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Taxing Local Energy Externalities

Hannah J. Wiseman
Professor of Law; Professor and Wilson Faculty Fellow in the College of Earth and Mineral Sciences; Co-funded Faculty—Institutes of Energy and the Environment, the Pennsylvania State University—University Park

TAXING LOCAL ENERGY EXTERNALITIES

*Hannah J. Wiseman**

There is a fundamental problem of scale in the governance of industrial development. For some of the fastest-growing U.S. industries, the negative impacts of development fall primarily at the local level, and the benefits tend to accrue more broadly to states and the federal government. These governments accordingly have inadequate incentives to address the very localized negative externalities of development. Yet states also increasingly preempt most local control over some forms of development. This creates a regulatory void, in which state and federal regulations are inadequate, and local governments lack the power to use traditional Pigouvian tools such as regulation, taxation, and liability to address local harms. Without these Pigouvian sticks, local governments are also constrained in their use of Coasean bargaining, in which they could threaten regulation or taxation to bring industry to the table and negotiate for private solutions. This gap is particularly evident in the energy space, in which oil and gas and associated pipelines, wind energy, and solar energy have strong local effects, but local control is constrained to varying degrees.

This Article explores the reasons for this governance gap, including federalism concerns, political-economic factors, and views about the relative competency of local government, and it proposes solutions that take these drivers into account. The Article uses the areas of renewable energy, oil and gas production, pipelines, and natural gas export terminals to demonstrate the highly localized externalities of energy development, explore the Pigouvian and Coasean tools available to address these externalities, and analyze state preemption of local governments' use of these tools. Based on the lessons from these industries, it argues that a combined system of taxation and negotiation incentives would best fill the regulatory void in local energy law while addressing the concerns that have created this void.

* Professor of Law; Professor and Wilson Faculty Fellow in the College of Earth and Mineral Sciences; Co-funded Faculty—Institutes of Energy and the Environment, the Pennsylvania State University—University Park. Many thanks to Michael Wolf, the faculty at the George Washington University Law School, the faculty at Penn State University College of Law, and Cary Coglianese and the students in his Regulatory Law and Policy Seminar for helpful comments on drafts of this Article. I extend particular gratitude to Jeffrey Kahn, Florida State University College of Law, for extensive consultation on this Article. Many thanks, too, to Sordum Ndam and Deborah Huveldt for research support, and to the Florida State University College of Law Research Center librarians for their help collecting numerous sources for this project.

INTRODUCTION

Some of the fastest-growing U.S. industries generate primarily localized externalities, yet local governments have varied, often inadequate authority to address intensely local harms.[1] In the worst circumstance, these governments lack any of the classic Pigouvian "polluter pays" tools—regulation,

1 This Article defines externalities as "uncontracted" effects—effects that are not purposeful on the part of the entity causing them but nonetheless occur. For discussion of the many meanings of the term externality and the confusion that has ensued, see A.H. Barnett & Bruce Yandle, *The End of the Externality Revolution*, SOC. PHIL. & POL'Y, July 2009, at 130, 130–138 (2009).

taxes, or common-law liability—to force industry to internalize its harms.[2] The absence of these traditional tools, and the presence of high transaction costs, also weakens Coasean market-based solutions, in which communities would bargain with developers to place a price on damages.[3] Without an entitlement to regulate the industry, tax it, or threaten meaningful liability, the local government has a weak bargaining chip, if any.[4]

The energy sector offers a key example of this conundrum. Energy is necessary for human survival and economic growth.[5] Although the need for energy is constant, new forms of energy development are transforming the U.S. economy and landscape. In the past decade, companies have drilled several hundred thousand new oil and gas wells in the United States due to the rise of hydraulic fracturing ("fracking") technologies.[6] Developers have similarly capitalized on technological and price-based advances to build thousands of new wind and solar installations.[7] These industries continue to

2 A.C. Pigou, The Economics of Welfare 115, 168 (1920) (noting that costs of an industry "might . . . [be] thrown upon other people not directly concerned, through, say, uncompensated damage done to surrounding woods by sparks from railway engines" and identifying taxes as a way for the state to address the problem of when "[t]he trade net product of any unit of investment is unduly large relatively to the social net product"). *See also* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & Econ. 1, 1–2 (1960) (characterizing the Pigouvian approach, which assumes that the polluter should bear the costs of internalizing externalities, as including regulation, liability, and taxation).

3 *See* Coase, *supra* note 2, at 1–2 (asserting that as an alternative to the Pigouvian approach, one should compare the cost of blocking an activity against the costs that the activity imposes on neighbors, and the highest-valued (lowest cost) side should prevail in negotiations, with the winning side paying the loser for the costs imposed on the loser). In the case of oil and gas development, individuals would have to pay industry to not operate, or to internalize more of its externalities, because in most states industry has the initial entitlement to engage in the activity. This is more the case with oil and gas than with wind energy, as discussed in Part II. *See also* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 Harv. L. Rev. 1089, 1105 (1972) (explaining that under a property rule, "[n]o one can take the entitlement to private property from the holder unless the holder sells it willingly and at the price at which he subjectively values the property").

4 *See generally* David B. Spence, *The Political Economy of Local Vetoes*, 93 Tex. L. Rev. 351 (2014) (arguing that giving local governments the power to veto (ban) oil and gas development would shift initial entitlements to development in a way that would encourage negotiation).

5 *See, e.g.*, *U.S. Economy and Electricity Demand Growth Are Linked, But Relationship is Changing*, U.S. Energy Info. Admin. (Mar. 22, 2013), https://www.eia.gov/todayinenergy/detail.php?id=10491 (noting that economic growth and electricity use growth were previously "nearly equal in value," although in the United States, electricity use no longer expands at the same pace as economic growth due to energy efficiency).

6 U.S. Energy Info. Admin., The Distribution of U.S. Oil and Natural Gas Wells by Production Rate 1 (2019), https://www.eia.gov/petroleum/wells/pdf/full_report.pdf (noting that "the number of producing wells in the United States increased from 729,000 in 2000 to a high of 1,035,000 wells in 2014, then declined to 982,000 wells in 2018" due to lower oil prices).

7 State and local policies to address greenhouse gases from the energy sector have also driven renewable energy development.

grow at a breathtaking pace, with a projected 41,000 miles of new oil and gas pipelines to be built in fewer than twenty years,[8] and solar energy generation projected to double in the next five years.[9]

The rapid transformation of the U.S. energy sector has generated employment and wealth benefits, many of which accrue at the state and federal levels,[10] but the costs of this development, such as noise, road damage, traffic congestion, and light pollution during project construction, tend to fall locally.[11] In many cases, local governments would prefer to allow energy development for reasons of revenue and job growth, but they also want to control the negative externalities that accompany these benefits.[12] Federal and state governments typically lack adequate incentives to regulate, in part

8 KEVIN PETAK, JULIO MANIK & ANDREW GRIFFITH, ICF, NORTH AMERICAN MIDSTREAM INFRASTRUCTURE THROUGH 2035: SIGNIFICANT DEVELOPMENT CONTINUES 2 (2018), https://www.ingaa.org/File.aspx?id=34658.

9 *Solar Market Insight Report 2019 Q3*, SOLAR ENERGY INDUS. ASS'N (Sept. 17, 2019), https://www.seia.org/research-resources/solar-market-insight-report-2019-q3.

10 *See, e.g.*, PAUL W. PARFOMAK, CONG. RSCH. SERV., R45239, INTERSTATE NATURAL GAS PIPELINE SITING: FERC POLICY ISSUES FOR CONGRESS 2 (2018) (noting that 26,000 miles of new natural gas pipelines could be built between 2018 and 2035, with capital expenditures amounting to "$154 billion to $190 billion"); James W. Coleman & Alexandra B. Klass, *Energy and Eminent Domain*, 104 MINN. L. REV. 659, 676–80 (2019) (observing that recent oil and gas development "did not fit the usual geography of oil and gas transport" as regions like the U.S. Northeast that historically received oil from other regions "had gas to export"); John M. Golden & Hannah J. Wiseman, *The Fracking Revolution: Shale Gas as a Case Study in Innovation Policy*, 64 EMORY L.J. 955, 966–67 (2015) (noting exponential growth in shale gas production); 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, 157 (2013) (observing that shale gas and oil development are "expected to generate $172.5 billion of investment annually by the end of the decade and $5.1 trillion in total by 2035"); *Wind Energy Continues Rapid Growth*, U.S. DEP'T OF ENERGY (Oct. 18, 2017), https://www.energy.gov/eere/wind/articles/wind-energy-continues-rapid-growth ("America's wind industry added more than 8,200 megawatts (MW) of capacity and supported more than 101,000 jobs in 2016 . . . .").

11 David Spence has extensively documented the disproportionate allocation of externalities in the oil and gas context, noting how most of the negative harms fall at the local level, whereas the benefits accrue more to the states. Spence, *supra* note 4, at 380–84 (concluding that "the most certain and tangible costs of fracking fall most heavily on locals"). For discussion of the widespread benefits of unconventional natural gas development, see, for example, Merrill & Schizer, *supra* note 10, at 157–70 (discussing the economic-, environmental-, and security-based benefits of expanding domestic gas development); Richard J. Pierce, Jr., *Natural Gas Fracking Addresses* All *of Our Major Problems*, 4 J. ENERGY & ENV'T L. 22, 23–24 (2013) (arguing that the growth of natural gas production has extensive economic and environmental benefits). For a discussion of local government officials who report net positive community benefits from shale gas development, see Richard G. Newell & Daniel Raimi, *Shale Public Finance: Local Government Revenues and Costs Associated with Oil and Gas Development* 7–11 (Nat'l Bureau of Econ. Rsch., Working Paper No. 21542, 2015).

12 *See, e.g.*, DANIEL RAIMI, THE FRACKING DEBATE: THE RISKS, BENEFITS, AND UNCERTAINTIES OF THE SHALE REVOLUTION 193–98 (2018) (describing local government officials who supported shale gas development in their communities); Newell & Raimi, *supra* note 11, at

because they primarily experience benefits.[13] This leaves to local governments the challenging task of adequately controlling energy-based externalities. In some contexts, such as the construction of liquefied natural gas (LNG) export terminals and wind and solar farms, local governments have the ability to address harms through regulation or negotiation for community benefits.[14] In contrast, many local governments are preempted from regulating, and have few bargaining chips, in the oil and gas production and interstate natural gas ("gas") pipeline contexts. Many of the states with substantial levels of oil and gas production bar local governments from controlling the externalities of development,[15] and the federal government bars nearly all local control over natural gas pipelines.[16] For the most problematic cases, there is little federal regulation of the industry, state regulation is also sparse, and states have preempted most forms of local government control over the industry.[17] Under this aggressive preemption regime, local gov-

23–24 (noting net positive revenues in Fort Worth, Texas, from shale gas development, but also noting costs incurred by the city).

13 For arguments that federal and state regulation of oil and gas development is inadequate, see generally Michael Burger, *Fracking and Federalism Choice*, 161 U. Pa. L. Rev. Online 150 (2013); Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 U. Colo. L. Rev. 729 (2013). For arguments that federal pipeline safety regulation is inadequate, see, for example, Sara Gosman, *Planning for Failure: Pipelines, Risk, and the Energy Revolution*, 81 Ohio St. L.J. 349, 352–53 (2020). For discussion of the scale of benefits, see, for example, Alan J. Krupnick & Isabel Echarte, Res. for the Future, Economic Impacts of Unconventional Oil and Gas Development 16–17 (2017), https://media.rff.org/archive/files/document/file/RFF-Rpt-ShaleReviews_Economic%20Impacts_0.pdf (surveying studies of the economic impacts of shale gas development and noting local benefits but also the many benefits that instead accrue regionally); OECD, Linking Renewable Energy to Rural Development 73 (2012) (noting that renewable energy developers "typically source labour and equipment from international suppliers, so the impact at the community level in terms of job creation is rather limited").

14 Many states do not preempt local control of wind energy development. *See* Uma Outka, *Intrastate Preemption in the Shifting Energy Sector*, 86 U. Colo. L. Rev. 927, 981 (2015) (noting that, in 2014, approximately forty-eight states allowed local governments "significant control" over decisions about the location (siting) of commercial wind farms). The federal government also explicitly grants local governments safety-based input through state agencies in the liquefied natural gas terminal siting process. 15 U.S.C. § 717b-1 (2018).

15 In other cases, communities do not wish to limit the externalities at all, calculating that the raw economic benefits from the activity are so great that regulating or taxing the activity to shift the burden of the externalities away from industry is not merited. *See infra* Part I (discussing the example of coal communities in West Virginia and some oil and gas communities).

16 15 U.S.C. § 717f(e) (2018).

17 Many states—including those that host some of the most oil and gas production in the United States—preempt or substantially curtail local control of oil and gas development. *See* Hannah J. Wiseman, *Disaggregating Preemption in Energy Law*, 40 Harv. Env't L. Rev. 293, 296 & n.8 (2016) (noting preemption of most local control over oil and gas development in seven states, including, among others, Texas and Oklahoma).

ernments cannot use ex ante strategies such as regulation to address local externalities. [18]

Local governments do not just experience pure *regulatory* preemption in the oil and gas production and pipeline contexts. They are hamstrung under both a Pigouvian and a Coasean approach to externalities. A Pigouvian solution would force industry, rather than society, to pay for its externalities by avoiding them altogether, paying a tax or fee to cover the damages, or paying damages under a legal liability regime.[19] But many communities lack adequate regulatory or fiscal authority over energy industries with very localized effects.[20] Further, state tort policy does not generally favor either private individuals or local governments in these cases.[21] Under an alternative Coasean framework, private individuals or local governments would pay industry—which has a property entitlement allowing it to operate—to produce fewer externalities.[22] But local governments often only have limited

18 15 U.S.C. § 717f (2018) (preempting state and local control over pipelines). For use of the term "aggressive preemption" and discussion of its recent expansion, including in the area of fracking, see Richard Briffault, Essay, *The Challenge of the New Preemption*, 70 STAN. L. REV. 1995, 1998, 2011 (2018); Richard C. Schragger, *The Attack on American Cities*, 96 TEX. L. REV. 1163, 1173–74 (2018) (discussing preemption specific to hydraulic fracturing).

19 *See* PIGOU, *supra* note 2, at 149, 168 (noting the possibility of addressing the "divergence" between profits and net social impacts through restraints or encouragements); Janet E. Milne, *Environmental Taxation in the United States: The Long View*, 15 LEWIS & CLARK L. REV. 417, 418 (2011) (noting that "[a]lthough not confined to environmental problems, [Pigou's] concept has become synonymous with the principle of internalizing environmental externalities"); OECD, THE POLLUTER PAYS PRINCIPLE: DEFINITION ANALYSIS IMPLEMENTATION 6 (1975).

20 *See, e.g.*, RICHARD SCHRAGGER, CITY POWER: URBAN GOVERNANCE IN A GLOBAL AGE 69–77 (2016) (noting substantial limits on local governments' fiscal authority); Erin Adele Scharff, *Powerful Cities?: Limits on Municipal Taxing Authority and What to Do About Them*, 91 N.Y.U. L. REV. 292, 296 (2016) ("Traditionally, states have granted local governments very limited revenue-generating authority, even as compared to other home rule powers." (footnote omitted)) [hereinafter Scharff, *Powerful Cities?*]; Erin Scharff, *Preemption and Fiscal Authority*, 45 FORDHAM URB. L.J. 1270, 1273–75 (2018) [hereinafter Scharff, *Preemption and Fiscal Authority*]. *See also* Spence, *supra* note 4, at 395 ("[S]ome will see the introduction of noise, truck traffic, air emissions, and other by-products of fracking in Pigovian terms, as attempts to shift costs of production to society, costs that *ought* to be internalized." (footnote omitted)).

21 With respect to private nuisance, see, e.g., BLAKE WATSON, HYDRAULIC FRACTURING TORT LITIGATION SUMMARY 6–9 (2020), https://udayton.edu/directory/law/documents/watson/blake_watson_hydraulic_fracturing_primer.pdf (showing numerous hydraulic fracturing cases dismissed by courts, although many also settled); Ryan Kusmin, Note, *Sucking the Air Out of Wind Energy: Nuisance Litigation and Its Effect on Wind Energy Development*, 88 WASH. U. L. REV. 707, 715–22 (2011) (noting how, of the four wind-related nuisance cases identified as of 2011, in three of the cases the court found no nuisance or no justiciable claim). *But see* Rose v. Chaikin, 453 A.2d 1378, 1382, 1384 (N.J. Super. Ct. Ch. Div. 1982) (enjoining a wind turbine in a private nuisance case). For differing views on the nature of public nuisance and who may file a claim, *see infra* note 175 and accompanying text.

22 The property entitlement means that industry has the right to operate and that individuals or communities must pay industry a subjectively determined amount to reduce

power, if any, to control the harm-producing activity.[23] In many states, the oil and gas industry holds the bulk of the initial entitlement—the ability to operate free of many local legal interventions—and thus might not even come to the bargaining table, let alone accept a payment for limiting externalities.[24] And even if there were more incentives to bargain, the transaction costs of entering into extensive negotiations with hundreds of different local governments would further impede negotiation.

In short, some communities that host energy industries with very localized effects—particularly oil and gas and pipelines—operate within a regulatory void caused by state preemption. Without the option of regulation,[25] fiscal tools, liability, or adequate negotiation, empirical data suggests that many governments experiencing these externalities would simply choose the extreme solution of banning the industry[26] or resorting to scaremongering—exaggerating the real risks of energy development and even inventing unproven ones.[27] This has the effect of wholly blocking development rather than achieving a middle ground.[28]

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the externalities of operation. *See* Calabresi & Melamed, *supra* note 3, at 1105. David Spence has extensively analyzed the Coasean option in the oil and gas production context. Spence, *supra* note 4, at 394–97.

23 *See supra* note 17 and accompanying text. Under the Calabresi-Melamed approach to Coase, this means that local governments essentially operate under an inalienability rule. When they are fully preempted by state governments, they are forced to allow the activity and are not compensated for having to shoulder this burden. *See* Calabresi & Melamed, *supra* note 3, at 1092–93 (describing inalienability).

24 *Cf.* Spence, *supra* note 4, at 397 ("[A] rule against preemption will stimulate bargaining in ways that a rule permitting preemption probably would not."). In states like Texas, Ohio, and Oklahoma, local governments are preempted from regulating most aspects of oil and gas development. *See* OKLA. STAT. tit. 52, § 137.1 (2020) (preempting most local regulation of oil and gas development); TEX. NAT. RES. CODE ANN. § 81.0523 (West 2019); State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 135, 136–37 (Ohio 2015) (finding that Ohio law preempts nearly all local control over oil and gas development, including, for example, requiring a permit or requiring industry to post a bond for damages that it might cause).

25 I define regulations as including local ordinances that control actual industry operations or include land use controls, such as zoning, that constrain the location of industrial development.

26 *See* Robert D. Cheren, *Fracking Bans, Taxation, and Environmental Policy*, 64 CASE W. RSRV. L. REV. 1483, 1484–97 (2014) (concluding that local governments that draw "additional revenue" from fracking (such as taxes)—additional to the raw economic benefits, thus providing some compensation for externalities—are less likely to ban fracking, whereas those with limited taxation options and thus little additional revenue are more likely to ban it). *See also* Spence, *supra* note 4, at 394–95 (noting the mirror image of Cheren's observation, which is that local governments that are allowed to tax oil and gas development are less likely to ban it).

27 *Cf.* David B. Spence, *Regulation and the New Politics of (Energy) Market Entry*, 95 NOTRE DAME L. REV. 327, 364–67 (2019) (empirically documenting local NGOs' use of these tactics to oppose oil and gas and wind energy projects).

