

NOTES

THE WEAKEST LINK IN GREENHOUSE GAS EMISSIONS
REGULATION: A COMPARATIVE STUDY OF METHANE
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Vienna Bottomley

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INTRODUCTION

Natural gas, which accounted for almost 32% of power generation in the United States in 2017,¹ is often touted as a cleaner, cheaper, and more plentiful alternative energy source to coal. In relation to coal, burning natural gas produces nearly half as much carbon dioxide as per unit of energy.² These benefits have led to a recent decrease in the United States' carbon emissions and have led many to consider natural gas to be a "bridge fuel" that can help the United States and other countries to reduce carbon emissions while gradually transitioning from fossil fuels to carbon-neutral, renewable forms of energy.³

The benefits of natural gas fracking do not come without costs, particularly costs pertaining to climate change. Natural gas is primarily comprised of methane, a potent greenhouse gas (GHG), that is more than twenty times stronger than carbon dioxide over a hundred-year horizon.⁴ Methane is about thirty times more effective than carbon dioxide at trapping

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¹ Erin Ailworth, *Natural Gas Under Assault in Some States After a Brief Reign at the Top*, THE WALL STREET JOURNAL (March 18, 2018), <https://www.wsj.com/articles/after-a-brief-reign-at-the-top-natural-gas-is-under-assault-1521378008>.

² Sarah Zielinski, *Natural Gas Really Is Better Than Coal*, SMITHSONIAN.COM (Feb. 13, 2014), <https://www.smithsonianmag.com/science-nature/natural-gas-really-better-coal-180949739/>.

³ See *id.* (providing that "[n]atural gas is thus considered by many to be a "bridge fuel" that can help nations lower carbon emissions while they transition more slowly from fossil fuels to renewable, carbon-neutral forms of energy. The recent boom in natural gas production in the United States, for instance, contributed to a 3.8 percent drop in carbon emissions in 2012.").

⁴ Caitlin Stafford, *The Great Escape: Addressing the Problem of Fugitive Methane Emissions from the Conventional Natural Gas System Under the Clean Air Act*, 26 COLO. NAT. RESOURCES, ENERGY & ENVTL. L. REV. 351, 358 (2015).

atmospheric heat,⁵ and unburned methane reacts in the atmosphere to form ozone, “a major threat to public health and welfare.”⁶ Methane escapes from natural gas pipelines primarily through unintentional leakage from equipment and intentional routine venting or flaring, during which well operators release or burn off natural gas for purposes of well maintenance or safety. Whether these fugitive methane emissions render natural gas less environmentally friendly than coal in the long run is a question currently under debate.⁷

One NASA study using “space-based observations of North American methane emissions gathered between 2003 and 2009” determined that the Environmental Protection Agency (EPA) emissions inventory underestimated methane emissions “by a factor of 1.8.”⁸ Recent research estimates suggest that total methane emissions in the United States could be twenty-five to seventy-five times higher than estimates from the Environmental Protection Agency (EPA), and methane leakage from the natural gas industry “are an important part of the problem.”⁹ Methane emissions from both human activity and naturally occurring sources precipitate climate change and pose a holistic threat to life on Earth as we know it. One projection commissioned by the Environmental Defense Fund found that the twenty-year “global warming potential of methane emissions from the oil and gas drilling sector totaled the equivalent of 5,650 metric tons of carbon dioxide, with nearly 3.5 trillion cubic feet of natural gas having leaked into the atmosphere in 2012.”¹⁰

In this comparative study, I will analyze the various methods employed by states for monitoring and curtailing methane leakage in comparison with approaches that have been employed at the federal level. I will juxtapose the regulatory regimes of Colorado, North Dakota,

⁵ Morgan Kelly, *A More Potent Greenhouse Gas than CO₂, Methane Emissions will Leap as Earth Warms* (*Nature*), PRINCETON: RESEARCH (Mar. 26, 2014), <https://blogs.princeton.edu/research/2014/03/26/a-more-potent-greenhouse-gas-than-co2-methane-emissions-will-leap-as-earth-warms-nature/>.

⁶ Stafford, *supra* note 4, at 358.

⁷ One study found that “[e]ven though the gas system is almost certainly leakier than previously thought, generating electricity by burning gas rather than coal still reduces the total greenhouse effect over 100 years,” but “[t]he natural gas industry, the analysis finds, must clean up its leaks to really deliver on its promise of less harm.” See Mark Golden, *America’s Natural Gas System is Leaky and in Need of a Fix, New Study Finds*, STANFORD REPORT (Feb. 13, 2014), <https://news.stanford.edu/news/2014/february/methane-leaky-gas-021314.html>.

⁸ Joel Minor, *Completing the Bridge to Nowhere: Prioritizing Oil and Gas Emissions Regulations in Western States*, 34 STAN. ENVTL. L. J. 57, 85–86 (2015).

⁹ See Golden, *supra* note 7.

¹⁰ Daniel Bloom, *Study: Methane Leaks Both Problematic and Costly*, CQ ROLL CALL WASHINGTON ENERGY BRIEFING (April 23, 2015).

New York, Pennsylvania, New Mexico, and California with the Obama Administration methane leakage regulations, including the 2016 Bureau of Land Management (BLM) “methane waste rule” regulations that the Trump Administration formally rolled back in September 2018.¹¹ Finally, I will consider what the failure of the Obama Administration methane leak regulations means for climate change law in the United States and will argue that there is a compelling need for stronger methane leakage regulation at the state level. While California arguably has the most comprehensive and effective state-level regulations in place, California’s regulatory scheme is not a one-size-fits all solution to methane leakages. To prevent or halt the progress of climate change, I contend that other states should adopt regulatory schemes driven by their own state-specific needs. If fugitive methane emissions are to be curbed in future years, there will need to be significant state-level regulatory efforts.

