to Dismiss Complaint*, *Colo. Oil & Gas Conservation Comm'n v. City of Longmont*, No. 2012-cv-702 (Colo. Dist. Ct. Boulder Cnty. Oct. 12, 2012).

314. City of Longmont's Opposition to Colo. Oil & Gas Ass'n's Motion to Intervene, *Colo. Oil & Gas Conservation Comm'n v. City of Longmont*, No. 2012-cv-702 (Colo. Dist. Ct. Boulder Cnty. Sept. 27, 2012).

315. COLO. REV. STAT. ANN. § 29-20-104(1)(b) (West 2013) (Enabling Act provision establishing local government land use authority to "Regulat[e] development and activities in hazardous areas").

316. 2 COLO. CODE REGS. § 404-1.804 (2013).

Although the ordinance's minimum requirements match COGCC's painting requirements, they go further than COGCC by stating that "[o]n-site relocation may be necessary."³¹⁷ Visual impacts were among the "technical conditions" the *Frederick* court found to be operationally preempted, although it did not explain why visual impacts were a technical condition, finding operational preemption simply because they were regulated by COGCC.³¹⁸ A court reviewing Longmont's ordinance will have to address whether a home rule municipality's broader constitutional authority allows it to regulate visual impacts, even though a statutory municipality's regulation was operationally preempted. Since visual impacts relate closely to the idea of proactively preventing nuisances on which Euclidean zoning authority is based,³¹⁹ it seems likely that a court would uphold it as part of home rule municipalities' broad land use authority.

The fate of Longmont's Charter Amendment banning fracking is less certain. COGA's lawsuit raised three major issues with the Amendment, of which one is particularly relevant to this Article: the Amendment is operationally preempted because fracking is a stimulation technique, which is a technical aspect of oil and gas drilling.³²⁰

On its face, banning a drilling technique seems to conflict with both *Voss*' prohibition on outright bans and *La Plata*'s dicta warning that "technical conditions" would likely be operationally preempted. But a more specific consideration indicates that Longmont's fracking ban could very well survive judicial scrutiny.

Unlike the Greeley ordinance struck down in *Voss*, the Longmont Charter Amendment prohibits only a certain practice used by oil and gas developers, and not oil and gas development itself. Notably, COGCC does not specifically regulate fracking. Aside from a few definitions, COGCC only requires disclosure of the chemicals used,³²¹ and imposes dust controls for fracking sands.³²² Longmont's ban does not seem to materially impede any

317. Longmont, Colo., Ordinance O-2012-25 at § 32(w)(iv)(b)(2) (July 24, 2012), available at http://www.ci.longmont.co.us/pwwu/oil_gas/documents/CA_20120724_125237.pdf.

318. *Town of Frederick v. N. Am. Res. Co.*, 60 P.3d 758, 765 (Colo. App. 2002).

319. ROBERT C. ELLICKSON & VICKI L. BEEN, *LAND USE CONTROLS: CASES & MATERIALS* 74-75, 516-17 (3d ed. 2005).

320. Complaint at ¶¶ 23a, 37, 39, *Colo. Oil & Gas Ass'n v. City of Longmont*, 2012-CV-960 (Colo. Dist. Ct. Weld Cnty. Dec. 17, 2012).

321. 2 COLO. CODE REGS. § 404-1.205(A) (2013).

322. 2 COLO. CODE REGS. § 404-1.805 (2013).

aspect of COGCC regulation. Conventional oil and gas operations can proceed unimpeded under the Longmont Ban. Indeed, it seems to be a relatively straightforward case of the City exercising its constitutional police powers to protect its citizens' health and safety by enacting a regulation prohibiting a potentially dangerous activity.³²³

Although well stimulation techniques are undeniably "technical conditions," the *La Plata County* Court used "technical conditions" as an example, and not a hard and fast rule. A court will thus face an issue of first impression: whether home rule municipalities' police powers allow them to regulate a "technical condition" of oil and gas development which is not itself regulated by COGCC. Given that there seems to be no reason why a fracking ban would materially conflict with any specific COGCC regulations, a court could well find it not to be operationally preempted.