28 Of course, some governments with adequate tools to address externalities also choose the extreme, problematic options from the perspective of blocking needed devel-

There are several factors that cause this void. First, local governments start from a position of relative powerlessness with respect to regulatory and taxation powers. The dominant legal presumption is that local governments are merely an arm of the state and possess only the powers delegated to them from states.[29] Second, higher-level governments are wary of delegating too much authority to local governments—sometimes due to concerns about local competency,[30] but also for purely political-economic reasons. Powerful national industries like oil and gas operators, pipeline developers, and wind energy companies have concentrated influence that may allow them to effectively lobby for weaker local authority. Their power is most pronounced at the centralized national or state levels, where lobbying resources are most efficiently deployed and can be focused on efforts to preempt local control.[31] Federalism concerns, too, cause states to resist allocating power to local governments. Governments worry that a patchwork of conflicting regulations will impede development, lead to a race to the bottom, or simply interfere with centralized goals.[32]

The regulatory void produced by these factors in the oil and gas and pipeline context offers a stark contrast to the relative powers of local governments in the renewable energy and liquefied natural gas terminal contexts.[33] This Article proposes tools that local governments should have at their disposal in all energy contexts. Specifically, it argues that Pigouvian taxation and other financial instruments—combined with a framework to encourage limited Coasean negotiation—should be available to local governments.

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opment. *Documents Filed Under Zoning/Planning from USA*, WINDACTION, http://www.windaction.org/posts?utf8=%E2%9C%93&type=document&topic=zoning%2FPlanning&location=USA (last visited Sept. 13, 2020) (noting a San Bernadino County, California, ban on large-scale renewable energy projects; a Linn County, Kansas, moratorium on wind energy development; a Somerset County, Maine, resolution that opposes any additional wind energy development in the county; a Perquimans County, North Carolina, denial of a wind farm permit; a Buckfield, Maine, ordinance that placed a very high setback requirement on wind farms—one mile between a wind turbine and the adjacent property line; and an Elmwood Township, Michigan, moratorium on wind farms).

29 *See* Gerald E. Frug, *The City as a Legal Concept*, 93 HARV. L. REV. 1057, 1105–09, 1113 (1980) (noting rejection of early judicial arguments that municipalities had organic authority).

30 *See, e.g.*, Schragger, *supra* note 18, at 1196 ("Municipal politics is viewed as more corrupt than state or national politics, more prone to capture by special interests, more wasteful, and more incompetent.").

31 *See, e.g.*, David Iaconangelo, *Lobbying Sets Record as Big Coal, Beach Towns Push Back*, E&E NEWS (May 1, 2019), https://www.eenews.net/stories/1060248953/print (noting large sums of money spent by offshore wind developers on state-level lobbying); Mike Soraghan, *Industry Pours Campaign Cash into State, Local Races*, E&E NEWS (Dec. 9, 2011), https://www.eenews.net/stories/1059957451 (noting in 2010, "the oil and gas industry gave state candidates a record $34 million").

32 *See, e.g.*, Cap. Area Dist. Libr. v. Mich. Open Carry, Inc., 826 N.W.2d 736, 745 (Mich. Ct. App. 2012) (concluding that allowing each local government to regulate firearms possession "would undoubtedly lead to patchwork regulation").

33 *See supra* note 14.

Through this solution, states would create a uniform tax or fee that local governments could choose to levy on industries that generate disproportionately localized externalities. And because designing a tax that fully addressed local externalities while not overcontrolling them would involve too many transaction costs, the federal government or states should mandate or incentivize developer negotiation with local governments.[34]

From a political economy perspective, giving local governments limited powers to tax industry to compensate for its local externalities—essentially a Pigouvian "polluter pays" tax—may be more politically palatable than granting them broad regulatory authority or modifying tort liability. It will also address the federalism concerns associated with a conflicting patchwork of local regulations, and, because the tax would be administered by the state, it would alleviate worries about the comparative competence of local governments.

Part I of the Article documents the highly localized externalities of some of the fastest-growing U.S. energy industries as compared to the broader benefits that these industries produce. Part II then explores the Pigouvian and Coasean tools available to address these localized externalities, including traditional regulation, tort law, revenue-generating financial tools, and government negotiation with industry for community benefits or mitigation of impacts. This Part also documents the regulatory void, in which local governments lack access to many of these tools, particularly in the oil and gas production and pipeline contexts. Part III then analyzes the factors that cause this problematic void, some more legitimate than others. These include concerns relating to government competence, federalism issues, and political-economic factors. Finally, Part IV proposes a fiscal and negotiation-based solution to the regulatory void, which would address concerns about strong local authority while ensuring that localized externalities are adequately addressed.

Relying on local fiscal tools and negotiation to address powerful local externalities will not satisfy all constituencies and will not adequately address certain harms. Harms with irrevocable and difficult-to-remedy effects, such as deaths from pipeline explosions, require regulatory prevention in addition to ex post remedies. But taxation and similar financial tools combined with negotiation, where appropriate, might lead to more cautious industrial decisions at the front end, potentially encouraging behavior that prevents localized externalities in light of their costs.

34 For a discussion of the problems with state approaches to externalities, and criticism of economists' tendency to inaccurately view the state as an "omniscient" and "well-motivated" force that will make "corrective adjustments for externalities," see Harold Demsetz, *The Core Disagreement Between Pigou, the Profession, and Coase in the Analyses of the Externality Question*, 12 EURPOEAN J. POL. ECON. 565, 566–67 (1996).

I. WIDESPREAD BENEFITS, LOCALIZED BURDENS, AND UNEVEN LOCAL CONTROL

Local governments and their constituents experience a wide range of negative and positive externalities from industry—impacts from an activity that are not fully addressed by the entity that causes them.[35] Externalities from any activity with a physical presence, ranging from sports stadiums to manufacturing facilities and energy development, often fall most heavily at the local level.[36] This is because the local government experiences some of the impacts that also extend more broadly, such as air pollution in the oil and gas context or wildlife habitat destruction from most types of energy development.[37] In addition to these shared costs, the community suffers distinct localized harms, such as increased vehicle traffic, aesthetic changes, and noise, that are uniquely location-based. Thousands of acres of land are needed to produce fuel or electricity, thus literally requiring that development occur in the backyards of schools and homes, farm or ranch fields, and the like.[38]

The uneven distribution of costs and benefits presents several distinct challenges. Giving local governments too much control can lead to over-exclusion of the industrial activity because governments suffering substantial costs will potentially ban or substantially curb the activity.[39] The literature on the "Not in My Back Yard" syndrome, or NIMBYism, has documented this likelihood.[40] But leaving too much authority at the state and federal levels

35 *See, e.g.*, PIGOU, *supra* note 2, at 115 (although not using the term "externality," describing the condition later defined as an externality, which is when industry causes effects that are "thrown upon other people not directly concerned" with the industry, for which those people are not compensated); Barnett & Yandle, *supra* note 1, at 138–39 (describing the origins of the concept of the externality as largely resting with Pigou).

36 Entities that engage in more abstract commerce, such as software companies, have less of a physical presence and less local impact, but even these industries have more localized impacts than typically conceded—they have physical servers and battery banks, for example. *Cf.* Andrew Keane Woods, *Against Data Exceptionalism*, 68 STAN. L. REV. 729, 734 (2016) (rebutting arguments that internet data is "different" and that traditional notions of jurisdictional control should not apply to this data).

37 *See, e.g.*, Jeffrey E. Lovich & Joshua R. Ennen, *Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States*, 61 BIOSCIENCE 982, 984–85 (2011) (describing the impacts of solar project construction and decommissioning on wildlife, including endangered species).

38 *See, e.g.*, David A. Dana & Hannah J. Wiseman, *Fracking as a Test of the Demsetz Property Rights Thesis*, 71 HASTINGS L.J. 845, 871–72 (2020) (describing oil and gas development in backyards and near schools); Anne M. Trainor, Robert I. McDonald & Joseph Fargione, *Energy Sprawl Is the Largest Driver of Land Use Change in United States*, PLOS ONE, Sept. 2016, at 1, 7 (describing the massive amounts of land required for energy development).

39 *See, e.g.*, Patricia E. Salkin & Ashira Pelman Ostrow, *Cooperative Federalism and Wind: A New Framework for Achieving Sustainability*, 37 HOFSTRA L. REV. 1049, 1091–97 (2009) (arguing for limits on local control over wind energy); Spence, *supra* note 4, at 389–90 (noting the potential for overregulation of fracking by local governments).

40 *See, e.g.*, K.K. DuVivier & Thomas Witt, *NIMBY to NOPE—or YESS?*, 38 CARDOZO L. REV. 1453, 1466–70 (2017) (noting communities that have blocked important renewable

and stripping local governments of most meaningful control tips the scales too heavily in favor of development. In the context of zero-carbon energy sources like renewables, there is a growing sense of urgency to develop cleaner energy infrastructure as quickly as possible.[41] But a rapid transition does not have to mean that governments must ignore all local externalities when approving needed infrastructure. At a minimum, development could quickly proceed while ensuring that communities receive the funds they need to address some of the most negative effects of that development.

Some communities are also at the opposite end of the spectrum from NIMBYism—they welcome industrial development and oppose any regulation of it, for fear of decreasing revenues. This is the case with some coal mining communities, which are highly dependent on coal mining for jobs and local revenue, and which view federal regulation of air pollution from coal as an unjust "war on coal."[42] I leave discussion of these types of communities for another day, focusing instead on the many communities that want to find a middle ground but cannot due to the regulatory void.

A. Oil and Gas Development

Oil and gas development is a powerful example of an industrial activity with disproportionately local effects, and an industry that many communities want to allow, but within limits.[43] In the United States, this development typically requires drilling and hydraulically fracturing ("fracking") as well. Thousands of wells must be drilled to access underground oil and gas reservoirs, and the rise of fracking in the United States has caused a surge in oil and gas development, thus producing more waste that is disposed of in

energy projects); Barak D. Richman & Christopher Boerner, *A Transaction Cost Economizing Approach to Regulation: Understanding the NIMBY Problem and Improving Regulatory Responses*, 23 YALE J. ON REGUL. 29, 32 (2006) (observing that "[t]he NIMBY syndrome . . . has stymied policy makers, local land use planners, and developers for generations" and noting that NIMBYism has become so problematic that some facilities are simply not sited anywhere).

41 *See, e.g.*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5°C, at 40 (Valérie Masson-Delmotte et al. eds., 2019) [hereinafter IPCC] (noting that "[l]imiting warming to 1.5°C above pre-industrial levels would require transformative systemic change" including renewables); Jeffrey Thaler, *Fiddling as the World Floods and Burns: How Climate Change Urgently Requires a Paradigm Shift in the Permitting of Renewable Energy Projects*, 42 ENV'T L. 1101, 1103–04 (2012) (noting the environmental laws that impede renewable energy projects).

42 *See, e.g.*, Patrick C. McGinley, *From Pick and Shovel to Mountaintop Removal: Environmental Injustice in the Appalachian Coalfields*, 34 ENV'T L. 21, 50 (2004) ("From the beginning of . . . efforts to regulate strip mining, the coal industry cooperated with local and state politicians to oppose meaningful state regulation.").

43 *See, e.g.*, Cheren, *supra* note 26, at 1499 (arguing that in communities with the power to tax natural gas, fracking bans are "exceedingly scarce"); *supra* note 12 (describing local support for shale gas and oil development coupled with local efforts to address externalities, such as monitoring for environmental effects).

thousands of communities around the country.[44] Oil and gas well sites are individually relatively small—somewhere between five to ten acres—but they are numerous.[45] For example, the city of Fort Worth, Texas, has more than two thousand natural gas wells within city limits.[46] On or near any given well site, spills of chemicals can occur,[47] air pollution from diesel rig motors and other equipment can be substantial, dust and noise are common, and—absent regulation—bright lights from twenty-four-hour operations disrupt residents.[48]

Although the full risks of oil and gas drilling and fracking have yet to be documented, the studies so far show powerful localized effects from this small, highly dispersed form of development. For example, one study concluded that babies born to parents who live close to well sites with fracking activity have lower birth weights.[49] Fracking, which requires millions of gallons of water for each well, also has primarily localized water scarcity effects—drying up small streams or portions of them and causing fish kills, for example.[50] Chemicals used in fracking, as well as fracking and drilling wastes, regularly spill at or near oil and gas sites and sometimes migrate offsite, damaging nearby land or water.[51] Livestock and pets near the sites are negatively impacted, with some studies showing higher rates of animal illness and deaths near well sites.[52] Further, disposal wells for liquid waste from drilling and fracking have had the largest impacts at the local level. Trucks carrying

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44 *See, e.g.*, U.S. ENERGY INFO. ADMIN., *supra* note 6, at 1, 8, B18 (showing 433,434 oil wells and 556,837 natural gas wells (conventional and hydraulically fractured, for both types of wells) in the United States in 2017).

45 Michael Focazio, *Geographic Footprint*, *in* INST. OF MED. OF THE NAT'L. ACADS., HEALTH IMPACT ASSESSMENT OF SHALE GAS EXTRACTION: WORKSHOP SUMMARY 23–24 (2014).

46 *Gas Well Drilling*, CITY OF FORT WORTH, https://www.fortworthtexas.gov/departments/development-services/gaswells (last visited Oct. 29, 2020) (click on "View a map"; then click on "Gas Well Locations" under "Info Summary").

47 *See* Lauren A. Patterson et al., *Unconventional Oil and Gas Spills: Risks, Mitigation Priorities, and State Reporting Requirements*, 51 ENV'T SCI. & TECH. 2563, 2565, 2567 (2017) (describing spill rates).

48 *See, e.g.*, Letter from Ivan Dubrasky to the EPA Science Advisory Board Hydraulic Fracking Research Advisory Panel (Jan. 25, 2016) (available at https://yosemite.epa.gov/sab/sabproduct.nsf/479CF36A838E21C285257F490062F313/$File/Oral+Statement§ubmitted£y+Ivan‡ubrasky.pdf) (providing a resident's statement regarding bright lights and dust).

49 Janet Currie, Michael Greenstone & Katherine Meckel, *Hydraulic Fracturing and Infant Health: New Evidence from Pennsylvania*, SCI. ADVANCES, Dec. 13, 2017, at 1.

50 *See, e.g.*, Sally Entrekin et al., *Water Stress from High-Volume Hydraulic Fracturing Potentially Threatens Aquatic Biodiversity and Ecosystems in Arkansas, United States*, 52 ENV'T SCI. & TECH. 2349, 2353–55 (2018) (noting how water withdrawals for fracturing even one well could cause water levels to drop to dangerously low levels in small streams).

51 *See, e.g.*, Wiseman, *supra* note 13, at 800–01 (describing incidents in which pollutants from drilling or fracturing migrated offsite).

52 Michelle Bamberger & Robert E. Oswald, *Impacts of Gas Drilling on Human and Animal Health*, 22 NEW SOLS. 51, 59–61 (2012).

waste to and from the wells create traffic congestion, noise, and dust.[53] The wells sometimes cause earthquakes, which, if large enough in magnitude, typically damage structures closest to the epicenter of the earthquakes.[54]

Local social impacts are also well documented. Booms in oil and gas development involve hundreds or thousands of workers rushing into a community, causing the price of basic goods to increase for local residents and sometimes leading to housing shortages. Oil and gas employees outcompete local residents for apartment rentals.[55] The spike in development also increases demand for government-provided services such as courts, emergency response, and schools.[56] Some governments have incurred millions of dollars in debt to provide such infrastructure and services.[57]

Communities hosting oil and gas development experience important benefits, too, such as employment, increased income for landowners who lease their mineral rights, and tax revenues from higher property tax assessments and hotel and tourism taxes.[58] But many of the benefits accrue more broadly, with employment coming largely from outside of the community[59] and wealth flowing primarily to a company typically headquartered far from

53 *See, e.g.*, R.R. Comm'n of Tex. v. Tex. Citizens for a Safe Future and Clean Water, 336 S.W.3d 619, 622 (Tex. 2011) (noting these traffic-related concerns); U.S. Forest Serv., Emission Reduction Techniques for Oil and Gas Activities 3 (2011), https://www.fs.fed.us/air/documents/EmissionReduction-072011x.pdf (noting "windblown dust" from truck activity).

54 Katie M. Keranen, Heather M. Savage, Geoffrey A. Abers & Elizabeth S. Cochran, *Potentially Induced Earthquakes in Oklahoma, USA: Links Between Wastewater Injection and the 2011 Mw 5.7 Earthquake Sequence*, 41 Geology 699, 699–700 (2013) (noting an earthquake induced by injection that "destroyed 14 homes, damaged many other buildings, injured 2 people, and buckled pavement" near the epicenter of the quake).

55 Jonathan Williamson & Bonita Kolb, Ctr. for The Study of Cmty. & the Econ., Marcellus Natural Gas Development's Effect on Housing in Pennsylvania 1 (2011), https://www.phfa.org/forms/housing_study/2011/marcellus_report.pdf (noting the use of "man camps" for "the first transitory wave of gas workers"); Susan Christopherson & Ned Rightor, *How Shale Gas Extraction Affects Drilling Localities: Lessons for Regional and City Policy Makers*, J. Town & City Mgmt., no. 4, 2012, at 1, 15 (noting rising rental costs).

56 *See, e.g.*, Newell & Raimi, *supra* note 11, at 28 (noting that Midland, Texas, had to add more staff to police and fire departments as a result of the shale gas boom and spent approximately $4 million on a fire station and $9 million on a courthouse).

57 *See, e.g.*, *id.* at 43 (noting that Watford City, North Dakota, had no outstanding debt prior to the shale oil boom but incurred $12.5 million in debt to finance the "necessary expansion of city services" caused by the boom); *id.* at 45 (noting that Dickinson, North Dakota, also had no debt prior to the boom but then issued $100 million in bonds).

58 *See, e.g.*, Dusan Paredes, Timothy Komarek & Scott Loveridge, *Income and Employment Effects of Shale Gas Extraction Windfalls: Evidence from the Marcellus Region*, 47 Energy Econ. 112, 114, 120 (2015).

59 *See* Charles F. Mason, Lucija A. Muehlenbachs & Sheila M. Olmstead, *The Economics of Shale Gas Development*, 7 Ann. Rev. Res. Econ. 269, 274–75 (2015) (noting the "resource curse" but also positive local benefits); Paredes et al., *supra* note 58, at 120 (noting that natural gas development relies largely on out-of-state workers with the exception of trucking and construction).

the communities experiencing energy development.[60] As a result, in some regions, the local benefits do not appear to outweigh the distinct local harms.[61]

Many states, perhaps in light of the financial benefits of oil and gas development, view their explicit role as cheerleaders for the oil and gas industry.[62] Old statutes have long directed state oil and gas commissions to maximize production of the resources that they govern, and state agencies continue to take this mission quite seriously.[63] Additionally, the powerful Interstate Oil and Gas Compact Commission (IOGCC)—an association of the petroleum-producing U.S. states—is a formidable opponent to more stringent environmental regulation of oil and gas.[64] Governor members of the IOGCC regularly interact with powerful repeat industry players, and the organization explicitly caters to industry, advertising to industry sponsors on the website for its 2019 annual meeting: "The meeting offers a unique opportunity to spotlight your business and interact with . . . governors; state, provincial and federal legislators and regulators; and prominent oil and gas industry representatives."[65]

Whether for reasons of capture, a genuine belief in the safety of oil and gas development, or a focus on the importance of the widespread economic benefits of oil and gas development, state and federal officials have so far largely refrained from imposing substantial regulatory curbs on local dam-

60 Christopherson & Rightor, *supra* note 55, at 5; David Kay, The Economic Impact of Marcellus Shale Gas Drilling: What Have We Learned? What Are the Limitations? 25–26 (Apr. 2011) (unpublished manuscript) (available at http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=9B0EA7834DFEA839ECDA355B7AA7D2AA?doi=10.1.1.588.2856&rep=rep1&type=pdf) (noting that models often fail to examine the extent to which "money that flows into the community is either not respent locally or in fact accrues to nonlocal or temporary residents and firms"); *cf.* Paredes et al., *supra* note 58, at 120 (concluding that "direct income effects of Pennsylvania Marcellus shale fracking activities are likely to have negligible indirect or induced income impacts on the general population in a county where a well is drilled").

61 *See, e.g.*, Newell & Raimi, *supra* note 11, at 2 (showing that areas where benefits do not outweigh harms include North Dakota and parts of Wyoming and Colorado).

62 *See, e.g.*, *National Energy Policy*, INTERSTATE OIL & GAS COMPACT COMM'N, http://iogcc.ok.gov/Default.aspx?shortcut=national-energy-policy (last visited Oct. 29, 2020) (arguing, in a statement from the Commission, which is a collection of oil and gas producing states, that states "will continue to fight for the responsible development of our nations [sic] resources" and citing to the "decline of domestic production" as a concern).