I. STATE-LEVEL METHANE LEAKAGE REGULATIONS

While not every state directly regulates fugitive methane emissions, the states that do have put in place a variety of different regulatory schemes. Rulemaking procedures and policies vary from state to state, resulting in a cross-country “patchwork” of methane leakage policies ranging from the reporting-only regime implemented in New Mexico to the comprehensive rules promulgated by the California Air Resources Board (CARB).¹² Some states implement policies that are more stringent than any federal standards in place, while others instead rely upon the federal government to institute any applicable rules governing air quality under the Clean Air Act and decline to further regulate fugitive methane emissions. This results in a nation where two adjoining states, such as Colorado and New Mexico, may have drastically differing regulatory frameworks and standards even though atmospheric emissions flow freely between them.

A. Colorado’s Leak Detection and Repair Regulatory Scheme

In February 2014, Colorado became the first state in the nation to regulate methane leakage associated with the natural gas industry.¹³ The

¹¹ See Lisa Friedman, *Trump Administration Formally Rolls Back Rule Aimed at Limiting Methane Pollution*, N.Y. TIMES (Sept. 18, 2018), <https://www.nytimes.com/2018/09/18/climate/trump-methane-rollback.html>.

¹² Stafford, *supra* note 4, at 369 (“States have historically played a prominent role in regulating oil and natural gas development. Rulemaking efficiency and priorities vary by state, resulting in a patchwork of policies across the nation.”).

¹³ See *id.* at 369-70 (“Colorado became the first state in the nation to announce plans to directly regulate the detection and reduction of methane emissions associated with oil

Colorado framework, Regulation Number 7,¹⁴ set compliance standards that were developed in coordination with leading players in the oil and natural gas industry.¹⁵ The Colorado rules, according to the governor, aimed “to strike a balance between the state’s need for a healthy oil and gas industry and citizen concerns about health and safety.”¹⁶ They were praised as “tough but reasonable,” and garnered support from both industry leaders and environmental interest groups, such as the Environmental Defense Fund.¹⁷

The Colorado standards apply to both newly constructed (or modified) and existing energy production facilities and require regular leak detection and repair.¹⁸ The frequency of the leak detection that is required depends upon the size of the facility. The biggest emitters, such as sites with multiple oil and gas wells, must be checked monthly, smaller facilities must be checked quarterly, and the smallest emitters are only required to be monitored once a year.¹⁹ In addition, the Colorado regulations require the installation of methane capture technology that captures at least 95% of emissions of methane and volatile organic compounds (VOCS) that industry sources emit.²⁰ Because captured methane can later be sold by energy producers at a profit, methane capture requirements, such as those in Colorado, show promise to unite both environmental interests and leaders in the oil and gas industry. The state incentivizes oil and gas producers to

and natural gas development in November 2013. State officials worked with leading operators in the oil and natural gas industry throughout the regulatory process. Following a public comment period, the Colorado Air Quality Control Commission voted to adopt the methane regulations in February 2014.”).

¹⁴ 5 Colo. Code Regs. § 1001-9(XII) (2014).

¹⁵ See Stafford, *supra* note 4, at 371.

¹⁶ Stephanie Paige Ogburn, *Colorado First State to Limit Methane Pollution from Oil and Gas Wells*, SCI. AM. (Feb. 25, 2014), <https://www.scientificamerican.com/article/colorado-first-state-to-limit-methane-pollution-from-oil-and-gas-wells>.

¹⁷ See *id.*

¹⁸ Stafford, *supra* note 4, at 370 (“Colorado’s regulations encompass both newly constructed (or modified) facilities as well as existing facilities.”).

¹⁹ Cathy Proctor, *EPA Follows Colorado Lead in Targeting Methane Leaks from Oil & Gas*, DENVER BUS. J. (May 12, 2016), https://www.bizjournals.com/denver/blog/earth_to_power/2016/05/epa-follows-colorado-lead-in-targeting-methane.html.

²⁰ See 5 COLO. CODE REGS. § 1001-9 (XII.G.2) (2014) (providing that “[a]ir pollution control equipment shall be installed and properly operated to reduce emissions of volatile organic compounds from any atmospheric condensate storage tank (or tank battery) used to store condensate that has not been stabilized that has uncontrolled actual emissions of greater than or equal to two tons per year. Such air pollution control equipment shall have a control efficiency of at least 95%.”); See also Bruce Finley, *Colorado Pitches New Rules to Cut Oil and Gas Industry Air Pollution*, THE DENVER POST (Nov. 18, 2013), <https://www.denverpost.com/2013/11/18/colorado-pitches-new-rules-to-cut-oil-and-gas-industry-air-pollution/>.

comply with regulatory requirements by imposing a statutory penalty of \$15,000 per day upon “[a]ny operator that violates this article, any rule or order of the commission, or any permit” for as long as the violation continues.²¹

Before they were finalized, the Colorado regulations were expected to curb air pollution by 92,000 tons per year, or roughly the equivalent of removing all vehicles from Colorado roadways for a year.²² The Colorado methane leakage regulations were implemented in 2014, and a two-year pilot study conducted by the state found that the number of leaking oil and natural gas facilities in Colorado decreased by 75% between July 2013 and July 2015.²³ Between 2011 and 2015, total methane emissions fell by 1.5 million tons per year in Colorado, a 30% decrease from earlier levels.²⁴ During this time period, natural gas production and economic development as a whole within the state continued to increase.²⁵ A 2016 survey of oil and gas operators in Colorado conducted by the Center for Methane Emissions Solutions also concluded that the regulations have “improved air quality and promoted worker safety,” in addition to leading many industry players to “profit[] because, instead of releasing natural gas into the atmosphere, it is being used to heat homes and power buildings.”²⁶ In light of these findings and others, Colorado’s regulations have been cited as the “gold standard”²⁷ in methane leakage regulation, “working extremely well,”²⁸ and a

²¹ COLO. REV. STAT. ANN. § 34-60-121(1)(a) (2016) (providing that “[a]ny operator that violates this article, any rule or order of the commission, or any permit is subject to a penalty of not more than fifteen thousand dollars for each act of violation per day that such violation continues”).

²² See Finley, *supra* note 20.

²³ Rebecca Moss, *Neighboring States a World Apart on Methane Regulation*, THE NEW MEXICAN (July 15, 2017), http://www.santafenewmexican.com/news/local_news/neighboring-states-a-world-apart-on-methane-regulations/article_7ed78010-26f2-5d65-a80b-45112785bbbc.html.