4. *Fracking regulations in other Colorado cities and counties.*

As the fracking boom in the Denver-Julesburg basin moves closer to the heavily populated Front Range, many other local governments have contemplated or taken action to restrict, ban, or regulate the boom. Most recently, in November 2013, three home rule municipalities—Boulder, Fort Collins, and Lafayette³²⁴—and the City and County of Broomfield passed ballot measures regulating fracking.³²⁵ Lafayette's measure was a permanent ban based on the CELDF "community rights" model,³²⁶ while Boulder,

323. See COLO. REV. STAT. ANN. § 29-20-104(1)(a) (West 2013) (Enabling Act provision establishing local government land use authority to "Regulat[e] development and activities in hazardous areas").

324. John Aguilar, *Anti-fracking Measures Win in Lafayette, Boulder, Fort Collins*, BOULDER DAILY CAMERA (Nov. 5, 2013), www.dailycamera.com/local-election-news/ci_24459893/fracking-bans-lafayette-broomfield-boulder-fort-collins. The author of this Article acknowledges that, as a Lafayette resident, he participated in discourse surrounding the Lafayette ballot measure, and was at times in communication with members of the measure's proponents, East Boulder County United. See Joel Minor, *Lafayette Issue 300: Yes, but . . .*, BOULDER DAILY CAMERA (Nov. 3, 2013), www.dailycamera.com/guest-opinions/ci_24436599/lafayette-issue-300-yes-but?.

325. Megan Quinn, *Broomfield Fracking Ban: Results Flip; Measure Approved by 17 Votes After Outstanding Ballots Counted*, BROOMFIELD ENTERPRISE (Nov. 14, 2013), www.broomfieldenterprise.com/broomfield-news/ci_24524511/final-tally-ballots-broomfield-becomes-all-day-affair.

326. BOULDER COUNTY CLERK & RECORDER, BALLOT CONTENT: 2013 BOULDER COUNTY COORDINATED ELECTION 10 (Nov. 5, 2013), *available at* www.bouldercounty.org/elections/ballot/documents/2013%20coordinated%20ballot%20content.pdf (describing City of Lafayette Ballot Question No. 300: Gas and Oil Charter Amendment).

Broomfield and Fort Collins all enacted five-year moratoria.³²⁷ The passage of the four bans has triggered statewide conversations about the role of local governments in regulating the oil and gas industry and statewide oil and gas regulatory measures.³²⁸

Commerce City has adopted an ordinance targeting the fracking boom, which takes a flexible, case-by-case approach.³²⁹ It prohibits drilling near two major wildlife areas (Barr Lake State Park and Rocky Mountain Arsenal National Wildlife Refuge).³³⁰ For all other areas, operators must negotiate specific agreements with the City on a case-by-case basis.³³¹ The Commerce City ordinance has not been challenged in court. The fact that the state has not raised a legal challenge suggests that such a flexible approach does not impose sufficiently specific requirements to “materially impede” COGCC regulations. The lack of an industry challenge may indicate only that no specific development company has been harmed by the ordinance, but may similarly highlight that Commerce City’s flexible approach does not raise a colorable conflict with state regulations.

Other Colorado local governments, including many on the Front Range, have longstanding oil and gas regulations that predate the fracking boom.

Greeley’s ordinance is highly instructive as to the permissible scope of home rule municipality regulations. After the Colorado Supreme Court struck down its ban on oil and gas development in

327. *Id.* at 8 (describing City of Boulder Ballot Question 2H, Oil and Gas Exploration Moratorium Extension); CITY AND CNTY. OF BROOMFIELD CLERK AND RECORDER, PROPOSED CHARTER AMENDMENT 300, www.broomfield.org/DocumentCenter/View/5636 (last visited Nov. 28, 2013) (providing text of Broomfield Charter Amendment enacting a five-year moratorium); Kevin Duggan, *Voters Put Brakes on Fracking*, FORT COLLINS COLORADOAN (Nov. 5, 2013), www.coloradoan.com/article/20131105/NEWS01/311050093/ (describing the measure passed in Fort Collins as a five-year moratorium).