63 *But see* Tara K. Righetti, *The Incidental Environmental Agency*, 2020 UTAH L. REV. 685, 687, 725–26 (noting how recent lawsuits have forced state oil and gas conservation commissions to take on more of an environmental regulatory role).

64 *See, e.g.*, *Resource Conservation and Recovery Act Amendments of 1991: Hearing on S. 976 Before the Subcomm. on Env't Prot. of the S. Comm. on Env't and Pub. Works*, 102d Cong. 99–100 (1991) (statement of W. Timothy Dowd, Executive Director, Interstate Oil and Gas Compact Commission) (testifying in favor of exempting oil and gas wastes from hazardous waste regulation under the Resource Conservation and Recovery Act).

65 *2020 Sponsorship Information*, INTERSTATE OIL & GAS COMPACT COMM'N, http://iogcc.ok.gov/sponsorship-information (last visited Sept. 7, 2020).

ages from oil and gas development.[66] And as discussed in Part II, a growing number of states have preempted local governments from addressing these damages.

B. Pipelines

The recent boom in oil and gas production in the United States has triggered a related surge of pipeline construction. In just over a decade, pipeline companies in the United States have constructed more than 125,000 miles of oil and gas pipelines, and they expect to construct 41,000 more miles of pipeline by 2035.[67] Compare this with the U.S. interstate highway system, which includes fewer than 47,000 miles of roadway.[68] This Section focuses on interstate gas pipelines, in particular, because local governments experience the most preemption for these types of pipelines.[69] Interstate oil pipelines, in contrast, receive siting approval from each state in which they are located, and many states give local governments at least some say in the decision to approve an oil pipeline.[70]

Natural gas pipelines are buried, but they require a thirty-to-fifty-foot-wide permanently open corridor to allow for access for inspection and maintenance during the life of their operation.[71] As with oil and gas well sites, during construction, local impacts include potential short-term housing scarcity; increased truck traffic; diesel construction equipment with localized air

66 For a discussion of limited regulations, see, for example, Wiseman, *supra* note 13, at 738–41. There are important exceptions. Colorado now allows extensive local control of oil and gas development. S.B. 19-181, 2019 Gen. Assemb., Reg. Sess. (Colo. 2019). And as discussed in Part IV of this Article, Pennsylvania allows local governments to impose a fee on hydraulically fractured (unconventional) oil and gas wells. *See also* Thomas Kaplan, *Citing Health Risks, Cuomo Bans Fracking in New York State*, N.Y. TIMES (Dec. 17, 2014), https://www.nytimes.com/2014/12/18/nyregion/cuomo-to-ban-fracking-in-new-york-state-citing-health-risks.html (describing New York's ban on fracking).

67 *See* PETAK, ET AL., *supra* note 8, at 2; *U.S. Oil and Gas Pipeline Mileage*, BUREAU OF TRANSP. STATS., https://www.bts.gov/content/us-oil-and-gas-pipeline-mileage (last visited Sept. 17, 2020) (showing increase in number of miles of oil and gas pipeline by year).

68 *Interstate Frequently Asked Questions*, FED. HIGHWAY ADMIN., https://www.fhwa.dot.gov/interstate/faq.cfm (last visited Sept. 7, 2020).

69 15 U.S.C. § 717f (2018) (placing all responsibility for approving interstate natural gas pipelines in federal hands). Indeed, interstate gas pipeline companies initially lobbied for state preemption "to avoid local and municipal regulation." *See* Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 993 (2015).

70 *See, e.g.*, Klass & Meinhardt, *supra* note 69, at 1027–53 (showing that although most states situate siting authority within a centralized commission, some states still allow limited local control).

71 *See* Cowpasture River Pres. Ass'n v. Forest Serv., 911 F.3d 150, 155 (4th Cir. 2018) (noting that the corridor is thirty feet wide in wetlands and fifty feet wide elsewhere), *rev'd*, 140 S. Ct. 1837 (2020).

emissions; and noise, dust, and lights from this equipment.[72] Construction of pipelines also leads to soil erosion, which can pollute local streams and other waterbodies.[73] During the construction of the Mountain Valley Pipeline, the State of Virginia alleged that the pipeline company caused multiple violations of the Clean Water Act, causing soil to wash off of steep slopes during heavy rains.[74]

Once the pipeline has been constructed and buried, the open corridor remains—thus impacting the local landscape and fragmenting wildlife habitat.[75] Further, safety issues, including methane leaks and explosions, are somewhat rare, yet potentially deadly when they occur. Over the past twenty years (through 2019), there have been 1404 "significant" gas pipeline incidents that killed 49 people, injured 175 people, and caused more than $2 billion in damage.[76] All of these are distinctly local effects. The people who die and are injured are those who are near the pipeline at the time of the explosion, and the property damaged is immediately in the vicinity of the pipeline. Other environmental effects of the pipeline, such as soil erosion, also impact local streams and other resources in addition to having broader effects.[77]

The federal government, alone, regulates the siting (location) and construction of interstate gas pipelines and preempts local control over these pipelines.[78] The government primarily grants approval on grounds that the pipeline is economically needed—taking environmental and safety considerations into account, but only as one, often more minor factor in its economic

72 *See, e.g.*, FED. ENERGY REGUL. COMM'N, MOUNTAIN VALLEY PROJECT AND EQUITRANS EXPANSION PROJECT: FINAL ENVIRONMENTAL IMPACT STATEMENT, at ES-10 to ES-14 (describing these impacts in association with the Mountain Valley Pipeline).

73 *See, e.g.*, *id.* at ES-5.

74 Keith Goldberg, *Mountain Valley Pipeline Pays $2M to End Va. Pollution Suit*, LAW360, (Oct. 11, 2019), https://www.law360.com/articles/1208847/mountain-valley-pipeline-pays-2m-to-end-va-pollution-suit (describing the violations).

75 *See, e.g.*, FED. ENERGY REGUL. COMM'N, *supra* note 72, at ES-7.

76 *Pipeline Incident 20 Year Trends*, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends (click link titled "Significant Incident 20 Year Trend"; then choose "Gas Transmission" from dropdown). Significant incidents are those that result in a fatality or injury and cause $50,000 or more in total costs, among other metrics. *Id.*

77 *See, e.g.*, Laurence Hammack, *Mountain Valley Pipeline to Pay $2.15 Million in Lawsuit over Environmental Problems*, ROANOKE TIMES (Oct. 11, 2019), https://www.roanoke.com/business/mountain-valley-pipeline-to-pay-million-in-lawsuit-over-environmental/article_ac54be7e-22ce-5932-a6fd-c9d2763e2e8f.html (noting allegations that a pipeline company "violat[ed] stormwater control measures more than 300 times during the first year" of construction, with violations primarily involving erosion of soil from steep slopes during heavy rains).

78 15 U.S.C. § 717f (2018) (providing that the Federal Energy Regulatory Commission must grant a certificate of public convenience and necessity to the pipeline applicant prior to construction and that the certificate confers eminent domain authority).

decisionmaking.[79] Indeed, although federal approval often takes years to complete while the government checks off various procedural boxes,[80] the approval of interstate gas pipelines is, ultimately, nearly automatic.[81] Local input is largely limited to the environmental review process required for these pipelines under the National Environmental Policy Act, in which the agency must consider alternative routes—which tend to be suggested by local governments or their constituents.[82] The agency need not select any alternative routes, though. Rather, it must sufficiently explain why it chose the route that it ultimately selected.[83] Many of the community's residents impacted by the pipeline are not compensated for damages despite being required to accommodate the pipeline. Landowners who negotiate an easement with the pipeline company, or are forced to accept an easement through eminent domain, receive payment for the company's initial acquisition of the easement and its use of the easement over time,[84] but those who experience pipeline impacts but do not own land directly affected by the pipeline receive no compensation.

Federal environmental regulations beyond the National Environmental Policy Act apply to these pipelines during and after construction, but many have argued that these regulations are inadequate—particularly with respect to human health, as demonstrated by rare yet deadly pipeline explosions.[85]

79 *See, e.g.*, Coleman & Klass, *supra* note 10, at 682–83 (noting that FERC typically grants a certificate to the pipeline "so long as the company has contracts to transport gas"); Statement of Policy, Certification of New Interstate Natural Gas Pipeline Facilities, 88 FERC ¶ 61,227 at 2 (Sept. 15, 1999) (listing as relevant factors competition, the potential for overbuild, environmental impacts, and the ability to avoid eminent domain).

80 *See* PAUL W. PARFOMAK, CONG. RSCH. SERV., R43138, INTERSTATE NATURAL GAS PIPELINES: PROCESS AND TIMING OF FERC PERMIT APPLICATION REVIEW 8 (2015) (citing a GAO study that found FERC pipeline certificate reviews took an average of 558 days).

81 *See* Coleman & Klass, *supra* note 10, at 683 ("FERC has only denied a certificate for two pipelines in the last thirty years.").

82 *See, e.g.*, Birckhead v. Fed. Energy Regul. Comm'n, 925 F.3d 510, 515 (D.C. Cir. 2019) (describing arguments to locate a new natural gas pipeline compressor station farther from a city).

83 *See, e.g.*, *id.* (concluding that the Federal Energy Regulatory Commission considered and rejected twelve alternative locations for a pipeline compressor station and adequately supported its selected location). FERC does typically condition the approval of the pipeline construction permit on compliance with all local permits. *See* PIPELINE PERMITTING, INTERSTATE NAT. GAS ASS'N OF AM. (2019), https://www.ingaa.org/File.aspx?id=34233&v=89d18216. But a FERC certificate "preempts any state or local law that duplicates or obstructs" the federal approval, including preemption of siting or zoning "relevant to the project." PARFOMAK, *supra* note 80, at 5–6.

84 JOHN ALLEN CHALK, MICHAEL JACOBSON & RICHARD STEHOUWER, PENN STATE EXTENSION, NEGOTIATING PIPELINE RIGHTS-OF-WAY IN PENNSYLVANIA (2015), https://extension.psu.edu/negotiating-pipeline-rights-of-way-in-pennsylvania. These easement payments are taxed as capital gains, so any taxes on landowners associated with the pipeline flow to the federal government (if capital gains occur). *Id.*

85 *See, e.g.*, Pipeline Safety: Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related Amendments, 84 Fed. Reg. 52,180, 52,180 (Oct. 1, 2019) (to be codified at 49 C.F.R. pts. 191, 192) (concluding

Local governments have the most success in slowing pipeline projects once construction has commenced by engaging in extensive citizen monitoring and documenting violations of acts such as the Clean Water Act.[86] And in rare cases states have also successfully resisted pipelines—thus sweeping in local concerns—by using their ability to veto federal approval of the pipeline due to its impacts on water quality and coastal areas.[87] For example, in 2006 Connecticut blocked the proposed "Islander East" natural gas pipeline that would have run from Connecticut to New York by denying the pipeline company a certification under the Clean Water Act.[88] However, Congress subsequently crafted an expedited federal review process for state Clean Water Act decisions that would delay FERC-approved pipeline or LNG construction.[89] Thus, states' authority to block projects can be quickly challenged and potentially overturned.[90] Further, these types of state denials have been the exception to the norm, leaving local governments with the extreme option of resisting the pipeline altogether.[91]

C. Utility-Scale Renewable Energy Development

Other energy industries—particularly the fast-growing areas of utility-scale wind and solar energy—also have negative effects at the local level in

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that "incidents continue to occur on gas pipeline systems resulting in serious risks to life and property," including, for example, the San Bruno explosion that killed eight people and injured fifty-one people). Recent federal pipeline safety regulations make important progress in reducing the likelihood of explosion, focusing particularly on testing and ensuring the integrity of older pipelines. *See id.* at 52,182. But past and present safety regulations do not, for the most part, take into account the specific *location* of the pipeline, and the potentially sensitive populations around the pipeline, when addressing safety issues. Gosman, *supra* note 13, at 370 (noting that decisions about safety and siting are separated in pipeline law, thus "leaving the relationship between the location of a pipeline" and its risks unaddressed).

86 *See supra* note 78.

87 States may block pipelines before they are built by refusing certification under the Clean Water Act that a project will not negatively impact water quality. 33 U.S.C. § 1341 (2018). They may also refuse to certify a project under the Coastal Zone Management Act due to its impacts on the state's coastal zone, although the federal government may ultimately "veto" the state veto. Ann E. Carlson & Andrew Mayer, *Reverse Preemption*, 40 ECOLOGY L.Q. 583, 585, 598 (2013); Joan M. Darby, Janet M. Robins & Beth L. Webb, *The Role of FERC and the States in Approving and Siting Interstate Natural Gas Facilities and LNG Terminals After the Energy Policy Act of 2005—Consultation, Preemption and Cooperative Federalism*, 6 TEX. J. OIL, GAS & ENERGY L. 335, 350, 352 (2010).

88 Islander E. Pipeline Co. v. McCarthy, 525 F.3d 141, 142–43 (2d Cir. 2008).

89 Darby et al., *supra* note 87, at 350.

90 *See* 15 U.S.C. § 717r(d)(3) (2018); Darby et al., *supra* note 87, at 350.

91 *But see* PIPELINE SAFETY TRUST, LOCAL GOVERNMENT GUIDE TO PIPELINES 13 (1st ed. 2014), http://pstrust.org/wp-content/uploads/2013/10/PST-Govt-Guide-Pipelines-2014-web.pdf ("[S]ome local jurisdictions have managed to get some pipeline companies to voluntarily agree to safety improvements as part of easement or franchise agreements.").

addition to positive ones.[92] Nearly all new additions of electric generating capacity are now in the form of large-scale wind, solar, or natural gas projects.[93] During the construction phase of a solar or wind farm, large, heavy trucks rumble to and from the site, creating pollution and dust.[94] Site constructions, as with pipelines and oil and gas production, also cause soil erosion.[95] These large farms also require hundreds or even thousands of acres of land,[96] and, in the context of wind, they often sit at higher elevations to take advantage of stronger, steadier winds.[97] Although some people find renewable farms aesthetically pleasing, other residents express alarm at the prospect of a familiar rural vista transformed into a view of spinning turbines or shiny solar panels.[98] There is no scientific evidence that conclusively shows negative health effects from wind turbine operations, but some residents near wind farms also claim to suffer from "shadow flicker"—a strobe-like shadow produced by spinning turbines that some argue causes headaches and other health problems.[99] Spinning turbines can also be

92 Utility-scale projects have a variety of definitions but generally include projects that are ten megawatts and larger. *Renewable Energy: Utility-Scale Policies and Programs*, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, https://www.energy.gov/eere/slsc/renewable-energy-utility-scale-policies-and-programs (last visited Sept. 7, 2020). Distributed energy projects such as rooftop solar are growing but are dwarfed by the explosion of utility-scale capacity. *See Short-Term Energy Outlook Data Browser*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/outlooks/steo/data/browser/ (last visited Sept. 9, 2020) (choose "8b. U.S. Renewable Electricity Generation and Capacity" from "Standard Tables" dropdown; then choose "Large-Scale Solar" under "Electric Power Sector Generating Capacity" and "Small-Scale Solar" under "Other Sectors Generating Capacity").

93 *More than 60% of Electric Generating Capacity Installed in 2018 Was Fueled by Natural Gas*, U.S. ENERGY INFO. ADMIN. (Mar. 11, 2019), https://www.eia.gov/todayinenergy/detail.php?id=38632 (showing that in 2018, 19.3 new gigawatts of natural gas, 6.6 new gigawatts of wind, and 4.9 new gigawatts of solar capacity were added).

94 BUREAU OF LAND MGMT., U.S. DEP'T OF THE INTERIOR, 1 FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ON WIND ENERGY DEVELOPMENT ON BLM-ADMINISTERED LANDS IN THE WESTERN UNITED STATES 5-13 (2005).

95 *Id.* at 5-4 to 5-5.

96 *See, e.g.*, Uma Outka, *The Renewable Energy Footprint*, 30 STAN. ENV'T L.J. 241, 243 (2011) (describing disproportionate acreage consumed by renewable energy as compared to many other forms of energy); Trainor et al., *supra* note 38, at 1 (same).

97 *See* ERIC LANTZ, OWEN ROBERTS, JAKE NUNEMAKER, EDGARD DEMEO, KATHERINE DYKES & GEORGE SCOTT, NATL. RENEWABLE ENERGY LAB'Y, INCREASING WIND TURBINE TOWER HEIGHTS: OPPORTUNITIES AND CHALLENGES, at vi (2019) (noting that "[w]ind resource quality improves significantly with height above ground"). One can increase height by placing the turbines on elevated ground and increasing the physical height of the turbine as constructed. *Id.*

98 *See, e.g.*, BUREAU OF LAND MGMT., *supra* note 94, at 5-90 to 5-91 ("It is widely acknowledged that aesthetic impacts are among the most important impacts associated with wind energy development and operations."); Ashley Saari, *Denial of Wind Project Upheld*, MONADNOCK LEDGER-TRANSCRIPT (Aug. 1, 2013), https://www.ledgertranscript.com/Archives/2013/07/anSECDecision-ml-071113 (discussing residents' aesthetic objections to construction of a wind farm).

99 *See, e.g.*, TETRA TECH EC, INC., SHADOW FLICKER IMPACT ANALYSIS FOR THE ALABAMA WIND LEDGE FARM 1–2 (2007), https://www.edprnorthamerica.com/wp-content/uploads/

noisy, and the blinking lights on top of the turbines produce light pollution at night.[100] Those who live near transmission lines that transport electricity from wind and solar farms worry about the health impacts of electromagnetic fields, which are relatively small but still raise concerns.[101] Further, many residents dislike the aesthetic impact of large towers and wires required for long-distance transmission lines.[102]

Renewable energy development also has costs and benefits that extend beyond the local level. Wind and solar energy infrastructure and associated transmission lines, like oil and gas development, fragment habitats and kill wildlife.[103] With respect to financial benefits, renewable energy companies are major national employers, and as the industry has boomed, the income and employment-based effects have been highly positive.[104] But as with oil and gas development, at the local level, these benefits do not always appear to outweigh the substantial costs experienced within communities.

In contrast with oil and gas production and pipelines, communities are not broadly preempted from regulating the highly localized effects of utility-scale wind and solar development.[105] Indeed, most states still allow a meaningful amount of local control over this development.[106] It is not clear why states have taken largely opposite approaches to preemption in the oil and

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2014/04/ALWF-Shadow-Flicker-Analysis-Report-_V82-V90-G87__edit-TWG-9-27-07_.pdf (noting health claims but rejecting connections to epileptic seizures). Despite the lack of scientific documentation of these effects, residents regularly report them. This appears to partially involve the "nocebo" effect, in which residents report health effects from wind energy development after hearing that they allegedly exist or ascribe existing health conditions to a newly developed project. *See* Spence, *supra* note 27, at 366.

100 *See* BUREAU OF LAND MGMT., *supra* note 94, at 4-11, 5-94 to 5-95.

101 *See, e.g.*, WORLD HEALTH ORG., ESTABLISHING A DIALOGUE ON RISKS FROM ELECTROMAGNETIC FIELDS 5 (2002), https://apps.who.int/iris/bitstream/handle/10665/42543/9241545712_eng.pdf?sequence=1&isAllowed=y&ua=1 (placing the risk from low-frequency electromagnetic fields in the same category as coffee and its potential link to kidney cancer); *id.* at 9–10 (noting "considerable" opposition to transmission lines for health reasons); Spence, *New Politics*, *supra* note 27, at 354–55 (same).

102 *See, e.g.*, Lita Furby, Paul Slovic, Baruch Fischhoff & Robin Gregory, *Public Perceptions of Electric Power Transmission Lines*, 8 J. ENV'T PSYCH. 19, 19, 25–26 (1988) (noting opposition to power lines due to their aesthetic impacts, among other objections).

103 *See* BUREAU OF LAND MGMT., *supra* note 94, at 5-3 to 5-4 (noting the land and habitat disturbed by wind farm sites and access roads); *id.* at 5-53 to 5-56 (describing bird and other wildlife fatalities caused by wind farm operation); U.S. FISH & WILDLIFE SERV., LAND-BASED WIND ENERGY GUIDELINES 1 (2012), https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf.