²⁴ See *id.*

²⁵ See John Fialka, *Methane Leaks Declining Even as Natural Gas Production Grows*, CLIMATEWIRE (Oct. 6, 2016), <https://www.eenews.net/climatewire/stories/1060043917/search?keyword=colorado+methane+regulation>; see also Brittany Patterson, *Coloradans Get Behind New Methane Rules*, CLIMATEWIRE (Mar. 2, 2016), <https://www.eenews.net/climatewire/stories/1060033298/search?keyword=colorado+methane+regulation>.

²⁶ KC Becker, *Federal Methane Guidelines, Modeled on Colorado’s Rule, Also Necessary*, THE DENVER POST (Aug. 4, 2016), <https://www.denverpost.com/2016/08/04/federal-methane-guidelines-modeled-on-colorados-rule-also-necessary/>.

²⁷ Moss, *supra* note 23 (“Colorado has one of the nation’s most rigorous laws for the oil and gas industry to limit methane emissions, rules that the federal government - under the Obama administration - and other states used as the gold standard on which to model their own regulations.”).

²⁸ Proctor, *supra* note 19.

“success.”²⁹

Despite their apparent limiting effect upon methane emissions in the state and their reputation as the “gold standard” in methane waste regulation, the Colorado rules do not present a perfect or fully comprehensive regulatory scheme. While the regulations go a long way toward curbing the amount of methane that is unintentionally leaked by failing pipeline infrastructure, they arguably do not go far enough to limit the intentional venting or flaring of natural gas from wells. Colorado law prohibits “[t]he unnecessary or excessive venting or flaring of natural gas produced from a well.”³⁰ Notice and administrative approval is further required for all necessary venting or flaring operations.³¹ But the regulations also provide expansive exceptions to this rule for “upset condition[s],” “well maintenance,” “well stimulation flowback,” “purging operations,” and “productivity test[s],” for which no notice or approval is required.³² These exceptions do not swallow the rule’s prohibition on venting or flaring, but they do limit its efficacy.

B. North Dakota’s Gas Capture Strategy

After Colorado implemented its leak detection and repair regulations in 2014, North Dakota formulated and adopted its own six-step methane regulation policy focused primarily on curbing the oil and industry practice of intentionally flaring or burning off methane emissions into the atmosphere.³³ Within the northwestern region of the state, the practice of natural gas flaring became so common that NASA photographs taken in 2012, prior to the implementation of North Dakota’s gas capture strategy, reveal methane flare fires that were visible from space.³⁴ In April 2014, shortly before the emissions policy went into effect, oil and gas well operators within the state were found to have burned off as much as 30% of their methane gas.³⁵ The reduced gas flaring “policy goals were to reduce the flared volume of gas, reduce the number of wells flaring and reduce the duration

²⁹ Becker, *supra* note 26.

³⁰ 2 COLO. CODE REGS. § 404-1:912(a) (2014).

³¹ 2 COLO. CODE REGS. § 404-1:912(b) (2014) (providing that “gas from a well shall be flared or vented only after notice has been given and approval obtained from the Director on a Sundry Notice, Form 4, stating the estimated volume and content of the gas”).

³² *Id.* (stating that “[e]xcept for gas flared or vented during an upset condition, well maintenance, well stimulation flowback, purging operations, or a productivity test, gas from a well shall be flared or vented only after notice has been given and approval”).

³³ Pamela King, *North Dakota: State Moves to Capture 90% of Flared Gas by 2020*, ENERGYWIRE (July 2, 2014), <https://www.eenews.net/energywire/stories/1060002259>.

³⁴ See *Gas Drilling, North Dakota*, NASA EARTH OBSERVATORY (Nov. 12, 2012), <https://earthobservatory.nasa.gov/NaturalHazards/view.php?id=79810>.

³⁵ King, *supra* note 33.

of flaring from wells.”³⁶ Although the North Dakota Industrial Commission (NDIC) policy does not explicitly cite climate change as the motivating factor behind its implementation, the Commission did express concern that “[s]ome flared gas contains components that if improperly combusted could cause air quality degradation and health issues.”³⁷

The North Dakota gas capture regulations set six progressive periodic goals for the percentage of methane that must be captured during the flaring process, beginning with a 74% goal by October 1, 2014.³⁸ Beginning in November 2020, the NDIC plans to attain a final gas capture goal of 91%.³⁹ These gas capture percentages are calculated by “summing monthly gas sold plus monthly gas used on lease plus monthly gas processed in a Commission approved beneficial manner, divided by the total monthly volume of associated gas produced.”⁴⁰ Oil and gas well operators are allowed to remove gas from their total monthly volume calculation under certain exceptional circumstances, such as the first 90 days after an infill horizontal well is completed, “the initial 14 days of flowback gas” after new hydraulic fracturing operations are completed, and “gas volumes flared from wells already drilled and completed on the date a force majeure event occurs if the event is properly documented in writing by the gas gathering company.”⁴¹

To incentivize oil and gas producers to comply with the gas capture goals, the regulations set forth a system of credits and penalties.⁴² Producers can earn credits for “volumes of gas captured during the most recent three months in excess of the current gas capture goal.”⁴³ These nontransferable credits can be applied in all or in part to a month in which the producer that earned the credit cannot meet the current gas capture goal.⁴⁴ In the alternative, producers that fail to meet the gas capture goal without any extenuating circumstances or credits to spend, could face penalties in the form of daily production restrictions and civil penalty fines.⁴⁵ Oil producers that fail to meet the NDIC goals, but capture at least 60% of their monthly volume of gas are restricted to a production cap of 200 barrels per day;

³⁶ Three Forks Pool Field Rules to Restrict Oil Prod. to Reduce the Amount of Flared Gas, Order No. 24665, Case No. 22058 (N.D. Indus. Comm’n July 1, 2014), <https://www.dmr.nd.gov/oilgas/or24665.pdf>.