328. *See, e.g.*, Sarah Gilman, *Why It Doesn’t Matter Whether Colorado’s Fracking Bans Hold up in Court*, HIGH COUNTRY NEWS (Nov. 19, 2013), [www.hcn.org/blogs/goat/why-it-doesn’t-matter-whether-colorados-fracking-bans-hold-up-in-court](http://www.hcn.org/blogs/goat/why-it-doesn-t-matter-whether-colorados-fracking-bans-hold-up-in-court) (discussing the local government bans as an impetus for statewide regulatory action); Bruce Finley, *Colorado Pitches New Rules to Cut Oil and Gas Industry Air Pollution*, DENVER POST (Nov. 18, 2013), www.denverpost.com/environment/ci_24548337/proposed-colorado-air-pollution-regs-clamp-down-oil (suggesting that Governor Hickenlooper’s support for stronger controls on oil and gas air pollution may be attributable to the political strength behind the four local government bans).

329. Yesenia Robles, *Commerce City Approves Fracking Rules*, DENVER POST (July 2, 2012), http://www.broomfieldenterprise.com/broomfield-news/ci_23461770/group-kicks-off-campaign-get-fracking-ban-broomfield.

330. *Id.*

331. *Id.*

Voss, Greeley passed a less restrictive ordinance.³³² It is remarkably similar to Longmont's 2012 ordinance. Among other things, it requires special use permits for all oil and gas operations,³³³ creates setback requirements based on population density,³³⁴ requires noise and visual impacts mitigation,³³⁵ wildlife mitigation planning and cumulative impacts analysis,³³⁶ and has enforcement, inspection, and signage provisions.³³⁷ Greeley's visual impact mitigation requirements are stricter than Longmont's, recommending several location-related requirements "to the maximum extent practicable," mandating minimal vegetation removal, requiring submission of a visual impact mitigation plan for facilities granted an exception to normal setback requirements, and allowing the imposition of one or more of five measures, including "cutting rock areas to create irregular forms" on a case-by-case basis.³³⁸

Despite the Greeley ordinance's extensive scope, it appears never to have been subject to judicial scrutiny. It has done little to prevent development—there are roughly 427 wells within the city limits today³³⁹—and the current City government is committed to promoting oil and gas development.³⁴⁰ But the lack of either a state or industry lawsuit may be more than political. It could indicate a belief that the ordinance is unlikely to be overturned by a court, especially given both the state and industry's willingness to challenge ordinances in nearby towns like Longmont and Frederick. Greeley's ordinance may thus provide insight to other home rule municipalities about the scope of their regulatory

332. See Jack Healy, *Supporting Oil and Gas, but Resisting Encroachment*, N.Y. TIMES (June 9, 2013), http://www.nytimes.com/2013/06/10/us/supporting-oil-and-gas-but-resisting-encroachment.html?_r=2&; accord Bruce Finley, *Drilling in Gung-Ho Greeley, Hits Opposition Near West Side Homes*, DENVER POST (May 5, 2013), http://www.denverpost.com/environment/ci_23174358/drilling-gung-ho-greeley-hits-opposition-near-west (describing the history of oil and gas regulation in Greeley).

333. GREELEY, COLO., MUN. CODE § 18.56.020(b) (2013); *id.* § 18.56.170(a).

334. *Id.* § 18.56.040(a).

335. *Id.* § 18.56.110(a), (b).

336. *Id.* § 18.56.110(d).

337. *Id.* § 18.56.210 (inspections); *id.* § 18.56.220 (enforcement); *id.* § 18.56.080 (signage).

338. *Id.* § 18.56.110(b)(1)-(5), (10), (11).

339. See Finley, *supra* note 332; Healy, *supra* note 332.

340. See, e.g., Thomas E. Norton, *Proposed Setback Rules Would Hurt Greeley*, DENVER POST (Jan. 19, 2013), http://www.denverpost.com/opinion/ci_22405168/proposed-setback-rules-drilling-would-hurt-greeley (opinion column by the Mayor of Greeley and co-signed by city council members, opposing stricter statewide regulation of the oil and gas industry).

authority.