104 *See, e.g.*, E. LANTZ, NAT'L RENEWABLE ENERGY LAB'Y, ECONOMIC DEVELOPMENT BENEFITS FROM WIND POWER IN NEBRASKA: A REPORT FOR THE NEBRASKA ENERGY OFFICE 2 (2009), https://www.nrel.gov/docs/fy09osti/44344.pdf (concluding that "the development and construction of 7,800 MW of wind energy in Nebraska . . . will support 26,000 to 36,500 construction-period jobs" as well as create "a boost in economic activity ranging from $140 million to $260 million" from construction-related activity).

105 *See* DuVivier & Witt, *supra* note 40, at 1463 ("[M]any states that have statewide siting for almost all other sources of electricity generation do not cover wind.").

106 *See* Outka, *supra* note 14, at 978–81.

gas and renewable energy contexts. One explanation could be that the oil and gas lobby has nearly a half-century-old connection with state legislatures and governors, whereas the renewable lobby—although strong, particularly in the wind context—is newer.[107] Another might be that many of the large oil and gas producing states are predominantly Republican, and Republican legislatures are more likely to preempt local limits on oil and gas than local bans or other limits on renewable energy development.[108] This explanation would require more nuance, though, because some heavily Republican states, such as Texas, are leaders in renewable energy. The Texas Legislature spurred massive wind development in Texas by requiring transmission lines to be built from windy areas of the state to "load centers"—cities with the highest electricity demand.[109]

The relatively weak state preemption of local control over renewables is not the result of local support for renewable development. There is a widespread local movement to resist wind development, in particular, and it has had a notable degree of success.[110] Local governments have fully banned and placed moratoria on wind and solar farms, denied individual projects, issued resolutions opposing any further renewable energy development in the community, and imposed stringent setbacks that make renewable energy development difficult, among other measures.[111] This demonstrates how local control over energy can go too far, in that it blocks needed infrastructure for generating electricity—in this case, electricity that is cheaper than

107 In some states, there has long been a "revolving door" between state oil and gas conservation commissions—once primarily tasked with ensuring that when drilling occurred, as much oil or gas would be produced as possible—and the oil and gas industry. *See, e.g.*, Dave Fehling, *Revolving Door: Oil & Gas Companies Hire Former Texas Regulators*, NAT'L PUB. RADIO: STATE IMPACT (June 12, 2012), https://stateimpact.npr.org/texas/2012/06/12/revolving-door-oil-gas-companies-hire-former-texas-regulators/ (noting individuals in industry who previously worked at the Texas Railroad Commission).

108 Texas, Pennsylvania, Louisiana, and Oklahoma were the top producers of natural gas in 2018. Pennsylvania is the only blue state among these. Susan Milligan, *The Battleground States: Pennsylvania*, U.S. NEWS (Aug. 18, 2020), https://www.usnews.com/news/elections/articles/the-2020-swing-states-pennsylvania-who-votes-past-results-and-why-it-matters (describing Pennsylvania as a traditionally "blue" state); *Natural Gas Annual Supply & Disposition by State*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/dnav/ng/ng_sum_snd_a_EPG0_FPD_Mmcf_a.htm (last visited Sept. 6, 2020). *See also*; OKLA. STAT. tit. 52, § 137.1 (2020) (showing preemption of most local regulation of oil and gas development Oklahoma); TEX. NAT. RES. CODE ANN. § 81.0523 (West 2019) (same for Texas). *See also* Briffault, *supra* note 18, 1997–98 (observing that although Democratic state legislatures have preempted local action in some areas, "the preponderance of new preemption actions and proposals have been advanced by Republican-dominated state governments").

109 *See* Commission Staff's Petition for Designation of Competitive Renewable-Energy Zones, Docket No. 33672 (Pub. Util. Comm'n of Tex. Oct. 7, 2008) (order on rehearing), http://www.ettexas.com/Content/documents/PUCTFinalOrderonCREZPlan100708.pdf.

110 DuVivier & Witt, *supra* note 40, at 1462–63.

111 *See supra* note 28 and accompanying text.

most other generation sources[112] and is key to addressing increasingly critical climate challenges.[113]

D. Liquefied Natural Gas Terminals

In terms of the degree of local authority to address energy externalities, liquefied natural gas terminals fall between oil and gas production and pipelines, for which there is very little local control, and utility-scale renewable energy development, for which local control remains surprisingly strong.

In order to efficiently import (or, as is now more common, export) natural gas, it must be cooled to a very low temperature and liquefied. Companies are currently constructing more export terminals, and approval of more terminals is underway. The terminals tend to be located near the coasts for ease of exporting the gas, and, as with other energy infrastructure analyzed in this Article, tend to have primarily localized effects. Tanks can breach and release liquefied natural gas, thus impacting coastal land and water resources. The impact of the spill would primarily relate to potential fire impacts, because LNG, when spilled, completely dissipates and "leaves no residue."[114] The larger localized risk is therefore the threat of explosion and fires. In a rare yet relatively extreme event, LNG facilities can cause "fireball type burning which occurs when a vapor cloud . . . is ignited."[115] These "catastrophic" explosions can cause deaths and injury near where they occur.[116] Other effects of LNG terminals, which fall primarily locally, include noise, air pollution, and aesthetic and visual impacts, as with other energy structures.[117] Impacts that fall both locally and more broadly include potential pollution to surface water due to dredging and filling of coastal land, wildlife

112 *See* U.S. ENERGY INFO. ADMIN., LEVELIZED COST AND LEVELIZED AVOIDED COST OF NEW GENERATION RESOURCES IN THE *Annual Energy Outlook 2020*, at 3, 7 (2020), https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf.

113 *See* IPCC, *supra* note 41, at 134.

114 CONG. RSCH. SERV., RL32205, LIQUEFIED NATURAL GAS (LNG) IMPORT TERMINALS: SITING, SAFETY, AND REGULATION 6 (2009).

115 TECH. & MGMT. SYS., INC., SPECTRUM OF FIRES IN AN LNG FACILITY, at E-2 (2006) (writing for the U.S. Department of Transportation), https://primis.phmsa.dot.gov/matrix/FilGet.rdm?fil=3133&s=72433F9E0D234D9ABACA8AF81103CADD&c=1.

116 GRAHAM ATKINSON, JONATHAN HALL & ALISON MCGILLIVRAY, HEALTH & SAFETY EXEC., REVIEW OF VAPOUR CLOUD EXPLOSION INCIDENTS, RR 1113, at 82 (2017) (UK), https://www.hse.gov.uk/research/rrpdf/rr1113.pdf (describing these types of catastrophic explosions); CONGR. RSCH. SERV., *supra* note 114, at 4 (noting deaths at and near LNG facilities abroad and a U.S. LNG facility in 1944). *But see* PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T OF TRANSP., FAILURE INVESTIGATION REPORT—LIQUEFIED NATURAL GAS (LNG) PEAK SHAVING PLANT, PLYMOUTH, WASHINGTON 1–2 (2016), https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/FIR_and_APPENDICES_PHMSA_WUTC_Williams_Plymouth_2016_04_28_REDACTED.pdf (noting a catastrophic explosion at an LNG facility that only sent debris to nearby railroad tracks).

117 *See, e.g.*, 1 FED. ENERGY REGUL. COMM'N, TEXAS LNG PROJECT: FINAL ENVIRONMENTAL IMPACT STATEMENT, at ES-4 (2019), https://www.ferc.gov/sites/default/files/2020-05/volume-I.pdf (listing these and other impacts).

and wetlands impacts, and interference with recreational opportunities on the portion of the coast occupied by the terminal.[118]

Local governments enjoy some authority over the LNG terminal siting process because the federal government preempts local control over the approval and siting of an energy project but requires some developer bargaining with the state government, largely on local governments' behalf.[119] The federal government requires the Federal Energy Regulatory Commission to consult with the state regarding safety considerations associated with the facility, including, for example, the size of the population near the proposed facility, existing land uses, emergency response capabilities, and "the need to encourage remote siting."[120] The federal government also allows the state, on local governments' behalf, to submit an "advisory report" with state and local safety considerations, which the Commission must specifically respond to before approving the terminal.[121]

As with natural gas pipelines, states—potentially acting on behalf of local governments—can also use other environmental acts to block an LNG terminal, including a refusal to certify that the project will not affect state water quality under the Clean Water Act.[122] But also as with pipelines, project developers may receive expedited federal review of denials of water quality certifications, and courts may override these denials.[123] States also may block federal approval of an LNG terminal under the Coastal Zone Management Act, but the government may override this state veto.[124]

The following Part provides a framework of the available tools for preventing or mitigating local negative externalities in these contexts and offers examples of the circumstances in which communities have deployed these tools. It also documents state policies that increasingly block local use of these tools, thus causing a regulatory void.

II. Local Governance Tools and the Regulatory Void

Local governments have a wide range of tools available to address externalities, from inaction to relatively detailed intervention. A Pigouvian approach to externalities would suggest that local governments should force industry to internalize externalities through regulation, a "polluter pays" tax or similar fiscal mechanisms, or liability.[125] Under a Coasean approach, private individuals or governments would negotiate with industry as an alternative to governmental intervention to address externalities.[126] And under the

118 *See, e.g.*, *id.*

119 15 U.S.C. § 717b-1 (2018). *But see* Darby et al., *supra* note 87, at 343 ("[C]ourts have rejected attempts by states to subject natural gas projects to state or local laws . . . .").

120 15 U.S.C. § 717b-1.

121 *Id.*

122 *See supra* note 87.

123 Darby et al., *supra* note 87, at 350.

124 16 U.S.C. § 1456(c)(3)(A) (2018).

125 *See, e.g.*, Coase, *supra* note 2, at 1–2 (characterizing the Pigouvian approach).

126 *Id.* at 2–8 (describing how a pricing system could address damages).

Calabresi-Melamed framing of Coasean bargaining, the type of bargaining would depend on who had the initial entitlement—whether local governments had the right to block development or not—and what type of entitlement it was. If local governments had the right to block development and industry had to bargain with the governments for a subjectively determined price, this would be a property approach.[127] Under a liability approach, industry could force local governments to allow development at a predetermined price.[128] And under an extreme "inalienability" form of entitlement, local governments could not block development, and they would not receive any payment when development occurred.[129]

Local entitlements to block energy industries with highly localized externalities fall primarily in the category of a property entitlement, where they exist. For example, for wind energy, at least twenty-two states give local governments primary authority over wind energy development, and at least twenty-one other states give local governments some authority over this development.[130] Although only a subset of these states allow local governments to ban renewable energy, local governments in many states still retain this extreme option.[131] In these cases, local governments are able to address the externalities that they experience through bans, or, more moderately, through regulation, taxation, or other tools.[132] Indeed, this local authority might be *too* broad, in that it impedes what is increasingly viewed as a critical type of energy development.[133] The broad local authority to regulate and tax also gives renewable energy developers a strong incentive to come to the table to negotiate with the local government. LNG terminals represent a very weak liability entitlement for local governments, which may not block the terminal but can slow its progress by commenting on safety concerns in the approval process.[134]

In other areas of energy law, particularly for some oil and gas development and all interstate natural gas pipelines, local governments lack any enti-

127 Calabresi & Melamed, *supra* note 3, at 1091–92.

128 *Id.*

129 *See id.* at 1092–93.

130 *See* Outka, *supra* note 14, at 981 (noting forty-eight states with significant local control over wind energy siting); Jaclyn Kahn & Laura Shields, *State Approaches to Wind Facility Siting*, NAT'L CONF. OF STATE LEGISLATURES (Sept. 2, 2020), https://www.ncsl.org/research/energy/state-wind-energy-siting.aspx (for wind energy, showing states with for which local governments control siting).

131 *See, e.g.*, Zimmerman v. Bd. of Cnty. Comm'rs, 218 P.3d 400, 405–06, 430 (Kan. 2009) (affirming a county ban on large-scale wind energy development); Outka, *supra* note 14, at 978–79 (noting local bans and moratoria on wind energy projects); Sammy Roth, *California's San Bernardino County Slams the Brakes on Big Solar Projects*, L.A. TIMES (Feb. 28, 2019), https://www.latimes.com/business/la-fi-san-bernardino-solar-renewable-energy-20190228-story.html (noting bans in California's largest county); Sarah Trafton, *Solar Supporters Sue Town*, REGISTER-STAR (Hudson), Apr. 30, 2019, at A1 (noting opposition to a New York town's ban on most solar farms).

132 *See infra* Sections II.A–D.

133 *See* IPCC, *supra* note 41, at 96–97 (showing the need for renewables).

134 *See* 15 U.S.C. § 717b-1 (2018).

tlement because they are preempted from regulating this development and do not receive any compensation for being forced to allow energy development. [135] In a way, industry therefore has a nearly inalienable entitlement. Local governments receive indirect revenue as a result of the development that they must accommodate, primarily in the form of property taxes, and a small distribution from state taxes on oil and gas development.[136] But these revenues are not Pigouvian—they are not tailored to make up the difference between the value of an activity to the party engaged in that activity and the value to society.[137] Thus, the taxes are blunt tools, at best, for addressing externalities. For example, in Ohio, the local taxable value of oil and gas is established under a state-specified formula.[138] And in Texas, which allows for local property taxation, the state caps the amount by which an overall county property tax rate may increase.[139] The legislature and governor have proposed further limits.[140] Further, given local governments' lack of entitlement, there is little room for Coasean bargaining for damages unless industry is incentivized to negotiate for reasons of good will or risk aversion. Energy companies operating within the community might have a firm commitment to a "social license to operate,"[141] so to speak, or they might fear common-law litigation or future regulation at the state level.

This Part explores the full range of tools that would be available to address the local externalities of energy development if local governments were unconstrained by preemption, which often precludes Pigouvian solutions and consequently limits Coasean bargaining options.

A. Regulation

A common way to address the potential externalities from a proposed industrial activity is to regulate the activity to prevent or limit the externalities produced. As discussed here, many states preempt local governments in the oil and gas production context, and all local governments are preempted

135 *See infra* note 151 and accompanying text.

136 *See, e.g.*, HEADWATERS ECON., HOW TEXAS RETURNS "UNCONVENTIONAL" OIL REVENUE TO LOCAL GOVERNMENTS 5 (2014), https://headwaterseconomics.org/wp-content/uploads/state-energy-policies-tx.pdf (noting an ad valorem tax on oil and gas equipment and mineral reserves); *Ohio Oil and Gas Real Property Taxation*, OHIO DEP'T OF TAX'N, https://tax.ohio.gov/wps/portal/gov/tax/government/real-state/oilgas (last visited Sept. 6, 2020) (showing that oil and gas reserves are taxed as real property by counties).

137 *See* PIGOU, *supra* note 2, at 150.

138 *Ohio Oil and Gas Real Property Taxation*, *supra* note 136.

139 *See* TEX. ASS'N OF CNTYS., COUNTY REVENUE CAPS RESTRICT LOCAL SERVICES 2 (2019), https://www.county.org/TAC/media/TACMedia/Legislative/Legislative-Brief/Revenue-Caps-Jan-2019.pdf (describing the cap).

140 *See* Scharff, *Preemption and Fiscal Authority*, *supra* note 20, at 1282–83 (describing other Texas proposals to limit local property tax authority).

141 Jim Cooney, *Reflections on the 20th Anniversary of the Term 'Social Licence,'* 35 J. ENERGY & NAT. RES. L. 197 (describing "social license" as a term that came to prominence in 1997 "to describe the challenge that mining companies face in building relationships with communities located around their projects").

from regulating natural gas pipelines. This preemption would not be problematic if state and federal regulations adequately addressed the externalities, but they only do so partially.

1. Federal and State Regulation That Incidentally Addresses Local Externalities

State and federal governments regulate the effects of some industries with very localized harms because some of the harms spill beyond local borders or otherwise implicate state and national interests.[142] For example, Clean Air Act regulation of air pollutant emissions from natural gas wells controls "volatile organic compounds," a group of pollutants that includes methane, which is a heat-trapping gas with globalized effects on climate.[143] By limiting this group of pollutants, these regulations also happen to reduce odors and haze at the local level.[144] Recent federal regulations also addressed some air pollution from pipelines, but the EPA removed these requirements in 2020.[145]

Regulation of energy projects under the Endangered Species Act also incidentally addresses local impacts. Energy developers are prohibited from "taking" (harming) endangered species or their habitats under the Act, except with express permission from the Fish and Wildlife Service, with conditions attached.[146] These conditions often include habitat protection provisions that also serve to preserve open space, and, potentially, important local landscapes.

Despite some coverage of local externalities by state and federal regulation, state and federal officials lack the incentive or authority to address many other local effects and are often not the best entities to address these effects. Broad-brush, higher-level regulations are unlikely to fully capture the nuances of local problems even though they have some beneficial spillover effects for communities. For example, although protection of habitat under

142 *See, e.g.*, WIS. ADMIN. CODE PUB. SERV. COMM'N § 128-15 (2020) (controlling shadow flicker, among other wind energy externalities); U.S. FISH & WILDLIFE SERV., *supra* note 103, at 54–55 (providing guidance for minimizing bird and bat deaths caused by wind turbines).

143 *See, e.g.*, Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, 81 Fed. Reg. 35,824, 35,825 (June 3, 2016) (codified at 40 C.F.R. pt. 60) (regulating methane (greenhouse gas) emissions from hydraulically fractured oil and gas wells).

144 *See id.* at 35,827.

145 Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review, 85 Fed. Reg. 57,018 (Sept. 14, 2020) (codified at 40. C.F.R. pt. 60) (eliminating volatile organic compound (VOC) and methane regulations for the pipeline and storage sectors of oil and gas).

146 16 U.S.C. § 1539 (2018); U.S. FISH & WILDLIFE SERV., HABITAT CONSERVATION PLANS UNDER THE ENDANGERED SPECIES ACT (2011), https://www.fws.gov/endangered/esa-library/pdf/hcp.pdf (explaining that Habitat Conservation Plans are required to obtain an incidental take permit and that these Plans must include minimization or mitigation of species impacts).

the Endangered Species Act might incidentally preserve a treasured local view, this Act is not designed with landscape and aesthetic protection in mind, and local resources that do not happen to house an endangered or threatened species will not benefit from it. Similarly, federal and state air pollution regulations do not fully cover localized air pollution effects.[147]

2. Direct Regulation by Local Governments

As introduced above, local governments can and sometimes do directly regulate the harms of energy development—particularly in the case of renewable energy development. In states where local governments are not preempted from regulating, they do the same for oil and gas development. Requirements for repairing roads damaged by heavy trucks traveling to and from sites, fencing or landscaping around development sites,[148] limiting the acceptable decibel limit a certain distance from the sites,[149] limiting the hours of construction, and avoiding pollution during construction are common in both the renewable energy context and (where allowed) the oil and gas context.[150]

Although local governments control energy externalities in some jurisdictions, a growing number of states preempt local authority to varying degrees, particularly in the oil and gas production context.[151] The Ohio Supreme Court interpreted Ohio's statutory preemption provision to block even seemingly minor requirements such as requiring oil and gas operators to hold public hearings before drilling a well and to post a modest bond.[152] And a federal court, hearing a state preemption case under diversity jurisdiction, found that Louisiana law prevented Shreveport from banning oil and gas development within 1000 feet of the city's drinking water supply.[153]

147 *See, e.g.*, DALE WELLS, COLO. DEP'T OF PUB. HEALTH & ENV'T, CONDENSATE TANK EMISSIONS 2 (2012), https://www3.epa.gov/ttnchie1/conference/ei20/session6/dwells.pdf (noting that oil and gas tanks were a primary cause of air quality problems in Colorado's Front Range).

148 *See, e.g.*, FORT WORTH, TEX., CODE OF ORDINANCES § 15-43 (2009), http://library.amlegal.com/nxt/gateway.dll/Texas/ftworth_tx/cityoffortworthtexascodeofordinances/partiicitycode/chapter15gas?f=templates$fn=default.htm$3.0$vid=amlegal:fortworth_tx$anc=JD_Chapter15 (providing fencing and landscaping requirements for well sites).