³⁷ *Id.*

³⁸ See North Dakota Industrial Comm’n Order 24665 Policy/Guidance Version 041718, OFFICIAL PORTAL FOR N.D. STATE GOV., <https://www.dmr.nd.gov/oilgas/GuidancePolicyNorthDakotaIndustrialCommissionorder24665.pdf>.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *See id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

producers that fail to capture even 60% of their monthly gas volume are restricted to a 100 barrels per day production limit.⁴⁶

Oil and gas producers alternatively can apply for a hearing with the NDIC to assert why they should be exempted from the production limits.⁴⁷ The regulations provide a list of “extenuating circumstances” that could cause a producer to fail to meet the current gas capture goal and assert that “flexibility will be provided” after notice and hearing if the circumstances are validated.⁴⁸ Producers that fail to meet the NDIC goals, fail to abide by the production caps, and fail to apply for a hearing with the Commission may be subject to a small monthly penalty of \$1000.⁴⁹ Likewise, producers that fail restrict their oil production for three months after notification from the Commission of their failure to meet the current gas capture goal could face a penalty of up to \$12,500 per well.⁵⁰

Some early reports found that North Dakota’s volume of flared gas “has declined sharply since 2014,” despite an increase in oil and natural gas production in the state’s Bakken region,⁵¹ but North Dakota’s gas capture regulations have not been particularly effective at permanently reducing the volume of flared methane gas at the rate that the regulations anticipated in 2014. State law provides that natural gas produced from an oil well may be permissibly flared, without any regulatory restrictions, “during a one-year period from the date of first production from the well.”⁵² The original NDIC gas capture goals were also subsequently revised in September 2015 to accommodate the oil and gas industry.⁵³ Furthermore, reports reveal that as many as thirteen oil and gas producers failed to meet their natural gas capture goals in September 2017.⁵⁴ During the month of September 2017, oil

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *See id.*

⁵⁰ *See id.*

⁵¹ *See generally* Neal Davis, *Natural Gas Flaring in North Dakota Has Declined Sharply Since 2014*, U.S. ENERGY INFORMATION ADMINISTRATION (June 13, 2016), <https://www.eia.gov/todayinenergy/detail.php?id=26632> (finding that “[i]n March 2016, 10% of North Dakota’s total natural gas production was flared, less than one-third of the January 2014 flaring rate, which was at 36%”).

⁵² N.D. CENT. CODE. § 38-08-06.4(1) (providing that “[a]s permitted under rules of the industrial commission, gas produced with crude oil from an oil well may be flared during a one-year period from the date of first production from the well.”).

⁵³ *See* Davis, *supra* note 51 (stating that “[t]he North Dakota Industrial Commission first established targets for the percentage of natural gas flared in April 2014 and subsequently revised these targets in September 2015.”).

⁵⁴ *See* Associated Press, *Natural Gas Flaring Increases in North Dakota Oil Fields*, US NEWS & WORLD REPORT (Dec. 11, 2017), <https://www.usnews.com/news/best-states/north-dakota/articles/2017-12-11/natural-gas-flaring-in-oil-fields-flares-up-in-september>.

and gas producers burned off an estimated volume of “more than 300 million cubic feet per day of natural gas,” a level that had not been seen in North Dakota since the summer of 2015.⁵⁵ Moreover, of the thirteen producers that failed to meet the NDIC goals, the Commission only refused to grant one producer a temporary exemption from the policy-stipulated production restrictions after notice and a Commission hearing.⁵⁶ The state’s Director of Mineral Resources anticipated in December 2017 that the NDIC’s November 2018 capture goal of 88% would be “challenging for [the] industry to meet without significant investment in processing plants and other infrastructure.”⁵⁷ In October 2018, members of North Dakota’s Industrial Commission announced their desire to review the state’s flaring regulations,⁵⁸ and the methane flaring regulations were relaxed after the industry failed to meet the current goal for five months in a row.⁵⁹

C. New York’s New Methane Reduction Plan

In late 2014, New York banned hydraulic fracturing within the state, citing both environmental and health concerns.⁶⁰ But, although New York is no longer in the business of producing shale gas, it is still in the business of transporting and storing it. “Virtually all major interstate pipelines from the Gulf Coast, Appalachia, and Canada reach New York, both to supply in-state customers and to ship supplies onward to New England,” and New York houses “26 natural gas underground storage facilities” that are “key to meeting northeastern winter heating demand.”⁶¹ Given New York’s increased usage of natural gas in the years following the 2014 natural gas production ban, some energy researchers have argued that, given the in-state demand for fractured gas, the ban will in the long term prove

⁵⁵ Amy Dalrymple, *Production Limits Rare for Companies That Miss Natural Gas Flaring Targets*, THE BISMARCK TRIBUNE (Dec. 10, 2017), http://bismarcktribune.com/news/state-and-regional/production-limits-rare-for-companies-that-miss-natural-gas-flaring/article_cba5505d-6c76-5df1-8734-7bac99c9955a.html.

⁵⁶ *See id.*

⁵⁷ *Id.*

⁵⁸ *See* Amy Dalrymple, *North Dakota Regulators Plan Review of Natural Gas Flaring Rules*, THE BISMARCK TRIBUNE (Oct. 25, 2018), https://bismarcktribune.com/bakken/north-dakota-regulators-plan-review-of-natural-gas-flaring-rules/article_2f77398e-a11e-57e5-a929-dfb5ea44ec57.html.

⁵⁹ Eric Tegethoff, *State, Federal Regulations Ease on ND Methane Flaring*, PUBLIC NEWS SERVICE (Dec. 5, 2018), <https://www.publicnewsservice.org/2018-12-05/energy-policy/state-federal-regulations-ease-on-nd-methane-flaring/a64806-1>.

⁶⁰ *See New York: State Profile and Energy Estimates*, U.S. ENERGY INFO. ADMIN. (August 15, 2019), <https://www.eia.gov/state/analysis.php?sid=NY>.