B. Recommendations: How Should Local Governments Regulate Fracking?

A full understanding of the fracking boom's impacts, Colorado's preemption law, the scope of state regulations, and past approaches to regulation indicates that Colorado local governments should regulate fracking through land use-based ordinances. Although COGCC extensively regulates the technical aspects and environmental impacts of oil and gas development, ordinances targeting the fracking boom's socioeconomic impacts are unlikely to be preempted. This is especially true for home rule municipalities because their plenary authority over both land use and their citizens' health and welfare is embedded in the Colorado Constitution, and was expanded by *Telluride v. San Miguel* in the 20 years since *La Plata County* and *Voss* were decided.

1. Home rule municipalities should exercise their full constitutional authority.

Telluride v. San Miguel highlights that home rule municipalities exercising powers explicitly enumerated in the Colorado Constitution are subject to especially deferential preemption analysis. Three such powers are relevant to regulating the fracking boom.

First, under their eminent domain authority, home rule municipalities have direct control over all land uses within their jurisdiction. Further, the *Telluride* Court specifically affirmed that this authority can be used to create parks and open space.³⁴¹ Eminent domain is at least a backstop option for home rule municipalities to prevent particularly harmful fracking projects. Using eminent domain to prevent oil and gas development is hardly unprecedented in Colorado. Seventeen years before it passed its oil and gas regulations, Longmont condemned a gas well located at what is now the Ute Creek Golf Course, citing safety concerns.³⁴² However, eminent domain is controversial. It is also costly due to compensation requirements. Broad use of eminent domain to prevent fracking could create a backlash, especially from those concerned about property rights. It is only a viable

341. See *supra* notes 180, 183 & 185 and accompanying text.

342. See Scott Roach, *Longmont Took Stance Against Residential Oil and Gas Wells in 1995*, LONGMONT TIMES-CALL (Oct. 10, 2012), http://www.timescall.com/ci_21743068/longmont-took-stance-against-residential-oil-and-gas.

substitute for more specific regulations in wealthy cities with very limited oil and gas resources, such as Fort Collins and Boulder.³⁴³

The *Telluride v. San Miguel* court recognized that home rule municipalities have all powers that *could* be delegated to them by the state government.³⁴⁴ And the Constitution grants home rule municipalities all “right[s] or power[s] essential or proper” to self-government.³⁴⁵ Based on these powers, home rule municipalities can pass ordinances, which enjoy constitutional status and cannot be preempted by state law, to regulate three fracking-related issues. First, they can require any proposed well to demonstrate that it has an adequate supply of water.³⁴⁶ Second, they can impose impact fees to fund infrastructure and services necessary to serve oil and gas development, including roads, emergency management, and city planning and enforcement staff time.³⁴⁷ Finally, they can require operators to pay impact fees to prevent and clean up water pollution.³⁴⁸

Finally, regardless of what ordinance they enact, home rule municipalities are constitutionally authorized to enact heavy fines for violating municipal ordinances. The Colorado Constitution grants them power over the “imposition, enforcement and collection of fines and penalties for the violation of any of the provisions of the charter, or of any ordinance adopted in pursuance of the charter.”³⁴⁹ Especially given the relatively lax enforcement of state level laws,³⁵⁰ the threat of local enforcement may lead operators to act more responsibly.

343. See Kevin Duggan, *Fort Collins Oil-and-Gas Moratorium to End*, FORT COLLINS COLORADOAN (July 16, 2013), www.coloradoan.com/article/20130716/NEWS01/307160035 (explaining that only a single oil and gas operator is seeking to develop in the northeast corner of Fort Collins); Erica Meltzer, *Boulder Enters Fracking Fray: City Council to Consider Moratorium in June*, BOULDER DAILY CAMERA (May 8, 2013), http://www.dailycamera.com/news/boulder/ci_23203032/boulder-enters-fracking-fray-city-council-consider-moratorium (noting that the “the risk of anyone attempting to drill for oil and gas within city limits is remote”).