149 *See, e.g.*, Rindge, N.H., Small Wind Energy System Ordinance (Mar. 12, 2013) (limiting decibel levels near small wind energy systems); FORT WORTH, TEX., CODE OF ORDINANCES § 15-42(b)(2)(a) (2009) (limiting decibel levels near oil and gas sites).

150 *See, e.g.*, Benton County, Ind., Ordinance for Regulating Energy Generation Using Wind Power in Benton County, Indiana (Mar. 7, 2006) (requiring approval of a drainage plan before construction can begin).

151 For discussion of the general trend toward increasingly aggressive state preemption of local power, see, for example, Briffault, *supra* note 18; Schragger, *supra* note 18.

152 State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 132–33, 137–38 (Ohio 2015).

153 Energy Mgmt. Corp. v. City of Shreveport, 397 F.3d 297, 299–300 (5th Cir. 2005).

Texas and Oklahoma prevent local governments from regulating most stages of oil and gas development, with limited exceptions.[154]

Preemption of local energy regulations leads some local governments to resort to unusual regulatory measures, adopting seemingly overly stringent conditions on development within the very narrow regulatory sphere in which they may operate. In Mustang, Oklahoma, for instance, town officials used their very limited oil and gas regulatory authority to require a sixteen-foot sound barrier around a proposed well site and to limit trucks traveling to and from the site to two roads.[155]

3. Local Land Use Regulation

Another common type of local regulation to address localized effects—but one that is increasingly preempted—is the use of land use controls such as zoning regulations to address negative externalities of industry. Through zoning, local governments carve their territory into districts in which certain types of land uses are permitted, permitted with conditions, or prohibited. Governments sometimes designate specific districts in which oil and gas or wind energy development is allowed or prohibited, or require the establishment of a special energy-based zoning district.[156]

Several state governments have preempted local *land use* authority over energy development, particularly in oil and gas. Pennsylvania went so far as to require local governments to allow oil and gas development in all zoning districts,[157] although this was ultimately deemed to violate the state constitution.[158] An Ohio Supreme Court opinion, interpreting general state language preempting local regulation of oil and gas activity, refused to differentiate between local direct controls on oil and gas development and land use controls, finding that all were preempted.[159] Similarly, when a local government tried to prevent an interstate natural gas pipeline from being placed within a designated floodplain, the court concluded that the regulation was likely preempted by federal pipeline siting authority.[160]

There have been some exceptions to land-use-based preemption in oil and gas, however. In New York, despite express state preemption of local

154 OKLA. STAT. tit. 52, § 137.1 (2020); TEX. NAT. RES. CODE ANN. § 81.0523(b) (West 2019).

155 Traci Chapman, *Plans to Drill in Mustang Halted*, MUSTANG TIMES (Dec. 13, 2017), https://www.centraloklahomaweeklies.com/2017/12/13/plans-to-drill-in-mustang-halted/.

156 *See, e.g.*, Cecil Township, Pa., Ordinance 3-2011 (Sept. 6, 2011) (repealed Dec. 5, 2011) (establishing an Oil and Gas Recovery Overlay District in which drilling must occur); SANTA FE CNTY., N.M., CODE OF ORDINANCES tit. xv, § 150.02, Exhibit B, § 5 (2008) (requiring an Oil and Gas Overlay District Classification before drilling can occur).

157 58 PA. CONS. STAT. § 3304(a) (2012), *invalidated by* Robinson Twp. v. Commonwealth, 83 A.3d 901, 913 (Pa. 2013).

158 *Robinson Twp.*, 83 A.3d at 913.

159 State *ex rel.* Morrison v. Beck Energy Corp., 37 N.E.3d 128, 135–37 (Ohio 2015).

160 Atl. Coast Pipeline v. Nelson Cnty. Bd. of Supervisors, No. 18-cv-00115, 2019 WL 2570530, at *7 (W.D. Va. June 21, 2019).

regulation of oil and gas development, the state's highest court concluded that the legislation does not preempt local land use controls on this development—even controls that prohibit drilling and fracking altogether.[161]

As introduced above, local governments enjoy relatively broad land use powers over renewable energy development, including the power to use land use controls to ban or place a moratorium on development. And court opinions have, in part, been favorable to local land use control over renewable energy. For example, the Kansas Supreme Court allowed a county to prohibit all large wind farms throughout the county in its zoning code,[162] and in New York a federal district court affirmed the validity of a town's two-year moratorium on wind energy development.[163] Counties and municipalities in states such as Indiana and California have also banned or placed moratoria on wind farms or renewable projects generally.[164] Additionally, courts have allowed local governments to deny conditional use permits to wind energy projects,[165] and a Pennsylvania court affirmed the validity of various restrictions placed on a wind project by a zoning hearing board, including, for example, increased setbacks.[166]

This is not to say, however, that local governments enjoy unfettered control over renewable energy development. Several states place a regulatory ceiling on local regulation of wind farms, providing statewide regulation of issues such as the height of wind equipment and setbacks from nearby buildings and preventing local governments from imposing more stringent limits.[167] A federal court in Michigan denied the validity of a two-year moratorium on wind energy development,[168] and the Oklahoma Supreme

161 Wallach v. Town of Dryden, 16 N.E.3d 1188, 1203 (N.Y. 2014).

162 Zimmerman v. Bd. of Cnty. Comm'rs, 218 P.3d 400, 405–06, 430 (Kan. 2009).

163 Ecogen, LLC v. Town of Italy, 438 F. Supp. 2d 149, 162 (W.D.N.Y. 2006).

164 *See* Mark Peterson, *Marshall County First to Ban Wind Farms*, NAT'L WIND WATCH (May 20, 2013), https://www.wind-watch.org/news/2013/05/20/marshall-county-first-to-ban-wind-farms-2/; *Documents Filed Under Zoning/Planning from USA*, *supra* note 28 (describing bans and other limits).

165 Tuscola Wind III, LLC v. Almer Charter Twp., No. 17-cv-10497, 2017 WL 5022640, at *1 (E.D. Mich. Nov. 3, 2017).

166 PPM Atl. Renewable v. Fayette Cnty. Zoning Hearing Bd., No. 1431 C.D. 2010, 2014 WL 2156744, at *1 (Pa. Commw. Ct. May 20, 2014).

167 *See, e.g.*, WIS. ADMIN. CODE PUB. SERV. COMM'N § 128-10(1) (2020). New York, New Hampshire, and Wyoming similarly allow local governments to regulate certain aspects of wind energy development but place state restrictions on this regulation. N.H. REV. STAT. ANN. § 674:63 (2020) (prohibiting local ordinances that restrict wind energy development in ways deemed unreasonable by the state); ENV'T L. INST., STATE ENABLING LEGISLATION FOR COMMERCIAL-SCALE WIND POWER SITING AND THE LOCAL GOVERNMENT ROLE 8–9 (2011), https://www.eli.org/sites/default/files/eli-pubs/d21-02.pdf (describing New York and Wyoming regulations). Four states wholly preempt local authority over large commercial wind projects, and eleven states preempt local authority over projects that exceed a threshold size. Outka, *supra* note 14, at 982 & n.266.

168 Tuscola Wind III, LLC v. Ellington Twp., No. 17-cv-11025, 2018 WL 1291161, at *1, *9 (E.D. Mich. Mar. 13, 2018).

Court rejected a town's denial of a conditional use permit for a wind farm.[169] Additionally, in Wisconsin, when a county tried to use its zoning powers to set uniform "setback, height and noise requirements" on small and large wind energy projects, the Wisconsin Court of Appeals deemed this approach preempted.[170] Further, a local government's objection to the Ohio Power Siting Board's decision to allow the construction of a wind farm failed in court.[171]

As compared to oil and gas development, however, many of the state preemptive regulations for wind energy development are more sensitive to local concerns. For example, although Wisconsin prohibits local governments from implementing ordinances stricter than the state statute, the state requires wind energy developers to mitigate a variety of local effects.[172] The state requires wind farm owners to prevent and mitigate shadow flicker—the shadow cast by moving blades—experienced by people in nearby residences and "occupied community building[s]."[173]

In summary, local governments in some states are able to use regulation to address the highly localized effects of energy development. But in many states, particularly for oil and gas production and natural gas pipeline development, local governments lack the regulatory tools needed to address important impacts.

B. Tort Law

In the absence of regulatory power—or in addition to it—local governments can look to the courts for solutions to localized externalities. Governments may argue that proposed industrial development will constitute a public nuisance or that existing development has created one. But nuisance does not systematically cover local impacts, and this is the case for most forms of energy development. For example, in many states, visual impacts—such as those created by wind energy—do not constitute a nuisance unless combined with other, more measurable effects such as noise.[174] And in some cases highly localized impacts are too localized to constitute interference with a "public right"—a necessary element for public nuisance claims.[175] For exam-

169 Mustang Run Wind Project, LLC v. Osage Cnty. Bd. of Adjustment, 387 P.3d 333, 335–36, 347 (Okla. 2016).

170 Ecker Bros. v. Calumet Cnty., 772 N.W.2d 240, 242, 245, 247 (Wis. Ct. App. 2009).

171 *In re* Application of Champaign Wind, L.L.C., 58 N.E.3d 1142, 1147 (Ohio 2016).

172 *See* WIS. ADMIN. CODE PUB. SERV. COMM'N § 128.03 (2020) (prohibiting local ordinances that are more restrictive than the state code); *id.* § 128.14 (requiring developers to mitigate local noise effects).

173 *Id.* §§ 128.15(1)–(3).

174 *See, e.g.*, Laubenstein v. Bode Tower, L.L.C., 392 P.3d 706, 709, 711 (Okla. 2016) (holding that individual's objection to the visual impacts of a cell tower and associated warning lights was not an actionable nuisance); Rankin v. FPL Energy, LLC, 266 S.W.3d 506, 511–12 (Tex. App. 2008) (holding emotional harm due to the unsightliness of a wind energy facility not to constitute a nuisance).

175 The courts vary widely in their application of public nuisance principles. Some require allegations of relatively widespread harm. *See, e.g.*, Fisher v. Zumwalt, 61 P. 82, 82 (Cal. 1900) (holding that public nuisance "is confined in most cases to where there has

ple, if a local government were concerned about chemical spills migrating offsite from one hydraulically fractured oil and gas well to a private property, this might be inadequate to support a public nuisance claim absent a showing that the chemicals might leach underground into groundwater or otherwise impact shared resources. As one state court has observed, interference with a "public right" must "deprive all members of the community of a right to some resource to which they otherwise are entitled,"[176] and an activity cannot be deemed to interfere with a public right "merely because it interferes with the use and enjoyment of land by a large number of persons."[177] Thus, even seemingly widespread harms, such as exposure to lead paint, have in some cases been deemed insufficient to constitute an actionable public nuisance.[178]

Private lawsuits could, of course, pick up some of the slack in the event that alleged nuisances from industries with highly localized effects did not adequately impact public rights. But these lawsuits often address harms only suffered by individual landowners, thus requiring a large collection of individual efforts to address harms shared by many community members. Further, even these individual lawsuits have, by and large, been unsuccessful for several local harm-producing activities.[179] In the oil and gas context, this is partly due to the challenge of proving or even adequately pleading causation. For example, it is difficult for private plaintiffs, who often lack access to sophisticated scientific data, to show that pollution in a local water source came from a specific oil and gas well.[180] Private plaintiffs' objections to wind

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been an invasion of a right which is common to every person in the community, and not to where the wrong has been done to private property"); State v. Lead Indus. Ass'n, 951 A.2d 428, 453 (R.I. 2008) (making a similar holding to *Zumwalt*); Denise E. Antolini, *Modernizing Public Nuisance: Solving the Paradox of the Special Injury Rule*, 28 ECOLOGY L.Q. 755, 771 (2001) ("The key element to a public nuisance claim . . . is that the annoyance, inconvenience, or injury must be to a public right or interest (e.g., a public road or beach), not just a private one." (emphasis omitted)). Others allow relatively localized harms to count. *See, e.g.*, Capitol Props. Grp., LLC v. 1247 Ctr. St., LLC, 770 N.W.2d 105, 110 (Mich. Ct. App. 2009) (finding sufficient allegations of fact to state a claim for public nuisance when a landlord alleged that noise from one nightclub exceeded a certain decibel level); Robert Abrams & Val Washington, *The Misunderstood Law of Public Nuisance: A Comparison with Private Nuisance Twenty Years After* Boomer, 54 ALB. L. REV. 359, 384 (1990) ("Although an aggregate of private nuisances is sometimes said not to constitute a public nuisance, the better-reasoned case law and scholarly opinion suggest otherwise." (footnotes omitted)).

176 *Lead Indus. Ass'n*, 951 A.2d at 453.

177 *Id.* (quoting 4 RESTATEMENT (SECOND) OF TORTS § 821B cmt. g (AM. L. INST. 1977)).

178 *Id.*

179 *See, e.g.*, WATSON, *supra* note 21, at 6–9 (showing numerous cases dismissed, although many also settled).

180 *See, e.g.*, Ely v. Cabot Oil & Gas Corp., No. 09-CV-2284, 2017 WL 1196510, at *1 (M.D. Pa. Mar. 31, 2017) (finding that plaintiffs' evidence "relied in some measure upon tenuous inferences"); Tucker v. Sw. Energy Co., No. 11-cv-44, No. 11-cv-45, 2012 WL 528253, at *2 (E.D. Ark. Feb. 17, 2012) (holding that "[g]eneral statements about the many dangerous substances used in fracking, and conclusory statements about the migration of those substances, will not suffice" for the purposes of causation).

farms have also often been struck down on the grounds that they are lodged solely in aesthetic objections or that they lack proof of health effects.[181] Further, even successful private lawsuits are unlikely to comprehensively address local governments' community-wide concerns, since private litigants are often only motivated to address their own harms. And private plaintiffs with more civic-minded motivations often lack standing to address broader harms.

C. Monetary Tools, Including Taxes

Communities that are unable to force or incentivize industry internalization of local externalities through regulation or liability have another potential solution in their quiver. They may tax or otherwise attach a monetary obligation to the use of land, equipment, and other goods and services associated with that activity and use the revenues to address impacts. As with liability, this is an ex post solution, which provides methods of addressing or offsetting the harm that has occurred. But also similar to liability, depending on their amount and design, taxes and other monetary tools can decrease the level of industrial activity within communities or change how the activity proceeds. Indeed, if these tools are tailored to address externalities directly, Pigouvian-type "polluter pays" taxes might allow relatively high levels of development while simultaneously reducing the externalities of that development, depending on the cost of such reduction.

1. Defining Taxes, Fees, Exactions, and Bonds

This Article refers broadly to "monetary tools" as a Pigouvian measure because government revenues to address externalities come from a variety of sources and are not strictly defined as taxes. The term "tax" typically refers to an instrument that applies to all entities within a jurisdiction that meet certain characteristics, such as all entities and persons who own property or produce oil and gas. A tax also applies regardless of whether the payer benefits from the revenue generated by the tax, and it is involuntary. Anyone who meets the characteristics associated with the tax must pay it unless the person falls within an exempted category.[182]

Exactions, in contrast, apply to entities and individuals who choose to benefit from the governmental service funded by the fee, such as water or sewer infrastructure that serves a new housing subdivision. The benefits, in turn, accrue primarily to those who have paid the fee.[183] Exactions typically

181 *See, e.g.*, Rankin v. FPL Energy, LLC, 266 S.W.3d 506, 511–12 (Tex. App. 2008).

182 *See, e.g.*, Nat'l Fed'n Indep. Bus. v. Sebelius, 567 U.S. 519, 565–66 (2012) (taking a relatively lax "functional" approach to the distinction between taxes, penalties, and other instruments); Home Builders & Contractors Ass'n of Palm Beach Cnty., Inc. v. Bd. of Cnty. Comm'rs, 446 So. 2d 140, 144–45 (Fla. Dist. Ct. App. 1983) (describing tests to distinguish taxes from fees); Laurie Reynolds, *Taxes, Fees, Assessments, Dues, and the "Get What You Pay for" Model of Local Government*, 56 FLA. L. REV. 373, 379–80 (2004) (distinguishing taxes from fees and describing the case law).

183 Reynolds, *supra* note 182, at 380.

refer to a variety of mechanisms that require developers of new land uses, such as commercial developments or housing subdivisions, to pay for or otherwise ensure the provision of the new infrastructure necessary to support these land uses. They also refer to fees for new infrastructure provided to existing land uses.[184]

Another revenue-based mechanism—the bond—is a financial tool that bridges the tax-impact fee divide. A bond involves a company putting money down—or providing another financial assurance—before engaging in an activity, and promising to allow the government to use that money if the company fails to meet its obligations.[185] For example, before drilling an oil and gas well, a company typically must post a bond to ensure that if the company does not properly fill in the well when it is done producing, the government can use the bond money to do this.[186] Wind energy developers must post similar bonds for decommissioning.[187] But unlike taxes, bonds do not automatically generate revenues to be spent by the government; rather, they are targeted specifically at one activity. And the government takes and uses the bond money only if the company fails to meet certain obligations associated with the activity.

Beyond their different technical labels, monetary tools vary along several dimensions that affect the extent to which they address local externalities. These include the object of the tool, the externality or the value of property, goods, or services to which the tool applies; the timing of the tax, both in terms of when money is paid and when revenues may be spent; and the location of monetary collection and allocation of the associated revenue, among other differences. The following subsections provide a framework for understanding these tools in terms of their ability to raise revenue that could

184 Exactions are also often defined as a general category that includes impact fees and other tools such as concurrency requirements—a mandate that if developers wish to build new projects, such as commercial or housing developments, they must ensure that there are adequate services and infrastructure to support that development. *See, e.g.*, Jim Rossi & Christopher Serkin, *Energy Exactions*, 104 CORNELL L. REV. 643, 644–45 (2019). Impact fees are "one-time charges assessed against new development projects to help finance the cost of public improvements necessitated by those projects." Michael B. Kent, Jr., *Theoretical Tension and Doctrinal Discord: Analyzing Development Impact Fees as Takings*, 51 WM. & MARY L. REV. 1833, 1836 (2010). Some scholars and practitioners specifically separate exactions from impact fees, defining exactions as fees placed on projects as a condition precedent to project approval and impact fees as fees that are simply charged "outright" as part of the project. Reynolds, *supra* note 182, at 415–16.

185 *See, e.g.*, David W. Kash & John C. Yi, *Deconstructing Subdivision Bonds*, DEF. COUNS. J., Jan. 2012, at 87, 87 (noting surety bond requirements for housing developers to provide an assurance that a housing subdivision would be completed and infrastructure would be installed).

186 *See, e.g.*, Austin L. Mitchell & Elizabeth A. Casman, *Economic Incentives and Regulatory Framework for Shale Gas Well Site Reclamation in Pennsylvania*, 45 ENV'T SCI. & TECH. 9506, 9508 (2011) (describing Pennsylvania's bonding requirement).

187 *See, e.g.*, OKLA. STAT. tit. 17, § 160.15 (2020) ("The owner of a wind energy facility shall submit to the Corporation Commission evidence of financial security to cover the anticipated costs of decommissioning the wind energy facility.").

address local externalities. These subsections use the term "tax" loosely, for simplicity, but the term as used here refers to all monetary tools just described.

2. Property, Goods, and Services Taxed

Taxes levied at the state and local levels attach to a variety of goods and services or associated impacts. There are few pure Pigouvian taxes on local harm-producing industries. As introduced in subsection 1, the closest instruments to Pigouvian taxes in this context might be bonds, which require industrial operators to put money down—or otherwise indicate an ability to pay—for potential damages they might cause.[188] Colorado also distributes parts of its oil and gas severance tax through "impact grants"—specifically allocating funds to address the negative impacts of oil and gas development.[189]

Other taxes are more tenuous in terms of addressing impacts. In one common form of oil and gas tax, states, and, in some cases, local governments, apply an ad valorem tax to energy development that taxes the value of property that hosts industrial activity. For example, Colorado taxes the property on which oil and gas wells are located, although operators may use most of the property value as a credit against other taxes imposed on the industry.[190] States also sometimes tax the value of the industrial equipment on the property. Colorado places an ad valorem tax on the "machinery, equipment, and buildings" associated with oil and gas development, and this may not be offset by severance tax payments.[191]

Other states similarly tax the property that hosts solar and wind energy-generating facilities, and the facilities themselves, through an ad valorem tax. California, Washington, and Oregon tax both the property (land) and infrastructure of renewable energy installations, whereas Pennsylvania taxes the property but not "nonrealty assets"—including the components of the wind farm (towers and blades, for example) and transmission infrastructure.[192] Additionally, the easement payments that property owners hosting renewable energy farms receive are taxed as capital gains, with money flowing to the

188 *See, e.g.*, WYO. STAT. ANN. §§ 30-5-104(d)(v)(A), 30-5-404(b) (2020) (requiring at least $5000 for the first 1000 acres of seismic testing).