⁶¹ *Id.*

“unsustainable.”⁶²

In May 2017, New York announced its Methane Reduction Plan, a framework developed by five state regulatory agencies to reduce methane emissions from oil and gas, landfills, and agriculture.⁶³ At the time of the Plan’s creation, methane accounted for 9% of greenhouse gas emissions in New York State.⁶⁴ About 11% of methane emissions in New York State and one percentage of total greenhouse gas emissions resulted from natural gas leakages in 2014.⁶⁵ (This figure does *not* include methane leakages from *existing* oil and gas production wells in the state.)⁶⁶ The overarching goal of the New York Methane Reduction Plan is to reduce methane emissions “in alignment with New York State’s commitment to reduce greenhouse gas emissions 40% by 2030 and 80% by 2050, from 1990 levels.”⁶⁷

The oil and gas component of the Plan provides that the Department of Environmental Conservation (DEC) and the Department of Public Service (DPS) will undertake actions in three areas: reducing methane leakage and otherwise addressing methane emission sources, enhancing reporting requirements, and improving regulatory consistency.⁶⁸ Like the regulatory schemes in Colorado and North Dakota, the New York Methane Reduction Plan applies to both new and existing sources of methane emissions.⁶⁹ For new sources, the Plan incorporates by reference the 2016 Environmental Protection Agency (EPA) New Source Performance Standards for new or modified sources of methane emissions.⁷⁰ For existing sources, the Plan authorizes the collection of emissions data as well as the development, proposal, and adoption of regulations “as necessary” to limit methane emissions.⁷¹

Like Colorado’s regulatory framework, the New York Methane

⁶² Jude Clemente, *Why New York’s Fracking Ban for Natural Gas is Unsustainable*, FORBES (June 7, 2015), <https://www.forbes.com/sites/judeclemente/2015/06/07/why-new-yorks-fracking-ban-for-natural-gas-is-unsustainable/#161ba8744e8b> (finding that “[s]ince 2008, gas has increased its total share of New York generation capacity from 44% to 60%” and “gas imports from Pennsylvania have skyrocketed.”).

⁶³ N.Y. ST. DEP’T OF ENVTL. CONSERVATION, METHANE REDUCTION PLAN (May 2017), https://www.dec.ny.gov/docs/administration_pdf/mrpfinal.pdf.

⁶⁴ *Id.*

⁶⁵ *Id.* at 4 (“NYSERDA’s 2014 New York State GHG Inventory reports that natural gas leakage makes up about 11% of methane emissions (1% of all NYS greenhouse gas emissions).”).

⁶⁶ *Id.* at 4–5.

⁶⁷ *Id.* at 4.

⁶⁸ *Id.* at 5.

⁶⁹ *See id.* at 4.

⁷⁰ *Id.* at 5 (calling for the “[i]mplement[ation] [of] new EPA rules: New Source Performance Standards for new/modified sources of methane emissions (40 CFR 60 Subpart 0000a)”).

⁷¹ *Id.*

Reduction Plan emphasizes leak detection and repair through required monitoring and reporting.⁷² Unlike Colorado's regulations, the New York Plan lacks a concrete inspection timetable and other details necessary to implement regular leak detection and reporting. Rather, the New York Plan calls for the prioritization of methane leak repairs in the intrastate and interstate distribution systems,⁷³ and states that preexisting state "regulations to support adoption of new technologies to meet monitoring requirements" should be "[r]evis[e]d."⁷⁴ The Plan does not specify which "new technologies" the state should adopt, nor does it describe exactly how the New York DEC and DPS will use these technologies to monitor methane leakages and increase emissions control.⁷⁵ In 2019, whether revision of existing New York State regulations will allow for regulatory consistency, regular monitoring, accurate reporting, and effective leak repair still remains to be seen.

At least one recent report indicates that New York is at an "energy crossroads," as the state cannot continue with all of its proposed natural gas infrastructure projects and achieve its climate change goals.⁷⁶ Earthworks recently commissioned Physicians, Scientists, and Engineers for Healthy Energy (PSE) to complete a feasibility study regarding whether New York can meet its GHG reduction goals without sacrificing its current natural gas infrastructure construction commitments.⁷⁷ This study concluded that "[f]ull buildout and average utilization of the proposed structure would cause New York's consumption of natural gas to jump 23% above 2015 levels," and, "assuming a medium leakage rate (2.5%)," energy-related GHG emissions would increase by 12% in the next twenty years.⁷⁸

Regarding methane specifically, "[n]early 133 metric tons per year of methane emissions would result from fugitive pipeline leaks and pipeline venting due to routine maintenance or upsets, or an increase in methane of 4.8% compared to estimates for current pipelines."⁷⁹ Unless New York drastically cuts its oil usage and eliminates coal,⁸⁰ the state cannot both continue

⁷² See *id.* at 7.

⁷³ *Id.* at 6 (calling for measures to "incentivize utilities to maintain a low backlog of leaks and replace leak-prone pipe" and intervention "at the Federal Energy Regulatory Commission to prioritize leak repair when interstate pipelines file rate cases").

⁷⁴ *Id.* at 7.

⁷⁵ See *id.*

⁷⁶ See generally Nadia Steinzor and Aaron Mintzes, *New York's Energy Crossroads: How the State's Climate Goals Clash with Natural Gas Infrastructure*, EARTHWORKS 1 (Feb. 2018), earthworksaction.org/nyenergyxroads.

⁷⁷ *Id.* at 11.

⁷⁸ *Id.* at 18.

⁷⁹ *Id.* at 19.

⁸⁰ *Id.* at 21-22 (proposing that New York could still meet its GHG reduction targets by "[b]uilding all the proposed pipelines and drastically cutting oil use plus eliminating

with its currently planned gas infrastructure projects *and* decrease GHG emissions forty percent below 1990 levels by 2030. The study concluded that “the only realistic option for New York to achieve its 2030 GHG reduction targets is to cut use of both oil and natural gas. Since building and using pipelines increases gas use, New York cannot realistically build and use more pipelines and achieve its goals.”⁸¹ Unless New York can change both its reliance upon natural gas and its status as natural gas thoroughfare, the state’s Methane Reduction Plan and its associated goals are largely aspirational.