344. See *supra* note 183 and accompanying text (describing the *Telluride v. San Miguel* court’s holding); see also *supra* note 162 and accompanying text (describing provision in Article XX, section 6 of the Colorado Constitution granting Home Rule municipalities all powers “necessary, requisite and proper for the government and administration of its local and municipal matters”).

345. COLO. CONST. art. XX, § 6.

346. COLO. REV. STAT. ANN. § 29-20-303(1) (West 2013).

347. *Id.* § 29-20-104.5(1).

348. *Id.* § 31-15-710(1)(a); see also *id.* § 31-15-401(1)(c) (granting municipalities authority to identify and fine public nuisances in general).

349. COLO. CONST. art. XX, § 6(h).

350. See EARTHWORKS, *supra* note 30, at 49-50.

2. *Local governments should enact competitive special use permit allocation ordinances.*

Under Colorado preemption law, and based on past regulatory efforts by Colorado local governments, the most successful and legally defensible mechanism to regulate oil and gas is a competitive special use permitting system that awards a limited supply of permits to operators that commit to best management practices to minimize their negative impacts.

Home rule municipalities, statutory municipalities, home rule counties, and statutory counties all enjoy relatively broad land use control under the *La Plata/Voss* framework. Both the Colorado Supreme Court in *La Plata County* and the Court of Appeals in *Frederick* and *Gunnison County* have upheld local government rules that permitted oil and gas development only after careful review of a special use permit. Neither COGCC nor COGA have challenged Greeley's special use permitting ordinance or Commerce City's case-by-case approach.

Special use permitting can allow local governments to control the issues at the root of the fracking boom's socioeconomic impacts: the boom's pace and scope.³⁵¹ Local governments can enact ordinances that make available a finite number of operating permits within an appropriate unit of time. The number of permits and time period can vary depending on the local government's geographic area and the amount of resources available. In a large county with substantial oil and gas resources, like Weld County, offering 100 permits a quarter might be reasonable, while in a smaller area, perhaps a municipality with more limited resources, offering a single permit a year might be equally reasonable. To avoid takings suits, the number of permits available should be targeted so as not to make development impossible within the ordinary duration of a lease.

The ordinance could specify best management practices that would receive a certain number of "points." Prospective permittees committing to practices worth the greatest number of points would receive permits at the end of each allocation period, while prospective permittees who committed to fewer best management practices would be less likely to receive permits.

The point system would be based on local governments' land use and zoning authority. More points would be necessary to

351. See *supra* Part II.C.3.a (explaining that the pace and scope of the fracking boom is at the root of its indirect socioeconomic, or "boomtown," impacts).

receive a permit in a residential zone or a public park than in an industrial or agricultural zone. Local governments could use lower point thresholds to direct development to zones in which it is more appropriate, without risking a lawsuit over an outright ban on development in any particular zone, as Longmont now faces.

So long as the threshold for receiving a permit was not set so high as to be unattainable,³⁵² they could hardly “materially impede” or “destroy” COGCC rules.³⁵³ Because operators would be committing to them voluntarily, their operational preemption would thus be very unlikely. The system would be more akin to Commerce City’s case-by-case negotiating system, except that it would follow Longmont’s model of providing very clear guidance about what practices will allow an operator to obtain a permit. But, unlike Longmont’s Ordinance, under which it is possible for substantial amounts of drilling to proceed very rapidly if a sufficient number of operators commit to meeting the minimum and recommended standards, a competitive special use permit allocation system ensures that the pace and scope of a fracking boom will remain under local government control.

The point system could focus on best management practices that exceed state and federal standards in areas that are regulated by COGCC. By not requiring that operators exceed state standards, but providing preferential treatment to those that do, the ordinance would neither materially impede nor destroy COGCC regulations, so long as it adopted a reasonable threshold that operators could comply with without exceeding state regulation in every aspect of operations. Many areas relating to the fracking boom’s environmental and quality of life impacts are already regulated by COGCC and would be good subjects for the point system. Extra points could be rewarded to operators committing to larger setbacks, additional visual impact mitigation, additional noise mitigation, no night time operations, 100% capture of all gas emissions at the wellhead to reduce air pollution, no flaring, concentrating development onto multi-well pads, not using any on-site waste pits, conducting extensive wildlife impact mitigation planning, public disclosure of chemicals transported to the well site and used in the fracking process, and conducting before-and-after ground water testing.