189 HEADWATERS ECON., HOW COLORADO RETURNS "UNCONVENTIONAL" OIL REVENUE TO LOCAL GOVERNMENTS 4 (2014), [hereinafter HEADWATERS ECON., HOW COLORADO RETURNS], https://headwaterseconomics.org/wp-content/uploads/state-energy-policies-co.pdf.

190 Memorandum from Larson Silbaugh, Principal Economist, Colo. Legis. Council Staff, on Effective Severance Tax Rates on Oil and Gas (Jan. 12, 2018) (available at https://leg.colorado.gov/sites/default/files/interested_persons_memo_on_severance_taxes.pdf) (noting that property tax expenses offset severance tax obligations).

191 COLO. OIL & GAS ASS'N, COLORADO OIL & GAS INDUSTRY TAX WHITEPAPER 2 (2011), https://www.naro-us.org/Resources/Documents/COGA%20Whitepaper.pdf.

192 P. Barton DeLacy, *Wind Farm Valuation Issues for Ad Valorem Taxation Purposes*, WILLAMETTE MGMT. ASSOCS. INSIGHTS, Summer 2014, at 85, 88.

federal and potentially state governments.[193] Easements for a "definite term of years" are taxed as income.[194] But some states also offer credits or exemptions to reduce the burdens of the tax and to attract the industry to the state. For example, under a constitutional amendment, Florida exempts the value of wind and solar energy devices from the ad valorem tax on personal property.[195]

Natural gas pipelines produce similar types of tax-based revenue. Some states, such as Virginia, allow local governments to tax the value of interstate natural gas pipeline companies' equipment based on a state determination of the value, which includes, for example, operating improvements, machinery and equipment, transmission mains and lines, and the land occupied by the pipeline.[196] Pipeline easements, as with renewable energy easements, are taxed as capital gains.[197]

Beyond taxing the value of purchased and installed physical equipment, severance taxes and similarly named instruments tax the product of industrial activity, such as oil and gas or the electricity from wind energy. Some states tax wind energy production, with Wyoming charging one dollar per megawatt-hour of wind energy produced.[198] And in 2018, the National Conference of State Legislatures indicated that thirty-four states taxed oil and gas production.[199] Pennsylvania's tax, included in this count, is called a "fee" but has all of the definitional characteristics of a tax as defined in subsection II.C.1 of this Article.[200] The tax is unlike most other oil and gas taxes, however, in that it is not levied based on the quantity of the resources produced. Rather, the state allows local governments to levy the fee on all producers who "spud" (drill) a hydraulically fractured gas well in the state, and the revenues are distributed to address a variety of community impacts.[201]

Other taxes that apply to all industries or people in a state can also produce revenue when local harm-producing energy development booms within the state. For example, wind energy and oil and gas companies pay state

193 *See* CHALK ET AL., *supra* note 84.

194 *See* Roger A. McEowen, *Selected Tax Issues for Rural Landowners Associated with Easement Payments*, LAW PROFESSORS BLOG NETWORK: AGRIC. L. & TAX'N BLOG (Nov. 7, 2016), https://lawprofessors.typepad.com/agriculturallaw/2016/11/selected-tax-issues-for-rural-landowners-associated-with-easement-payments.html.

195 FLA. CONST. art. VII, §§ 3(e)(2), 4(i)(1)–(2).

196 VA. DEP'T OF TAX'N, STATEMENT OF ASSESSED VALUES FOR LOCAL TAX PURPOSES FOR RAILROADS AND INTERSTATE PIPELINE TRANSMISSION COMPANIES 20–29 (2019).

197 *See* McEowen, *supra* note 194.

198 WYO. STAT. ANN. § 39-22-104 (2020).

199 Anne Kolesnikoff & Cassarah Brown, *State Oil and Gas Severance Taxes*, NAT'L CONF. OF STATE LEGISLATURES (Sept. 6, 2018), http://www.ncsl.org/research/energy/oil-and-gas-severance-taxes.aspx.

200 58 PA. CONS. STAT. § 2302 (2020).

201 *See id.* (stipulating the annual fee schedule); *id.* § 2314(g) (enumerating thirteen ends to which localities can devote funds raised through the Act 13 fee); *Act 13 Fee Schedule*, PA. PUB. UTIL. COMM'N (2019), https://www.act13-reporting.puc.pa.gov/Modules/Disbursements/FeeSchedule.aspx (calculating the fees for a given year).

corporate income taxes that other industrial actors within the state similarly pay.[202] Additionally, when workers rush into towns along with a booming industry, revenues from state and local tourism taxes on rental cars, hotels, and similar expenses tend to increase.[203]

Many of these taxes and revenues do not go directly to impacts, and the items and services taxed are often not adequately related to impacts. For example, taxing the energy production equipment itself, such as an oil and gas well or a wind farm, or the energy produced from it, only indirectly addresses impacts. The more energy infrastructure and the more energy produced, the more impacts there are likely to be. But some energy equipment may produce few to no damages depending on the company operating. And one oil and gas well or wind turbine that produces unusually large quantities of energy does not necessarily produce more impacts, although to the extent that the equipment must be larger, or the well deeper and longer, to produce more energy, more impacts could accrue.

3. Timing of Tax or Fee

Taxes or fees levied on local harm-producing activities vary in terms of when they are imposed and when the revenues from the tax may be spent. Some taxes are charged quarterly or annually. And even when imposed annually, some taxes do not reflect the increased value of the good taxed until several years after that value changes and is newly assessed, as often occurs with the ad valorem tax on property.[204] Taxes with a lag between the item or activity taxed and the revenue distribution can be problematic in that they fail to address immediate impacts associated with energy development.[205] In contrast, production taxes are often levied monthly.[206]

The timing of revenue distribution also varies among different financial tools. For example, North Dakota voters elected to lock some revenues from taxation of unconventional oil development in the state in a "legacy fund," to be spent at an as-yet-determined point in the future.[207] This type of delayed

202 *See* COLO. OIL & GAS ASS'N, *supra* note 191, at 2 (noting corporate taxes paid by the oil and gas industry).

203 *See, e.g.*, REGIONTRACK, OKLAHOMA OIL AND GAS INDUSTRY TAXATION: COMPARATIVE EFFECTIVE TAX RATES IN THE MAJOR PRODUCING STATES 17, 21 (2018) (noting that the oil and gas industry pays these taxes in substantial amounts).

204 *See* HEADWATERS ECON., HOW STATES RETURN REVENUE TO LOCAL GOVERNMENTS FROM UNCONVENTIONAL OIL EXTRACTION: WINDFALL OR MISSED OPPORTUNITY? 2 (2014) [hereinafter HEADWATERS ECON., HOW STATES RETURN REVENUE TO LOCAL GOVERNMENTS], https://headwaterseconomics.org/wp-content/uploads/state-energy-policies-report.pdf (noting one-to-three-year time lag in local property taxes).

205 *See, e.g.*, HEADWATERS ECON., HOW COLORADO RETURNS, *supra* note 189, at 1 (noting that in Colorado, property taxes on oil and gas produced within a local government's boundaries do not produce revenues until "two years after initial oil production begins").

206 HEADWATERS ECON., HOW STATES RETURN REVENUE TO LOCAL GOVERNMENTS, *supra* note 204, at 2.

207 *See North Dakota Legacy Fund*, N.D. OFF. OF STATE TREASURER, https://www.treasurer.nd.gov/north-dakota-legacy-fund-0 (last visited Sept. 20, 2020) (describing

revenue distribution could be problematic if immediate externalities needed remedying, but it is also beneficial in terms of ensuring the availability of funds to address both known and as-yet-unidentified risks. One known future cost in North Dakota will be the inevitable bust that follows an oil boom when workers flee the state, leaving behind schools, housing, and other infrastructure not yet at the end of their useful lives.[208] And there have already been examples of risks that were not initially identified but proved to require millions of dollars of cleanup, such as leaking distribution and oil lines in the state and low-level radioactive wastes from oil sites that were improperly disposed of.[209]

In the case of wind energy development, locking up some revenues could be similarly important, particularly for decommissioning old wind farms. If local governments or states do not require the posting of bond money for decommissioning, a tax or fee with a delayed distribution time could ensure the availability of money to clean up dangerous, abandoned electrical infrastructure.

Bonds can involve even more of a time lag because a local government does not use bond money until it confirms that the entity engaged in an energy development activity did not perform its obligations, such as properly decommissioning renewable energy infrastructure. But this lag is not overly problematic from the standpoint of externalities because the government has the money available upon discovery of the externality and industry's failure to address it within the time limit provided.

4. Location of Tax and Distribution of Revenue

Many taxes and fees are raised, and sometimes distributed, based on the location of the activity taxed. For example, Pennsylvania's unconventional gas well fee, which local governments may elect to impose on each well that is drilled and hydraulically fractured, is levied based on the location of drilling and partially distributed back to communities in which drilling occurs.[210] And in Colorado, in addition to a state severance tax, local governments tax the oil produced within their jurisdiction. These types of taxes and fees can better address externalities because they raise money in the place where the impacts fall and allow at least some of the money to go back to addressing

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the Fund). West Virginia has a similar fund, but no money goes to the fund when the budget is not balanced. *See Future Fund to Sit Empty*, INTELLIGENCER (Wheeling) (Jan. 18, 2015), https://www.theintelligencer.net/news/top-headlines/2015/01/future-fund-to-sit-empty/.

208 *See supra* note 11 and accompanying text.

209 *See, e.g.*, James MacPherson, *5 Years and $100M Later, Huge North Dakota Oil Spill Finally Cleaned Up*, INS. J. (Sept. 21, 2018), https://www.insurancejournal.com/news/midwest/2018/09/21/502039.htm; Nick Smith, *Dumped Filter Socks Found in Williston*, BISMARCK TRIB. (Mar. 12, 2015), https://bismarcktribune.com/bakken/dumped-filter-socks-found-in-williston/article_b83ee1ae-c0af-5b74-8a51-e5f395b946f2.html#:~:text=last (describing illegal dumping of filters that absorb low-level radioactive wastes from oil wells).

210 58 PA. CONS. STAT. § 2314 (2020).

these impacts. If not designed properly, they do, however, leave out jurisdictions near those with oil and gas production that experience impacts such as traffic and housing overflow.[211]

Impact fees—typically applied to new land development involving housing subdivisions, but which also sometimes address industrial development—are even more location-focused. If the residents in a new subdivision will create more traffic or strain existing potable water infrastructure, impact fees charged of these residents go directly toward improving the affected roads or water pipes.[212] Similar fees placed on the energy industry could cover the costs of the same things; oil and gas development often requires new water and sewage connections and roads.[213] Indeed, Santa Fe County, New Mexico, requires oil and gas developers to assess and pay for the new infrastructural demands that they will create.[214]

In a somewhat rougher approach to matching revenues with the location of impacts, many statewide severance and production taxes are distributed to the localities that experience production. For example, sixty percent of the revenues from Wyoming's tax on wind energy production are distributed to counties with wind farms,[215] and in Oklahoma, a portion of the severance tax goes to counties for highway funds, with more of the tax going to counties with more oil production.[216]

5. Taxation Amounts

A final feature that varies substantially among tools for raising local revenue is, of course, the amount of money collected. An independent think tank that has compared states' taxes on hydraulically fractured natural gas and oil wells concludes that the effective tax on these wells ranges from 3.3% to 11.7% of the value of oil and gas.[217] Bond amounts also vary substantially and often fail to directly address the externalities of development because they are often not tailored to specifically address risk. Indeed, a recent study of thirteen states' bonding requirements for oil and gas wells concludes that

211 *See, e.g.*, HEADWATERS ECON., HOW COLORADO RETURNS, *supra* note 189, at 4 (describing the problem of Colorado local governments' taxes on oil only accruing to the local governments, leaving out "adjacent communities experiencing impacts related to population growth and industrial activity").

212 *See, e.g.*, J.K. Constr., Inc. v. W. Carolina Reg'l Sewer Auth., 519 S.E.2d 561, 563 (S.C. 1999) (describing an impact fee that each new customer connecting to a sewer line or expanding an existing line had to pay, which funded the costs of the sewage system).

213 *Cf.* Rossi & Serkin, *supra* note 184, at 669 (proposing exactions for local electricity infrastructure needed for new housing and commercial development).

214 SANTA FE CNTY., N.M., CODE OF ORDINANCES tit. xv, § 150.02, Exhibit B, § 9.6.2.1 (2008).

215 WYO. STAT. ANN. § 39-22-111 (2020).

216 HEADWATERS ECON., UNCONVENTIONAL OIL AND NATURAL GAS PRODUCTION TAX RATES: HOW DOES OKLAHOMA COMPARE TO PEERS? 21 (2013), https://headwaterseconomics.org/wp-content/uploads/State_tax_comparison_study.pdf.

217 HEADWATERS ECON., HOW STATES RETURN REVENUE TO LOCAL GOVERNMENTS, *supra* note 204, at 3.

bond amounts in eleven of these states were unlikely to adequately cover damages.[218] The study also notes that bonds could be better designed to directly address damages. Bond amounts could vary based on different characteristics of wells that made some riskier than others, such as the depth of wells and their proximity to groundwater.[219]

A similar approach could be used for other energy infrastructure. For example, if local governments were allowed to impose bond requirements on natural gas pipeline companies under a uniform, state-approved system, the state government could specify different bond amounts that local governments could adopt based on characteristics such as population numbers and their proximity to the pipeline, the number of steep slopes and thus potential soil erosion in the area disturbed by the pipeline, and other factors.

6. Limits on Local Taxation

Just as local governments are substantially constrained in their ability to regulate certain industries with disproportionately large local impacts, local governments' taxation powers vary dramatically among states. Only approximately twelve states provide local governments with home rule fiscal authority, and five out of these twelve states grant very limited fiscal authority.[220] States limit local governments in terms of the types of taxes they may levy, the amount of taxes and revenues permitted and methods for appraising property value, and the processes through which local governments may form new taxes, such as the local voter approval required for the taxes.[221]

For the many local governments that lack the power to independently levy adequate taxes and fees, in some cases they also receive too little revenue from state taxes. States with shale gas development redistribute fourteen to fifty-five percent of total revenue back to local governments, showing the dramatic variation in approaches.[222] Indeed, local governments in states such as North Dakota, despite receiving some state tax revenue, experienced "net negative fiscal effects" from development, as did some local governments in Colorado and Wyoming "during heavy phases of development."[223]

In summary, local governments have varied authority to directly tax the externalities of energy production. Few governments may impose direct

218 Jacqueline S. Ho, Jhih-Shyang Shih, Lucija A. Muehlenbachs, Clayton Munnings & Alan J. Krupnick, *Managing Environmental Liability: An Evaluation of Bonding Requirements for Oil and Gas Wells in the United States*, 52 ENV'T SCI. & TECH. 3908, 3913 (2018).

219 *Id.* at 3909–10.

220 DALE KRANE, PLATON N. RIGOS & MELVIN B. HILL JR., HOME RULE IN AMERICA: A FIFTY-STATE HANDBOOK 476–77 tbl. A1 (2001).

221 *See, e.g.*, HEADWATERS ECON., HOW COLORADO RETURNS, *supra* note 189, at 4 (noting caps on "local revenue growth"); Scharff, *Powerful Cities?*, *supra* note 20, at 306–12 (2016) (describing different ways in which states limit municipal taxing and revenue expenditures).

222 HEADWATERS ECON., HOW STATES RETURN REVENUE TO LOCAL GOVERNMENTS, *supra* note 204, at 2.

223 Newell & Raimi, *supra* note 11, at 2.

taxes or fees on externalities without express permission of the state government. But local governments likely could more broadly use exactions and impact fees—which they regularly impose on housing developments—in the energy context.[224] To the extent that governments could impose these types of fees, this would give them needed leverage in terms of enticing energy developers to enter into more extensive negotiations with local governments.

D. Negotiation

In 1960, Ronald Coase explored an alternative to the Pigouvian framework, which assumes that industry should be forced to internalize the costs of its harms through governmental intervention.[225] Coase argued that as long as relying on a private pricing system is "without cost"—in other words, there are zero transaction costs—the cost to neighbors of the harm-producing activity should be weighed against the cost of shutting down the activity, and one entity should pay the other's damages.[226] Negotiation between the two sides would simply result in the instigator of the more highly valued activity paying the other side for the costs experienced.[227] For example, if shutting down a polluting factory would be more costly than the costs of factory pollution to neighbors, the factory should continue operating, and the factory operator should simply pay the neighbors for the damages inflicted.[228]

This Section explores both private and individual bargaining in the context of activities with large localized externalities, arguing that this Coasean option is also often quite limited.

1. Private Negotiation

Bargaining between individual landowners and developers of energy projects could address many of the very localized effects of these projects, particularly where the impacts are so local that they accrue solely on the property where the project is located.[229] But many effects, such as noise,

224 *Cf.* Rossi & Serkin, *supra* note 184, at 669, 686 (proposing exactions for the energy infrastructure required for new development).

225 Coase, *supra* note 2, at 29.

226 *Id.* at 2.

227 *Id.* at 3 (showing that the harm causer will increase the harm-causing activity if the value of the additional harm is greater than the cost of paying for it).

228 *See id.* at 2–6.

229 Community negotiation for benefits from energy developers has been more common internationally but is gaining traction in the United States. *See* OFF. OF MINORITY BUS. & ECON. DEV., U.S. DEP'T OF ENERGY, GUIDE TO ADVANCING OPPORTUNITIES FOR COMMUNITY BENEFITS THROUGH ENERGY PROJECT DEVELOPMENT 9–10 (2017) (providing examples of CBAs for a liquefied natural gas import terminal and an oil refinery modernization project); Sandy Kerr, Kate Johnson & Stephanie Weir, *Understanding Community Benefit Payments from Renewable Energy Development*, 105 ENERGY POL'Y 202, 204, 205–08 (2017) (documenting wind CBAs in the United Kingdom); Letter from Daniel Courtemanch, State of Maine, Department of Environmental Protection, to Blue Sky West, LLC, at 39 (Sept. 2014), https://www.maine.gov/dep/land/sitelaw/selected-developments/bing-

localized air pollution, and light pollution, can spill beyond property boundaries. And bargaining between individual landowners and industry, particularly in the oil and gas context, is limited.

In oil and gas, many estates are split—one individual owns the oil and gas, another individual owns the surface.[230] The oil and gas owner may use the surface as is reasonably necessary to develop the minerals, without paying any damages to the surface owner.[231] Surface owners overlying separately owned mineral estates are therefore largely powerless to bargain with industry, absent government intervention.[232] But some oil and gas companies do bargain with landowners—even when they are not required to do so—in part to avoid ongoing disputes over the reasonableness of their activities, or simply to foster good will.[233]

The states that have directly addressed the issue of split property in the renewable energy context have tended to prohibit separate estates, with the exception of leases under fifty years.[234] Surface owners in these states may not sever the air rights and solely lease the air rights to a wind or solar developer, thus giving the surface owner direct bargaining power.

2. Government Negotiation

As an alternative or supplement to regulation, governments, too, have strong negotiating powers—if they have the option of wielding a regulatory-, liability-, or taxation-based threat. If local governments have extensive authority, the threat of enforcement can be so heavy that the process really is not negotiation at all.[235]

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ham/bingham_wind_project_final_order.pdf (referencing community benefits agreements between several local governments in Maine and Blue Sky West, LLC); *City Approves Exclusive Community Benefits Agreement with Castle Wind to Pursue Mutual Benefits of Offshore Wind Project*, CASTLE WIND (Nov. 30, 2018), http://castlewind.com/city-approves-castle-wind-offshore-project/.