D. Pennsylvania’s Methane Reduction Strategy

Pennsylvania is the second-largest producer of natural gas in the United States, accounting for 19% of total US natural gas production.⁸² The state’s natural gas production, which primarily comes from Appalachia’s Marcellus shale formation, increased by 80% since 2013 and 25% in the past year alone.⁸³ Construction of two additional major Pennsylvania pipelines began in the first quarter of this year and is currently ongoing.⁸⁴

Because of Pennsylvania’s large-scale production and sprawling natural gas infrastructure, there has been increased concern in recent years over the potential for leaky pipelines within the state to precipitate climate change. One recent analysis based on peer-reviewed research conducted at oil and gas sites throughout Pennsylvania concluded that methane emissions from oil and gas in the state may be more than five times higher than what oil and gas companies report to the Pennsylvania Department of Environmental Protection (DEP).⁸⁵ The Environmental Defense Fund (EDF)

coal” if New York were to reduce its oil consumption “83% below 2015 levels assuming a medium methane leakage rate (2.5%)”.

⁸¹ *Id.* at 22.

⁸² Meleah Geertsma & Mark Szybist, *NRDC Fights Another Pruitt Rollback of Smog & Methane Curbs*, NAT. RES. DEF. COUNCIL (Mar. 18, 2018), <https://www.nrdc.org/experts/mark-szybist/nrdc-fights-another-pruitt-rollback-smog-methane-curbs> (citing Pennsylvania as “the nation’s second-largest producer of natural gas”); *see also* EIA: *Pennsylvania’s Natural Gas Production Reaches New High*, WORLD OIL (Nov. 8, 2017), <http://www.worldoil.com/news/2017/11/8/eia-pennsylvania-s-natural-gas-production-reaches-new-high>.

⁸³ EIA: *Pennsylvania’s Natural Gas Production Reaches New High*, *supra* note 82.

⁸⁴ *Id.*

⁸⁵ *See* Kelsey Robinson, *Report Estimates Pennsylvania Oil and Gas Methane Emissions Nearly Five Times Higher Than State’s Figures*, ENVTL. DEF. FUND (Feb. 15, 2018), <https://www.edf.org/media/report-estimates-pennsylvania-oil-and-gas-methane-emissions-nearly-five-times-higher-states> [hereinafter *EDF Pennsylvania Report Press Release*]. The EDF Report’s findings are consistent with previous studies of oil and gas site emissions in the state. *See* Reid Frazier, *Environmental Group: Methane Pollution Higher Than PA Thinks*, NPR STATE IMPACT: PENNSYLVANIA (Feb. 15, 2018), <https://>

analysis found that oil and gas producers in Pennsylvania emit an estimated 520,000 tons of methane a year, primarily through leaking equipment, and causing the same short-term climate pollution as “11 coal-fired power plants.”⁸⁶ These leakages are estimated to cost producers “nearly \$68 million worth of wasted energy resources” per year.⁸⁷

Pennsylvania only requires reporting of methane emissions from unconventional oil and gas well sites, those “unlocked” since 2008 using hydraulic fracturing.⁸⁸ The EDF analysis found that these sites did not produce most of the actual methane emissions in the state; whereas unconventional wells generated an estimated 253,500 tons of methane emissions in 2015, conventional wells emitted 268,900 tons of methane.⁸⁹ Only 112,100 tons of methane emissions from unconventional wells were reported to the Pennsylvania DEP in the same year.⁹⁰ Even though the 7,923 newer, unconventional wells in Pennsylvania produce more natural gas per well than the state’s 72,873 conventional wells, because there are so many more older, conventional wells operating in Pennsylvania, their emissions collectively outweigh those of their hydraulically-fractured counterparts.⁹¹ Moreover, conventional wells are more likely to leak methane at a higher rate because

stateimpact.npr.org/pennsylvania/2018/02/15/environmental-group-methane-pollution-higher-than-pa-thinks/ (reporting that the EDF report analysis was based on a study “by a team of researchers at Carnegie Mellon” that “is the best that there is right now in the scientific literature,” and “about 1,000 natural gas sites have been measured over the past few years by a variety of scientists, and [] compared with those studies, the Carnegie Mellon study and the EDF analysis are consistent”).

⁸⁶ Robinson, *supra* note 85.

⁸⁷ *Id.*

⁸⁸ *Pennsylvania Oil and Gas Emissions Data: Highlights from EDF Analysis*, ENVTL. DEF. FUND (2018), <https://www.edf.org/pa-oil-gas/#/air-emissions> [hereinafter *EDF Pennsylvania Report Data*]; see also Neela Banerjee, *Far More Methane Leaking at Oil, Gas Sites in Pennsylvania Than Reported*, INSIDE CLIMATE NEWS (Feb. 16, 2018), <https://insideclimatenews.org/news/16022018/methane-leaks-oil-natural-gas-data-global-warming-pennsylvania-edf-study> (“In the new report, EDF analyzed methane leaks from Pennsylvania’s conventional oil and gas wells, mostly drilled before 2008, and from unconventional wells, those unlocked since then using hydraulic fracturing.”).

⁸⁹ *EDF Pennsylvania Report Data*, *supra* note 88.

⁹⁰ *Id.* The amount of reported methane emissions in the Pennsylvania “2015 Air Emissions Inventory for Unconventional Natural Gas Operations,” reflects an 8.5% decrease since 2012. See *Pennsylvania Methane Emissions Continue to Fall as Production Rises*, PENNSYLVANIA INDEP. OIL & GAS ASS’N (Sept. 12, 2017), <https://www.pioga.org/pennsylvania-methane-emissions-continue-to-fall-as-production-rises/>.

⁹¹ *EDF Pennsylvania Report Data*, *supra* note 88 (charting the composition of “[a]ctively producing oil and gas wells across Pennsylvania”); see also Banerjee, *supra* note 88 (finding that “newer fracked wells [in Pennsylvania] produce considerably more natural gas than the older wells”).

they are often older and frequently in need of repair.⁹²

The Pennsylvania DEP claimed in a 2015 statement that Pennsylvania was “the first state in the country to require a comprehensive leak detection and repair program at natural gas operations.”⁹³ This claim referenced the state’s General Permit 5 (GP-5) for non-major sources.⁹⁴ The original 2013 GP-5 system established best available technology requirements for reducing methane emissions from new, non-major sources and imposed an obligation for affected owners and operators to inspect pipelines for leaks, report, and repair them. GP-5 was also “the first general permit in the nation to require LDAR [leak detection and repair] programs for mid-stream gathering and compression facilities.”⁹⁵ Currently, Exemption 38 grants unconventional well operators exempt status from methane emissions permitting requirements, provided that they “meet[] all applicable requirements established in the Category No. 38 exemption criteria including LDAR inspection requirements for well pads.”⁹⁶