352. This could be achieved by not making any of the points mandatory.

353. *See* Bd. of Cnty. Comm’rs, La Plata Cnty. v. Colo. Oil & Gas Conservation Comm’n, 81 P.3d 1119, 1125 (Colo. App. 2003) (describing “materially impede” and “destroy” standard for operational preemption).

Points could also be awarded to operators that committed to minimize the socioeconomic impacts of the fracking boom, which are generally unregulated by COGCC, but might be preempted by other state and federal laws. Extra points could be awarded to operators that committed to higher wages for employees, contractors, subcontractors, and their employees, and provided more generous leave and health benefits policies. The point system could also be used to incentivize employers to take responsibility for providing housing to their workers, preventing the need for man camps and avoiding issues with homelessness, motel overcrowding, and increased rental prices. Although it is likely illegal to *require* employers to provide affordable housing for their employees directly under Colorado law,³⁵⁴ there should be no legal problem with awarding additional “points” to employers that committed to finding affordable housing solutions for their employees, contractors, and subcontractors. Extra points can also be granted to operators that commit to mitigate their traffic impacts, either by restricting truck traffic to certain times of day, limiting the number of truck trips per well per period of time, building pipelines to avoid having to truck in water where possible, and providing funds to repair and/or expand roads that will be damaged by heavy truck traffic.

The “point system” can be supplemented by more specific regulations for the “boom town” effects, which neither COGCC regulations nor other state and federal laws address.

One such area is workers’ rights. A local ordinance could mandate that all oil and gas employees and contractors be paid a living wage. It can also require that employers provide adequate physical and mental health services to their employees, and provide resources to educate workers about depression, substance abuse, and the other common issues that arise in a “boom town” culture. Local governments could require that all employees have a mental health awareness component to their training, contact information for substance abuse and mental health care facilities posted on job sites, and monthly check-ins conducted either by company staff or trained mental health professionals. Given the known higher accident rates for contractors, it is particularly

354. *Town of Telluride v. Lot Thirty-Four Venture, L.L.C.*, 3 P.3d 30, 35-36 (Colo. 2000) (overturning an ordinance that required developers to provide affordable housing for future employees of the development), *superseded by statute*, COLO. REV. STAT. ANN. § 38-12-301 (West 2013), *as recognized in Meyersten v. City of Aspen*, 282 P.3d 456, 466 (Colo. App. 2011), *cert. denied*, 2012 WL 1773205, at *1 (Colo. May 14, 2012).

important that contractors receive the same level of services. Local governments can experiment with either requiring operators to provide mental health services for their contractors directly, or to require contractors to provide such services themselves.

Another area that could be addressed is worker housing. Although, as discussed above, it may not be possible under Colorado law to affirmatively require operators to provide affordable housing for their workers, an ordinance can follow Longmont's lead and ban temporary worker housing camps in all city zones. Alternatively, an ordinance can adopt stricter standards for "man camps," requiring access to running water, sewer systems, electricity and heating. Combined with a strong bonus for providing adequate housing in the "point" system, such rules provide a very strong incentive to operators to provide adequate housing for their employees.

Finally, local governments can require all operators to submit monthly reports on the number of workers they anticipate at their well sites, housing conditions for their workers, any known mental health and substance abuse incidences, and information on the anticipated volume, timing, and location of truck traffic. Such information can be crucial to local governments that need to know how to allocate scarce resources.

3. Local governments should enact strict traffic controls.

An ordinance narrowly tailored to the uniquely heavy truck traffic necessary to frack a well is the most straightforward and legally defensible strategy to achieve an effective fracking ban.