230 *See, e.g.*, Phillip Wm. Lear & Stephanie Barber-Renteria, *Split Estates and Severed Minerals: Rights of Access and Surface Use After the Divorce (And Other Leasehold Access-Related Problems)*, *in* 50 ROCKY MTN. MIN. L. INST. 10-1, 10-4, 10-5 (2004) (noting 438 million acres of split estate minerals managed by the Bureau of Land Management for federally owned oil and gas).

231 *See generally* Bruce M. Kramer, *The Legal Framework for Analyzing Multiple Surface Use Issues*, 44 ROCKY MOUNTAIN MIN. L. FOUND. J. 273 (2007) (describing this doctrine and the difficulty of proving that use of the surface is unreasonable, although arguing that surface owners have some recourse under some balancing applied by the courts).

232 Only approximately eleven states require negotiation with or compensation to surface owners for damages. *Id.* at 334–35.

233 *See, e.g.*, Dana & Wiseman, *supra* note 38, at 869 (describing memoranda of understanding between oil and gas communities and municipalities in Colorado).

234 *See, e.g.*, S.D. CODIFIED LAWS § 43-13-19 (2020). Texas is the exception, with wind developers tending to lease the wind estate separately, albeit without explicit statutory approval. *See* Ernest E. Smith & Becky H. Diffen, *Winds of Change: The Creation of Wind Law*, 5 TEX. J. OIL, GAS & ENERGY L. 165, 176–77 (2009).

235 Threats can be so strong that they impede any meaningful negotiation, as explored in the administrative law context. *See, e.g.*, Tim Wu, Essay, *Agency Threats*, 60 DUKE L.J.

In the case of externalities that fall heavily at the local level, local governments often negotiate extensively—but only with limited types of industries. The most common form of local government negotiation is in the residential and commercial construction context.[236] Governments regularly impose impact fees on construction, requiring developers of large projects to pay for the costs of new roads, sewage lines and connections, potable water, and similar infrastructure that the local government might have to provide.[237]

Some legal doctrines limit this bargaining authority or its results. For example, governments are prohibited from using "contract zoning," in which they tie the hands of future city councils or commissions.[238] Under this doctrine, cities are not supposed to make quid pro quo arrangements, in which they agree to approve a project only if the developer provides perks like schools or parks.[239] But this arrangement is often what occurs in reality, provided the city strikes the deal in a public hearing and obtains public benefits.

Some constitutional provisions also limit certain aspects of negotiation and its results. Negotiations can be an unconstitutional regulatory taking if they require conditions on development that are not aimed at the harm created and are disproportionate to the harm in terms of the amount of compensation demanded.[240] Further, even government-developer negotiations

1841, 1844 (2011) (describing agency threats involving "warning of agency action related to either ongoing or planned behavior"). But there has also been productive agency-industry negotiation. *See, e.g.*, Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 57–66 (1997) (describing Project XL, in which the EPA, empowered by statute, negotiated permits with a citrus juice manufacturer and Intel); Shi-Ling Hsu, *A Game-Theoretic Approach to Regulatory Negotiation and a Framework for Empirical Analysis*, 26 HARV. ENV'T L. REV. 33, 33–39 (2002) (describing Clinton-era "regulatory reinvention," in which Congress allowed "federal agencies to negotiate compromises with regulated parties").

236 *See, e.g.*, Daniel P. Selmi, *The Contract Transformation in Land Use Regulation*, 63 STAN. L. REV. 591, 593 (2011) (noting that "land use approvals are now increasingly the subject of negotiations leading to binding contracts between local governments and development interests").

237 *See, e.g.*, City of Olympia v. Drebick, 126 P.3d 802 (Wash. 2006) (describing a state act that allows local governments to require impact fees paid by developers to fund fire stations, schools, parks, and roads); St. Johns Cnty. v. Ne. Fla. Builders Ass'n, 583 So. 2d 635, 642 (Fla. 1991) (validating in part a county impact fee for school costs); Ronald H. Rosenberg, *The Changing Culture of American Land Use Regulation: Paying for Growth with Impact Fees*, 59 SMU L. REV. 177, 182 (2006) (noting that local governments' use of impact fees placed on residential and commercial development has "dramatically accelerated").

238 *See, e.g.*, Daniel A. Spitzer, Patricia E. Salkin & Michael Bookser, *Host Community Agreements for Wind Farm Development*, 9 N.Y. ZONING L. & PRAC. REP., Mar.–Apr. 2009, at 1, 2–4 (discussing illegal contract zoning in the wind energy host-community agreement (HCA) context but arguing that an HCA does not involve contract zoning).

239 *Id.* at 3–4.

240 *See, e.g.*, David L. Callies & Julie A. Tappendorf, *Unconstitutional Land Development Conditions and the Development Agreement Solution: Bargaining for Public Facilities After* Nollan *and* Dolan, 51 CASE W. RES. L. REV. 663, 666–69 (2001) (discussing *Nollan v. California Coastal Commission* and *Dolan v. City of Tigard* and their impacts on development agreements).

that result in the developer paying an impact fee, rather than mitigating impacts or offsetting damages, can amount to takings.[241]

Aside from these doctrines, local negotiating power to address the distinct localized harms from industry is, in the absence of preemption, theoretically strong. There are different types of tools available in this context, including community benefits agreements, in which developers provide funds or actual infrastructure such as parks or schools, and good-neighbor agreements, in which developers agree to reduce the environmental and social impacts of oil and gas development.[242] Indeed, some local governments have used negotiation to address the harms of fracking and wind energy development. Garfield County, Colorado, used a softer form of negotiation than the quid-pro-quo-type agreement that occurs in the building context. A community organization convened public meetings in which members of the community expressed concerns about the potential impacts of fracking, and industry voluntarily agreed to follow "Best Management Practices" to reduce harms and address these concerns.[243] The agreement is explicitly not legally binding but instead relies on an "ongoing exchange" of information between industry and the community.[244] Boulder County, Colorado, takes a more direct and one-size-fits-all negotiation approach, promising expedited approval of wells if operators agree to conditions such as stronger air- and water-quality protections.[245] A number of other communities in Colorado have similarly entered into memoranda of understanding with oil and gas operators, in which the operators commit to mitigate certain impacts.[246]

These types of community-industry agreements appear to have been relatively uncommon in the oil and gas context, however, outside of Colorado. The more common form of negotiation in the fracking context is the road use agreement, in which operators agree to pay for or repair any damage caused to roads by heavy trucks.[247] For example, in Ohio, companies that

241 Koontz v. St. Johns River Water Mgmt. Dist., 570 U.S. 595, 602, 615–17 (2013).

242 Kristen van de Biezenbos, *Contracted Fracking*, 92 TUL. L. REV. 587, 614–19 (2018).

243 *See* GRAND VALLEY CITIZENS' ALL., THE RIFLE, SILT, NEW CASTLE COMMUNITY DEVELOPMENT PLAN 8–9 (2006), http://www.oilandgasbmps.org/docs/CO68-RSNCCommunityDevelopmentPlan.pdf.

244 *Id.* at 4.

245 CTR. FOR SCI. & DEMOCRACY & CONSENSUS BLDG. INST., MANAGING THE RISKS OF UNCONVENTIONAL OIL AND GAS DEVELOPMENT: WHAT LOCAL COMMUNITIES CAN LEARN FROM OTHERS' EXPERIENCES 9 (2015), https://www.ucsusa.org/sites/default/files/attach/2015/07/ucs-managing-risks-unconventional-oil-gas-development-2015.pdf; *see also* George K. Foster, *Community Participation in Development*, 51 VAND. J. TRANSNAT'L L. 39, 83 (2018) (noting that "at least thirty municipalities in Colorado have negotiated 'operator agreements' with" the oil and gas industry).

246 Dana & Wiseman, *supra* note 38, at 869.

247 *See, e.g.*, Leah A. Dundon, Mark Abkowitz, Janey Camp & Craig Philip, *Assessing Impacts to Transportation Infrastructure from Oil and Gas Extraction in Rural Communities: A Case Study in the Mississippi Tuscaloosa Marine Shale Oil Play*, J. RURAL & CMTY. DEV., no. 2, 2018, at 16, 32 (noting the use of road use agreements).

plan to drill a horizontal well must provide proof of a road use agreement with the local government before receiving a state permit to drill.[248]

Community-industry negotiation has likely been most common for road-related issues in the fracking context because many local governments retain strong regulatory power over locally owned and managed roads.[249] Due to the backup threat of regulation in this context, these governments have the power to bring industry to the table to negotiate. The same is not true for other externalities, such as local air pollution, chemical spills, and other effects of fracking.[250] Giving local governments more regulatory control—a veto power over fracking, so to speak—would likely induce more efficient Coasean bargaining to address externalities.[251] But the trend has been in the other direction, toward more preemption.

Negotiation in the form of host community agreements (HCAs) appears to be somewhat more common in the renewable energy context[252]—perhaps because there is not as much state preemption of local regulation of wind energy. As with oil and gas, these agreements focus largely on impacts to roads. But in a much more ambitious vein than many oil and gas negotiations, most HCAs also include provisions for wind developers paying communities for the impacts of development.[253]

Communities also increasingly enter into community benefits agreements (CBAs)—which are similar to HCAs—with renewable energy developers. Maine strongly incentivizes this negotiation by providing that the state's Department of Environmental Protection may grant an expedited wind energy permit to a developer if the developer will provide "tangible benefits" to the community that will host the wind farm.[254] A developer may provide proof of tangible benefits under this state law by entering into a CBA with the host community.[255] Towns such as Bingham, Maine, have accordingly finalized CBAs with wind energy developers in which the developer agrees to make an "annual contribution to the town." The town uses this contribution for "property tax reductions, economic development projects, land and natural resource conservation, tourism promotion or reduction of energy costs."[256]

Further, communities have successfully negotiated for benefits from industry in the LNG terminal context, where the federal government must

248 OHIO REV. CODE ANN. § 1509.06(A)(11)(b) (West 2020).

249 *See* OKLA. STAT. tit. 52, § 137.1 (2020); TEX. NAT. RES. CODE ANN. § 81.0523(c)(1) (West 2019).

250 Some industry actors negotiate despite the lack of a regulatory threat. For example, a strong company culture of maintaining a "social license to operate" might lead to voluntary negotiation.

251 Spence, *supra* note 4, at 393–94.

252 *See, e.g.*, Spitzer et al., *supra* note 238, 2–3, 6 (describing agreements between local governments and wind developers in New York).

253 *Id.* at 2.

254 ME. STAT. tit. 35-A, §§ 3451–3459 (2020).

255 *Id.* §§ 3451(10), 3454(2).

256 *Id.* § 3451.1-B.

consult with states about state and local safety concerns.[257] For example, Robbinston, Maine, entered into a CBA with an LNG terminal developer that established a County Economic Trust Fund, a goal that five percent of supplies would come from "local, qualified contractors," a goal that sixty percent of the workforce would be recruited from the county, and requirements for "[c]onstruction job training[,] [s]chool education support[,] and [r]oad repair and transportation."[258]

Where developers have adequate incentives to sit down at the table—whether due to state or federal incentives to negotiate locally, a commitment to a social license to operate, or a threat of a local regulatory or financial stick—negotiations to address social and environmental externalities can be quite effective.

III. Drivers of the Regulatory Void

State governments—and, in the case of natural gas pipelines and export terminals, the federal government—substantially constrain local governments' authority to address externalities, including for industries with harms that fall disproportionately at the local level. This would have little import if states and the federal government adequately addressed these harms. But particularly when the majority of negative effects fall locally, with benefits spread more broadly, higher-level governments have little incentive to act. And even if these governments were motivated to act directly on behalf of local governments, they might not be the best governments to do so. Local governments often need to address variable issues, with noise from wind turbines or oil and gas drilling posing more of a problem in some neighborhoods than others, and local land use law, as opposed to uniform statewide ordinance, might best address the most variable effects.

This Part explores the reasons for the limitation on local governments' powers to regulate, tax, impose liability on, or negotiate with many of the energy industries that cause disproportionately large local effects.

A. Federalism

Traditional federalism accounts give at least two conflicting reasons for blockading local governments from what would seem to be their natural regulatory turf—the project of addressing the externalities that accrue at the local level. The race-to-the-bottom theory suggests that despite large, localized externalities, local governments might ignore these externalities if the money from development proved adequately alluring. These governments might compete to attract industry through lax regulation, thus leading to inadequately mitigated collective harms.[259]

257 15 U.S.C. § 717b-1(b) (2018).

258 U.S. Dep't of Energy, *supra* note 229, at 9.

259 See Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 Yale L.J. 1196, 1212 (1977). *But see* Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale*

A competing federalism account, the "inefficient conflicting regulations" story, worries that a patchwork of varied or overly restrictive local regulations will unduly impede industrial development, leading to problematically low levels of industrial development.[260] In the states that have allowed local control over industries with relatively large local externalities, there is not uniform evidence that this will occur. For example, although Wabaunsee, Kansas, banned wind energy development—an action affirmed by the state's supreme court—other local governments welcomed it, and Kansas is a leading wind energy state, with installed capacity nearly equal to California's.[261] But in places like the Northeast, a nontrivial number of communities have waged decades-long battles against wind farms.[262] And in the oil and gas context, before New York banned hydraulic fracturing that uses large volumes of water (as most modern fracturing does), dozens of local governments in the state had banned or placed moratoria on the practice, showing that a collection of numerous local restrictions can substantially block growth.[263]

B. Government Resources, Competencies, and Ethics

Beyond federalism concerns regarding potentially conflicting regulation, a long-simmering movement against local control, particularly in the fiscal arena, worries about local competence and corruption. The argument is that local governments simply are not good at raising, or cannot be trusted to raise, funds in a fiscally responsible and ethical manner. This movement arises out of a period of massive, rampant local government corruption, which far exceeded by degree and scale the local corruption that still endures today.[264]

Local governments have several potential advantages, however. Particularly important to localized externalities, they can attract skilled volunteers who can help monitor and address the impacts of industry. Through "bucket brigades" and similar mechanisms, volunteers can measure local levels of pollutants, regularly observe and record noise levels and aesthetic conditions at industrial sites, and call potential problems to the attention of local regula-

for Federal Environmental Regulation, 67 N.Y.U. L. REV. 1210, 1211–12 (1992) (arguing that the race can be positive).

260 *See, e.g.*, Heather K. Gerken, *Foreword: Federalism All the Way Down*, 124 HARV. L. REV. 4, 10, 72 (2010) (noting federalism arguments focused on the importance of uniformity).

261 *See supra* note 162 and accompanying text (describing the Kansas Supreme Court's affirmance of a local ban on commercial-scale wind energy); *U.S. Installed and Potential Wind Power Capacity and Generation*, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, https://windexchange.energy.gov/maps-data/321/ (last visited Sept. 13, 2020) (showing robust wind capacity in Kansas).

262 *See supra* note 28 and accompanying text.

263 *See, e.g.*, Caroline Cecot, *No Fracking Way: An Empirical Investigation of Local Shale Development Bans in New York*, 48 ENV'T L. 761, 763 (2018) (noting hundreds of communities with bans).

264 *See supra* note 18. *But see* SCHRAGGER, *supra* note 20, at 69–77 (blaming curbs on local fiscal and other policy for some of local governments' current challenges).

tory officials.[265] Additionally, volunteers can engage in ongoing negotiations with industry over the acceptable level of externalities and potential remedies for externalities, as they have done for oil and gas development in Garfield County, Colorado.[266]

In the vein of corruption, it is not clear that local governments are in fact more likely than state or federal officials to misspend funds, promulgate inadequate regulations due to capture or bribery, or otherwise poorly govern externalities. A long literature has debated this point.[267] On the one hand, some scholars argue that capture and corruption are less likely to occur at the local level, where citizens can more easily monitor and root out problematic conduct by officials and call these officials to task through shaming and other mechanisms.[268] And it is more difficult for regulated actors to capture hundreds of local governments than it is to capture more centralized state and federal agencies. But local officials' physical closeness to regulated actors makes it more likely that they will regularly rub shoulders, potentially creating more opportunities for both formal and informal repeat interactions that could sway local policy in favor of regulated actors to the detriment of the public.

C. Transaction Costs

Another potentially legitimate reason for legislatures' hesitance to permit broad local governmental authority is that governmental regulation is not only expensive in terms of increasing the costs of doing business. Regulation itself has transaction costs, just as negotiation does. Indeed, governments must incur massive costs to identify externalities; determine how and whether to address them through regulation, fiscal tools, or other

265 *See, e.g.*, Gregg P. Macey et al., *Air Concentrations of Volatile Compounds Near Oil and Gas Production: A Community-Based Exploratory Study*, 13 ENV'T HEALTH 1, 4–6, 15 (2014) (describing effective citizen monitoring of air pollution near oil and gas well sites).

266 *EAB Citizen Representatives*, GARFIELD CNTY., COLO., OIL & GAS DIV., https://www.garfield-county.com/oil-gas/eab-citizen-advisory-board/ (last visited Oct. 11, 2020).

267 *See, e.g.*, CLAYTON P. GILLETTE, LOCAL REDISTRIBUTION AND LOCAL DEMOCRACY: INTEREST GROUPS AND THE COURTS 15–30 (2011) (noting the distinct potential for local corruption); Bradley C. Karkkainen, *Zoning: A Reply to the Critics*, 10 J. LAND USE & ENV'T L. 45, 86–88 (1994) (noting the potential for capture and corruption at the local level, specifically, and providing examples, although defending the ability to prevent these problems); Daniel R. Mandelker & A. Dan Tarlock, *Shifting the Presumption of Constitutionality in Land-Use Law*, 24 URB. LAW. 1, 38 (1992) (noting various pathways to the capture of local governments).

268 David J. Barron, *The Promise of Cooley's City: Traces of Local Constitutionalism*, 147 U. PA. L. REV. 487, 555–58 (1999) (agreeing with many of Judge Cooley's arguments about the prospects for local governments avoiding capture by private interests); Paul A. Diller, *Reorienting Home Rule: Part 2—Remedying the Urban Disadvantage Through Federalism and Localism*, 77 LA. L. REV. 1045, 1098 (2017) (noting that local governments are more accessible to less well-funded interest groups).

approaches; and implement and enforce the regime chosen.[269] In the case of taxation, setting a tax at the right level—an amount that adequately deters harm-producing behavior and adequately compensates communities for the harm but does not overly stymie beneficial development—is exceedingly difficult. So, too, is directly regulating an activity at a level that prevents or mitigates harm. Although the transaction costs of individualized negotiations between developers and hundreds of communities are themselves quite high, a regulatory solution would not necessarily be cheaper from a transaction-cost perspective, particularly where there are many, diverse externalities that differ by location.

D. Responses

An approach to local externalities based on a combination of a uniform financial tool designed at the state level and implemented locally, combined with a mandate for some government-industry negotiation, addresses concerns about federalism and local corruption, and it overcomes the political-economic barriers noted above. A tax is likely more politically feasible than other policy tools from a political economy perspective. "Tax" is a fraught word for most politicians, but the political risk of this mechanism can be slightly reduced simply by labeling it as a fee, as Pennsylvania did.[270] And a tax does not carry with it the often-negative features ascribed to command and control regulation, which is viewed as inefficient and overly burdensome. Rather, a tax—particularly one that directly taxes externalities—will simply cause the operator to weigh the costs of externality control against the government-established price. And regulation does not typically produce revenues for the state government, aside from permit fees, which often only cover the cost of administering the regulatory system. In contrast, a state-designed, local government-imposed tax, with some revenues designated for state purposes, provides a tempting option for state legislatures looking to fill revenue gaps.

The tax-negotiation approach is also likely politically superior to a revised liability scheme, in which there would be a lower threshold for proving nuisance and other torts from energy activity. In the current political and fiscal climate of overworked judges operating in crowded courts, expanding the possibility of tort litigation is not typically a legislative priority. Additionally, requiring local officials or individual property owners to use courts to curb excessive local externalities would have high transaction costs. Uniform approaches such as tax—calibrated by some degree of case-by-case negotiation—offer a middle ground in terms of the costs of reducing local impacts.