In June 2018, the Pennsylvania DEP finalized new revisions to the current methane emissions permit regulations.⁹⁷ The DEP permitting system, GP-5A, establishes methane thresholds for new or modified unconventional oil and gas production and transmission sources.⁹⁸ Similarly, the revised GP-5 permit imposes best available technology leak detection and repair requirements upon new or modified natural gas compression and processing

⁹² *EDF Pennsylvania Report Data*, *supra* note 88 (providing that EDF estimated that “[t]wenty-three percent of methane at a conventional well leaked into the atmosphere compared to 0.3 percent at a fracked well,” likely, “because they are older.”). But it is also worth noting that the EDF report also estimated that “even a small leakage rate of 0.3 percent” would lead “to a vast amount of methane entering the atmosphere.”

⁹³ *How Pennsylvania is Regulating Methane from the Oil and Gas Industry*, PA. DEP’T OF ENVTL. PROT. (2018), <http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Permits/gp/MethaneRegulations.pdf>.

⁹⁴ *See A Pennsylvania Framework of Actions for Methane Reductions from the Oil and Gas Sector*, PA. DEP’T OF ENVTL. PROT. (Jan. 19, 2016), <http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Methane/DEP%20Methane%20Strategy%201-19-2016%20PDF.pdf> [hereinafter *DEP Methane Strategy*].

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *See Pennsylvania Framework of Actions for Methane Reductions from the Oil and Gas Sector* (June 2018), <https://www.dep.pa.gov/Business/Air/pages/methane-reduction-strategy.aspx>.

⁹⁸ *DEP Methane Strategy*, *supra* note 94 (providing that “[t]he new general permit will make Pennsylvania the national leader in controlling emissions from unconventional natural gas wells. DEP intends to establish BAT requirements at unconventional gas well pads for sources including dehydrators, engines, turbines for compressor engines at well pads, pigging operations, liquid unloading venting, gas processing units, storage tanks, and truck load-outs”).

facilities.⁹⁹ The 2016 DEP Methane Strategy framework laid out as a goal the development of “a regulation for consideration by the Environmental Quality Board that establishes stringent requirements for existing sources in the Oil and Natural Gas Industry.”¹⁰⁰ But no concrete proposal to regulate methane emissions from existing conventional sources has been made. Although draft air quality regulations have been proposed for existing sources, they fail to establish specific methane emissions standards.¹⁰¹ Even if new, more specific methane regulations are incorporated into the proposed rules for existing sources, they could take years to go into full effect.¹⁰²

While Pennsylvania’s regulations for new sources appear promising, the DEP’s overall approach to solving the state’s methane leakage problem is too narrow in its scope. A plumber cannot fix old leaky pipes by only inspecting and maintaining ones that are newer and leak less. Similarly, Pennsylvania cannot fix its aging conventional oil and gas infrastructure merely by maintaining its newer, hydraulically-fractured emissions sources. Pennsylvania’s regulations must be implemented and expanded to existing sources soon, or, according to the EDF analysis, “more than five million tons of methane pollution could be emitted by the year 2025.”¹⁰³

E. New Mexico’s Reporting Only Regime

New Mexico’s San Juan Basin and, more generally, the Four Corners region is a literal “hot spot” for methane emissions.¹⁰⁴ Although this hot spot may be linked to some amount of natural gas seepage, several recent studies have identified oil and gas industry sources as a major contributing cause of

⁹⁹ See generally BAQ-GPA/GP-5 Permit, PA. DEP’T ENVTL. PROT. (June 2018).

¹⁰⁰ *DEP Methane Strategy*, *supra* note 94.

¹⁰¹ See Michael Rubinkam, *Environmentalists Question Pennsylvania’s New Methane Rule* (April 10, 2019), <https://www.apnews.com/13d588e6f2e84f51a335741ec776cdf>; See also *Draft Proposed RACT Rulemaking: Control of VOC Emissions from Oil and Natural Gas Sources* (April 11, 2019), http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2019/4-11-19/AQTAC_Presentation_on_CTG_April_11th_Meeting.pdf.

¹⁰² See *EDF Pennsylvania Report Press Release*, *supra* note 85. See also Marie Cusick, *Pa. Wants to Cut Methane Emissions, But Plans Moving Slowly*, NPR STATE IMPACT: PENNSYLVANIA (Nov. 30, 2017), <https://stateimpact.npr.org/pennsylvania/2017/11/30/pa-wants-to-cut-methane-emissions-but-plans-moving-slowly/> (noting that “[a] separate package of new regulations for existing emission sources was supposed to be proposed over a year ago, but the DEP missed that self-imposed deadline and won’t give a new one,” and, “regulations on existing infrastructure would take years to go into effect”).

¹⁰³ *EDF Pennsylvania Report Press Release*, *supra* note 85.

¹⁰⁴ This “methane hot spot” even has its own Wikipedia page. See “Four Corners Methane Hot Spot,” WIKIPEDIA, https://en.wikipedia.org/wiki/Four_Corners_Methane_Hot_Spot.

this “2,500-square-mile methane cloud.”¹⁰⁵ Despite the fact that air carrying pollutants flows freely across the border between Colorado and New Mexico, the two states differ dramatically regarding how those pollutants are regulated. While Colorado became the first state in the nation to impose rigorous state-level methane emission regulations, New Mexico largely does not regulate the amount of methane that oil and gas producers can release into the air through pipeline leakage, venting, and flaring.¹⁰⁶

New Mexico’s approach to methane emissions regulation is arguably best described as a reporting only regime. The state technically prohibits oil well operators from venting or flaring natural gas “after 60 days following [a] well’s completion.”¹⁰⁷ But, there is a commonly used process through which a producer can file an application for an exception to this restriction “when the flaring or venting casinghead gas appears reasonably necessary to protect correlative rights, prevent waste or prevent undue hardships on the applicant,” and pending the connection of a well to a gas-gathering facility, “the operator shall burn all gas produced and not used, and report the estimated volume on form C-115.”¹⁰⁸ Furthermore, while reporting is compulsory, and failure to comply with state regulations could result in the suspension of an oil well,¹⁰⁹ state documents show that producers who fail to report their flared emissions have faced “negligible”