Traffic is a classic example of land use authority and traditionally a matter of local control in Colorado.³⁵⁵ The General

355. See, e.g., *City of Commerce City v. State*, 40 P.3d 1273, 1282-83 (Colo. 2002) (explaining that traffic control is an area of traditional local concern, although authority to employ novel traffic enforcement devices is an area of mixed state and local concern); *City of Colorado Springs v. Smartt*, 620 P.2d 1060, 1062 (Colo. 1980) (holding that "lessening traffic congestion and facilitating transportation" is "a legitimate zoning objective"); *Retallack v. Policy Ct. of City of Colorado Springs*, 351 P.2d 884, 885 (Colo. 1960) (holding that "[i]t is generally held . . . that . . . all regulations governing movements of vehicles, street cars, and of pedestrians on streets and sidewalks is the primary function of local government"); *W. Paving Constr. Co. v. Bd. of Cnty. Comm'rs of Jefferson Cnty.*, 689 P.2d 703, 707 (Colo. App. 1984) (holding that minimizing adverse traffic conditions is a legitimate zoning objective); *C & M Sand & Gravel v. Bd. of Cnty. Comm'rs of Boulder Cnty.*, 673 P.2d 1013, 1017 (Colo. App. 1983) (describing "traffic congestion" and "compatibility of land use" as "matters which are traditionally of concern to local zoning authorities"); see also *Laidley v. City & Cnty. of Denver*, 798 F. Supp. 2d 1193, 1198-99 (D. Colo. 2011) *aff'd*, 477 F. App'x 522 (10th Cir. 2012) (applying Colorado

Assembly has granted municipal governments broad authority to control traffic flow.³⁵⁶ Further, COGCC regulations have minimal requirements related to traffic flow and safety.³⁵⁷ But fracking-related truck traffic causes major negative impacts on public safety, convenience, and air quality.³⁵⁸ And given its intensive water demand and waste production, fracking is impossible without substantial truck traffic.³⁵⁹

Accordingly, ordinances restricting truck traffic can substantially mitigate the fracking boom's impacts on a community. Instead of levying an infrastructure tax, or granting preferential permitting treatment to operators limiting truck traffic, a potential ordinance could ban any activity requiring more than 1000 truck trips a month. Since fracking a well takes anywhere from 1000 to 4000 truck trips, and typically happens in less than a month, this would effectively limit fracking except under carefully controlled conditions.³⁶⁰ Such an extreme level of truck traffic is unsuitable in most municipalities, especially on smaller, relatively isolated rural roads where most oil and gas development takes place. Especially given the infrastructure costs and major accident risks posed by fracking traffic, such a ban would be well within a local governments' land use and police powers.

Local governments would have to carefully consider such an ordinance to avoid unintended consequences for large retail operations and any warehousing or other commercial and industrial activities with heavy truck traffic. To avoid these unintended consequences, the ban could be limited in scope to trucks transporting fluids or potentially hazardous chemicals.

V. CONCLUSION

As the COGCC and COGA challenges to Longmont's Ordinance and Charter Amendment continue to move through

state law and discussing which aspects of traffic control are matters of local concern); *but cf.* *Webb v. City of Black Hawk*, 295 P.3d 480, 489-91 (Colo. 2013) (finding a citywide ban on bicycling to implicate a matter of statewide concern, in large part due to its extraterritorial impacts).

356. COLO. REV. STAT. ANN. §§ 31-15-702, 704, 705 (West 2013).

357. *See* 2 COLO. CODE REGS. § 404-1(334) (2013) (requiring oil and gas operators subject to COGCC regulations to follow all state traffic and highway laws, but specifying no additional requirements).

358. *See supra* notes 113-20 and accompanying text.

359. *See supra* notes 36-38 & 113-14 and accompanying text.

360. *See supra* notes 113-14 and accompanying text.

the court system, local governments in Colorado and throughout the country will remain focused on Longmont's fate. But local governments in Colorado need not wait to enact their own laws regulating the fracking boom. Existing Colorado law and the experiences of other cities and counties reveal that land use-based ordinances, which target the fracking boom's socioeconomic impacts, while leaving environmental issues largely to state regulation, are likely to prevail in court.