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269 *See* Demsetz, *supra* note 34, at 567 (noting "[s]tate-associated costs of errors, implementation, and improper motivation" that arise from governmental solutions to externalities).

270 58 PA. CONS. STAT. § 2302 (2020).

Finally, a tax-negotiation approach would likely have fewer *governmental* transaction costs than several alternatives. As compared to local or state regulation of industry, a tax would likely be far less costly to design and implement than multiple regulations addressing separate externalities. Although setting the tax at the proper level to address the externalities would be difficult, it would be simpler to administer—through annual collections, for example—than a panoply of regulations to address separate externalities, all of which would require staff inspections, issuances of notices of violation, and hearings to address contested compliance cases.

Additionally, the existence of the tax, combined with state-level requirements for or incentives for local bargaining, would likely produce fewer transaction costs for industry than the other tools explored here. If local governments had the authority to "veto" local energy development through regulation, the detailed negotiations that industry might have to pursue for each project could be quite time consuming, particularly given the many stakeholders with competing concerns about energy development. The result could be a multiyear negotiation process with each individual government that hosted proposed energy development, followed by litigation from stakeholders who remained dissatisfied with the consensus.

IV. Empowering Reasonable Local Control

Despite some legitimate reasons for questioning strong local authority, local governments need tools to address externalities, particularly for growing energy industries with disproportionately harmful local effects. Through careful design, these tools can address federalism, local competence, and transaction-cost concerns, balance these concerns with the need for local control, and allow energy development to proceed, even rapidly.

This Part proposes a combination of monetary tools and state-level mandates or incentives for negotiation as a solution. The tax or fee should be designed by a state-local commission, approved by the state legislature, levied by local governments, collected by the state, and largely redistributed to local governments, with certain limiting conditions for the local expenditure of funds. This would allow for a uniform policy—avoiding a patchwork of local policies or a potential race to the bottom—and would be administered primarily at the state level, thus also addressing concerns associated with local government competency and ethics. The design of the tax by a commission that included state and local representatives, and which would make a recommendation to be approved by a state legislature, would also avoid potentially lopsided policy that overly favored state or local control, although the state would still have the upper hand.

In addition to the fiscal solution, state governments should implement approaches similar to Maine's and Ohio's—and the federal government's offshore wind and LNG terminal policy—that incentivize or require energy developers to negotiate with local governments. As introduced in Section II.D, Maine grants expedited state permits to wind farms that enter into a

community benefits agreements with local governments.[271] Similarly, Ohio requires that in order for a horizontal well operator to receive a permit to drill, the operator must first enter into a road use agreement with the host community.[272] Additionally, when the federal government considers bids for energy developers that want to lease offshore land for wind development, it prioritizes bids that show an existing community benefits agreement between the developer and the coastal community or communities most impacted by development.[273] Further, as described in Section I.C, Congress requires the Federal Energy Regulatory Commission to consult with states about state and local safety concerns associated with an LNG terminal and to specifically address these concerns when it issues a permit for the terminal.[274]

A local government's ability to tax the energy industry might incentivize some bargaining, thus reducing the need for state mandates or additional incentives for negotiation. But because the tax proposed here—designed at the state level, with extensive input from local governments—would be uniform among localities, energy developers might simply view the tax as a cost of doing business, thus quickly paying the tax and moving on. Additional nudges might be required to spur developers to seriously negotiate with communities over externalities. And a state-designed tax will never be perfect; given information and resource limitations, the tax will not exactly capture all externalities or produce the proper amount of revenue needed to address those remedies. Negotiation will help to address these loose ends. This Part discusses one example of a taxation approach similar to the one proposed in this Article, explores how the tax could be better designed, and argues for why a tax-negotiation approach would be the best means of addressing the localized externalities of energy development.

A. Lessons from Pennsylvania

In 2012, the Pennsylvania legislature instituted a tax that reflects many of the attributes proposed in Part IV.[275] Through an "unconventional gas well fee" formed as part of a larger statute, the state allowed local governments to choose to impose a fee on each hydraulically fractured well "spudded" (drilled) within their jurisdiction. The fee, which is essentially a tax under the definition in Part I of this Article, is a uniform amount per well (which varies based on the price of natural gas, and declines over time),[276] thus avoiding concerns about a conflicting patchwork of taxes that will be unpredictable and overly deter development. And although local govern-

271 *See supra* notes 254–80 and accompanying text.

272 OHIO REV. CODE ANN. § 1509.06(A)(11)(b) (West 2020).

273 BUREAU OF OCEAN ENERGY MGMT., RESPONSE TO COMMENTS AND EXPLANATION OF CHANGES FROM THE MASSACHUSETTS PROPOSED SALE NOTICE TO THE FINAL SALE NOTICE 2–3 (2014).

274 *See supra* note 120 and accompanying text.

275 58 PA. CONS. STAT. § 2302–18 (2020).

276 *Id.* § 2302(b).

ments choose to impose the fee,[277] the state initially collects all of the revenue, keeps some for state purposes, and then redistributes some of the revenue to local governments, specifying the purposes for which the revenues may be spent.[278] This addresses concerns about local governments' competence in terms of raising revenue and applying it to the areas where they are most needed.

The revenues from the tax are, for the most part, distributed directly to address the externalities caused by the wells taxed. Following distributions of set amounts of money to causes such as conservation, improved fishing and boating, and emergency response services, the state funnels sixty percent of the revenues to counties and municipalities and allows the governments to spend the funds for thirteen specific purposes, such as environmental conservation, affordable housing (which can address housing shortages caused by booming oil and gas production), and road and public infrastructure repair.[279] The remaining forty percent of the revenues flow to a state legacy fund for environmental and highway and bridge improvement initiatives, but fifteen percent of this forty percent goes to all counties in Pennsylvania, including those that do not have gas well development.[280] In 2018, the fee generated more than $209 million in total revenue.[281]

To a large extent, Pennsylvania's unconventional gas well fee appears to achieve the Pigouvian purpose at the heart of this Article. The distribution of some revenues to all counties, even those without wells, might not initially appear to address highly localized externalities. But this approach could cover impacts from development that also fall on counties without wells, such as truck traffic through the county to a neighboring county with wells. Additionally, the purposes for which municipalities and counties with wells may use the revenues appear to generally align with the externalities experienced by these counties, such as increasing demands on public services ranging from emergency response to courts or displacement of affordable housing as workers rush into town.

The amount of the tax seems well designed in that it is higher if natural gas prices are higher. When industry receives higher prices for natural gas, this might spur more production—and associated externalities—and would also mean that industry could likely afford to pay a larger tax amount. The tax is also tethered to the consumer price index, thus ensuring that the amount paid does not fall behind the actual cost of damages.[282] Further, the

277 *Id.* § 2302(a).

278 *Id.* §§ 2303(b), 2314.

279 *Id.* § 2314(c)–(g).

280 *Impact Fee Distributions to State & Local Governments*, PA. PUB. UTIL. COMM'N, http://www.puc.state.pa.us/filing_resources/issues_laws_regulations/impact_fee_collection/impact_fee_distribution_state_local_gov.aspx (last visited Sept. 13, 2020).

281 Marie Cusick, *Pennsylvania's Gas Impact Fees Rise to $209 Million This Year*, STATEIMPACT PA. (June 21, 2018), https://stateimpact.npr.org/pennsylvania/2018/06/21/pennsylvanias-gas-impact-fees-rise-to-209-million-this-year/.

282 58 PA. CONS. STAT. § 2314(c)(4) (2020).

timing of tax distribution likely reasonably addresses externalities, in that much of the money is distributed on an annual basis to communities and some passes through a legacy fund to address longer-term, as-yet-unrealized impacts.[283] Finally, the tax allows some flexibility to address unanticipated externalities. For the fifteen percent of the legacy fund allocated to all counties for environmental initiatives, the legislature specifies the initiatives on which the money must be spent but does not require counties to report their expenditures to the state, thus essentially allowing counties to make their own interpretations with respect to the acceptable uses of the fund.[284]

B. An Effective Local Tax-Negotiation Approach

Pennsylvania's approach appears to be largely effective in terms of directly addressing some of the localized externalities of development while allowing a state-level priority—allowing and supporting natural gas development—to proceed. But several improvements could be made if this type of scheme were to be applied more broadly. First, a tax of a uniform amount—albeit one that is adjusted based on the price of natural gas and the consumer price index—will inevitably fail to address the true cost of certain localized externalities, or might even overcompensate for some externalities. And limits on the expenditure of revenues from the tax will miss certain types of externalities. A local tax designed at the state level should be accompanied by requirements for periodic analysis of the actual localized costs and benefits of development and a requirement for reconsideration of the taxable amount on the basis of this analysis. This analysis should also examine whether there are types of externalities that are not covered by the permitted revenue distribution and should also make recommendations for modifying distribution rules.

Beyond a provision for periodically modifying the tax, a state-designed tax should also allocate some revenues to local governments with almost no strings attached, thus allowing the local governments to decide which harms most urgently need to be addressed. State legislatures that are concerned about local corruption and competence are likely to resist this type of provision, but the legislature could, at minimum, require local governments to report on their use of this discretionary pot of funds and revise these discretionary provisions if the legislature perceives abuse.

Additionally, with respect to the timing of distribution, a tax on energy externalities should contain a provision through which local governments could apply for emergency distributions that would be available between annual revenue distributions. In the event of a toxic or large-scale spill of hydraulic fracturing chemicals, for example, a local government might need funds urgently.

With respect to the type of activity taxed, a tax that is levied on a per-well basis is more feasible to implement from an administrative perspective than

283 *Id.* §§ 2314(d), 2315.

284 *Impact Fee Distributions to State & Local Governments*, *supra* note 280.

direct taxes on individual harms, such as spills or air pollution. But it might provide the wrong incentives to industry. Taxes should ideally be designed to deter externality-producing behavior; they should be set at a point at which industry might reasonably choose to avoid creating the externality to begin with, rather than causing harm and paying for it. To preserve the efficiency of a per-well tax but to better incentivize good behavior, the tax system should allow for reduced tax amounts or waivers for companies that have demonstrated a solid record free of environmental compliance problems. This might even incentivize practices that go above and beyond the externality reductions preferred by communities.

The issues relating to tailoring and reanalysis of the tax amount and revenue distribution also demonstrate that a local tax—designed at the state level in a uniform amount—will not be the best approach for all energy projects. Some projects, like LNG terminals, are larger, more centralized, and less numerous than oil and gas wells. For these projects, a fee or other solutions—such as industry commitments to engage in best practices for avoiding local harm—could be established on a case-by-case basis without imposing unreasonable transaction costs. This case-by-case approach would better capture the actual externalities associated with each project.

The challenges of tailoring a uniform tax to localized externalities also highlight the importance of combining a taxation scheme with a state mandate or incentive for energy industry negotiation with local governments. Negotiations could address impacts that local governments wished to prevent, rather than receive compensation for—particularly irreversible or relatively large impacts. Negotiations could also allow the government to obtain additional funds for externalities unaddressed by the revenue distribution of the tax. And they could cause the local government to forgo imposing the tax altogether, and instead obtain compensation and commitments to mitigate harm through an agreement tailored more specifically to the community's circumstances.

Another important consideration is the question of whether the tax-negotiation scheme would augment or replace existing schemes. As described in Part I, energy development is currently regulated by a hodgepodge of approaches. For oil and gas production, states increasingly preempt local regulation—even local land use regulation—and regulate some environmental effects at the state level. For natural gas pipelines, the federal government preempts most state and local control. For LNG terminals, states and local governments are also preempted, but the developer must consult with them about safety impacts. And local governments have a great deal of regulatory control over solar and wind farms, although many states have a state-centric siting process for these farms, which in some cases can override local regulations that would impede development.[285]

The tax-negotiation scheme envisioned here would largely augment, not replace, these existing approaches. For oil and gas development, state-level

285 *See supra* Part II.

regulation of environmental impacts remains important and likely alleviates the need for a large tax because it already prevents many externalities. And many of the transaction costs of regulating—identifying the externalities and how to best address them—have already been incurred, although inspections and enforcement remain costly. For pipelines and LNG terminals, a tax and additional negotiation incentives would fill some of the important gaps left by federal preemption of local control. Keeping preemption in place would enable efficient siting of projects that could otherwise be held up by individual landowners or local governments, but adding the tax and negotiation incentives or requirements would ensure that local externalities currently unaddressed by the preemption regime were recognized and compensated for. With respect to renewable energy development, the tax-negotiation scheme might lessen some of the local opposition that currently emerges in the form of local bans or challenges to the state-centric siting process. But in some cases, the tax-negotiation scheme might need to replace existing governance approaches. For example, if renewable energy development is so urgent, from a climate policy perspective, that delays from local opposition are deemed to be unacceptable, governments may need to limit procedures for challenging state siting decisions and preempt some local regulatory control in addition to implementing the tax-negotiation approach.

Traditional regulatory authority should remain firmly in place in some contexts—particularly for harms of development that are irreversible and must be prevented, such as rare yet deadly gas-pipeline explosions.[286] But in cases in which harms are problematic yet not massive, regulations are relatively sticky and difficult to adapt, and regulations that are overly stringent (due to incorrect predictions of risk) or that inadequately address externalities can take years to change—if they change at all.[287] Further, when industry is more knowledgeable about risks than regulators are—as is often the case in the highly technical areas of energy development—regulations might not accurately capture the largest risks, absent structured industry involvement in the regulatory process. Industry, facing a uniform tax and knowing the risk of harm from its processes, could measure the value of creating the harm and paying, or preventing it to begin with.

Existing tort solutions, like regulation, should also likely remain in place, with augmentation. Taxes are not tailored to address individualized damages; nor are negotiations between the local government and the developer. Although these negotiations often result in payments that benefit the community and specific members within it, they are not designed to assess and compensate for specific damages. But just as regulations are not a foolproof remedy to local externalities, a Pigouvian liability approach involving revised

286 *See, e.g.*, Carol M. Parker, Note, *The Pipeline Industry Meets Grief Unimaginable: Congress Reacts with the Pipeline Safety Improvement Act of 2002*, 44 NAT. RES. J. 243, 247–48 (2004) (noting a gas pipeline explosion in New Mexico that killed twelve campers).

287 *See, e.g.*, Jim Rossi & Hannah J. Wiseman, *Constrained Regulatory Exit in Energy Law*, 67 DUKE L.J. 1687, 1688 (2018) (noting the stickiness of regulation and the regulatory adaptation literature that suggests remedies to this, and providing cites).

tort remedies would also not be ideal, particularly standing alone.[288] While modified tort policy might have across-the-board effects of reducing industrial activity or its damages, relying upon case-by-case, ex post solutions in this context might allow for serious local harms in the meantime, as shown by rare yet problematic cases of drinking-water pollution from oil and gas activity.[289] Tort liability only deters industry behavior if, like a tax, it is calibrated at a proper level, and this calibration is quite hard to do.

Tort law, like regulation, is an important backstop to a tax-negotiation regime in energy—not a replacement for it. With the ability to charge the energy industry for the localized externalities it produces and negotiate around the edges, communities will have meaningful control over the impacts that they experience, yet not so much control that they deter economically and, in some cases, environmentally important development.

Conclusion

The energy sector in the United States—and globally—is at a critical crossroads. Climate change threats are no longer just threats. California is burning, intense storms pound the coasts, and seas are rising, engulfing parts of cities.[290] Rapid renewable energy development is essential, and, during the transition to renewables and battery storage, natural gas will be necessary to back up renewable resources.[291] More wells and pipelines are therefore an unavoidable part of the picture, at least in the short term. But railroading climate-friendly energy projects through a state and federal regulatory fast-track is likely to encounter substantial local opposition. Even preempted local governments have found ways to raise enough alarm, whether through scaremongering or creative legal arguments, to substantially delay or block energy development.[292] A middle ground is essential, in which energy devel-

288 *But see* Merrill & Schizer, *supra* note 10, at 228–50 (arguing for a tort-based solution to fracking with regulatorily defined liability).

289 *See, e.g.*, U.S. Env't Prot. Agency, Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States 33 (2016) (describing rare incidents of underground water contamination from hydraulically fractured wells).

290 Thomas Knutson et al., *Tropical Cyclones and Climate Change Assessment: Part 1: Detection and Attribution*, 100 Am. Meteorological Soc'y 1987, 2000–01 (2019) (describing likely anthropogenic contributions to the intensity of certain recent hurricanes); *2020 Incident Archive*, Cal Fire, https://www.fire.ca.gov/incidents/2020/ (last visited Sept. 13, 2020) ("The length of fire season is estimated to have increased by 75 days across the Sierras and seems to correspond with an increase in the extent of forest fires across the state.").

291 Mass. Inst. Tech. Energy Initiative, The Future of Natural Gas: An Interdisciplinary MIT Study 89 (2011).

292 *See, e.g.*, Abby Kessler, *State Court OKs Antrim Wind Project, Opponents Continue to Push Back*, Monadnock Ledger-Transcript (May 14, 2018), https://www.ledgertranscript.com/Appeal-against-Antrim-Wind-project-struck-down-17499941 (in a state-centric siting process for a wind farm, showing town residents' legal challenges to the siting process, which caused substantial delays for the modest ten-turbine project); Jimmy Vielkind, *Developing*

opment may proceed, but local governments play more of a role than the helpless defendant attempting to beat back an unpopular project.

The scholarly and judicial worlds tend to view the Not in My Back Yard and Not on Planet Earth movements as efforts to be weakened or blocked so that efficient development can move forward.[293] But individuals and local governments that oppose energy projects often do so for good reasons: they experience the brunt of the negative impacts, but not the benefits. These communities will predictably resist development altogether if they cannot adequately address its harms. Indeed, the "homevoter hypothesis" in economics posits that citizens will most forcefully lobby local governments for policies that will preserve home value—the largest investment that many citizens make.[294] If a nearby wind turbine or gas rig threatens this value, a homeowner will rationally resist this development.

Further, moderate local opposition to energy projects can generate productive changes, even in areas where rapid development is needed, such as renewable energy. If excessive opposition to projects is constrained, local governments that are empowered to tax developers and negotiate with them can hammer out solutions that have fewer impacts on local landscapes and resources. And when communities have reasonable tools to address externalities, they may be less likely to take the extreme position of banning energy development. Indeed, to the extent that states or the federal government view energy development as critical, they might be justified in preempting local bans and moratoria provided they have offered adequate alternative routes for local governments to address externalities.

The tax-and-negotiate approach is not a one-size-fits-all solution. A uniform tax designed at the state level and implemented by local governments is most feasible for projects that tend to be numerous and widely distributed, such as oil and gas wells, renewable energy farms, and segments of an interstate pipeline that cross through hundreds of local government territories. For centralized, less numerous projects such as liquefied natural gas terminals, for which industry can reasonably engage in more lengthy conversations with the community, negotiation alone might be adequate—provided the local government has enough leverage to negotiate.

Ultimately, whatever the tools chosen, communities need the authority to meaningfully address the externalities of development, and they currently lack this authority in some contexts. Oil and gas production and natural gas pipelines pose the most problematic scenarios: local governments are largely preempted from regulating or using other tools to address externalities, and state and federal regulation inadequately addresses some local externalities. This regulatory void can and should be filled. State legislatures and the fed-

Wind Farm in New York Is No Breeze, WALL ST. J. (Nov. 3, 2019), https://www.wsj.com/articles/developing-wind-farm-in-new-york-is-no-breeze-11572789601 (also showing substantial delay in a state siting process for a New York wind farm due to landowner challenges).

293 *See supra* note 40.

294 WILLIAM A. FISCHEL, THE HOMEVOTER HYPOTHESIS: HOW HOME VALUES INFLUENCE LOCAL GOVERNMENT TAXATION, SCHOOL FINANCE, AND LAND-USE POLICIES 1 (2001).

eral government can address federalism concerns of conflicting local regulations by providing for a uniform tax that local governments may choose to implement. And they can address potential local corruption or incompetence by specifying the externalities to be addressed, such as the causes to which tax revenue must flow.

As they stand, the state and federal governments, which experience many of the benefits of development but not the concentrated local costs, are partially blind to this need. No wonder, then, that disgruntled local governments impose moratoria and bans on energy projects. A new path forward will ensure that necessary energy development continues apace while balancing federal, state, and local priorities in the energy area.