¹⁰⁵ Jon Goldstein, *New Study Confirms (Again): New Mexico’s Methane Hot Spot Largely Tied to Oil and Gas Pollution*, ENVTL. DEF. FUND (June 15, 2017), <http://blogs.edf.org/energyexchange/2017/06/15/new-study-confirms-again-new-mexicos-methane-hot-spot-largely-tied-to-oil-and-gas-pollution/>. See also Dan Elliott, *Methane “Hot Spot” Over Four Corners Linked to Oil, Gas Production Sites*, THE DENVER POST (Aug. 15, 2016), <https://www.denverpost.com/2016/08/15/four-corners-methane-hot-spot-linked-to-oil-gas/?returnUrl=https://www.denverpost.com/2016/08/15/four-corners-methane-hot-spot-linked-to-oil-gas/?clearUserState=true> (reporting that “[r]esearchers identified more than 250 sources of a methane hot spot over the Four Corners region,” and “[o]nly a handful were natural seeps from underground formations”). See generally Mackenzie L. Smith et al., *Airborne Quantification of Methane Emissions Over the Four Corners Region*, ENVTL. SCI. & TECH. (April 18, 2017), <https://pubs.acs.org/doi/pdf/10.1021/acs.est.6b06107>; Christian Frankenberg et al., *Airborne Methane Remote Measurements Reveal Heavy-Tail Flux Distribution in Four Corners Region*, PNAS (Aug. 15, 2016), <http://www.pnas.org/content/early/2016/08/10/1605617113.full>.

¹⁰⁶ For one recent take on how Colorado and New Mexico differ in their state-level approaches to methane regulation see Moss, *supra* note 23 (claiming that the neighboring states are “a world apart” and finding that “[t]he biggest change that occurs at the state line is in the policies that govern the air pollution both states share. North of the border, Colorado has one of the nation’s most rigorous laws for the oil and gas industry to limit methane emissions . . . [b]ut for wells operated south of the state line, there are zero state-level requirements on the amount of methane they can release into the environment.”).

¹⁰⁷ N.M. ADMIN. CODE 19.15.18.12(A) (2008).

¹⁰⁸ *Id.* 19.15.18.12(B)(F) (2008).

¹⁰⁹ *Id.* 19.15.18.12(C) (2008).

penalties.¹¹⁰ New Mexico does not impose an affirmative duty upon oil and gas producers to detect and repair pipeline leaks.¹¹¹ The state's 2015 Energy Policy and Implementation Plan emphasized the potential impact from flared methane but failed to address the consequences of unintentional infrastructure leakage.¹¹²

In particular, New Mexico's own energy policy materials and the reports published by environmental groups seeking to influence energy policy within the state appeal more to the economic value of any natural gas wasted than to its potential to aggravate climate change. The 2015 New Mexico Energy Plan emphasizes that "[f]lared gas is a valuable resource that could bring additional revenues to both operators and the state."¹¹³ Likewise, a recent analysis by the Environmental Defense Fund (EDF) provides approximate amounts of royalty revenue and taxes that New Mexico loses from the approximately \$176.6 million worth of natural gas that is wasted annually on federal, state trust, private, and tribal lands.¹¹⁴ In total, the EDF report estimates that wasted natural gas costs the State of New Mexico \$27.6 million dollars in taxes and royalty revenue per year.¹¹⁵

New Mexico's regulatory strategy going forward is dependent upon the future of federal methane emissions regulation. The 2015 Energy Plan states that New Mexico will "keep apprised of [] federal actions."¹¹⁶ Roughly one-third of the state's land is federally administered,¹¹⁷ and, as of 2015, 55.1% of the state's natural gas output was produced on federal

¹¹⁰ Moss, *supra* note 23 (finding that "state documents show" that, "[w]hile New Mexico does require companies to report the amount of gases vented or flared into the atmosphere from their wells, producers have been slow to comply, and penalties are negligible").

¹¹¹ For a comparative chart of methane emissions regulations in the Western United States, see "Falling Short: State Oil and Gas Rules Fail to Control Methane Waste," W. ENVTL. L. CTR. & W. ORG. OF RES. COUNCILS 1, 6-7 (2016), https://westernlaw.org/sites/default/files/2016StateMethaneWasteReport_0.pdf (noting that methane leaks are "not covered" by New Mexico's regulatory framework).

¹¹² See STATE OF NEW MEXICO OFFICE OF THE GOVERNOR, NEW MEXICO ENERGY POLICY & IMPLEMENTATION PLAN 1, 30-31 (2015), http://www.emnrd.state.nm.us/EnergyPolicy/documents/EMNRD_EnergyPolicy.pdf [hereinafter *New Mexico Energy Plan*].

¹¹³ *Id.* at 31.

¹¹⁴ See Renee McVay et al., *Analysis: Oil and Gas Methane Emissions in New Mexico*, ENVTL. DEF. FUND 1, 12 (Nov. 2017), <https://www.edf.org/energy/new-mexico-methane-waste-report> (finding that "[t]he royalty rate for production on federal lands is 12.5%, of which 49% is returned to the state," while the royalty rate for production on state trust lands "varies by lease").

¹¹⁵ *Id.* ("Revenue is calculated based on a \$2.98/Mcf natural gas price.").

¹¹⁶ *New Mexico Energy Plan*, *supra* note 112 at 31.

¹¹⁷ See U.S. ENERGY INFO. ADMIN., NEW MEXICO: STATE PROFILE AND ENERGY ESTIMATES (Jan. 18, 2018), <https://www.eia.gov/state/analysis.php?sid=NM>.

lands.¹¹⁸ New Mexico has been reluctant to finalize further emissions regulations that go above and beyond its current reporting regime and the baseline set by federal requirements. State regulators claim that methane emissions levels as they are currently reported have declined “by more than 50 percent over the past year,” and state oil and gas industry leaders contend that the costs of promulgating additional state-level regulations would threaten the viability of an industry that is vital to the state’s economic development.¹¹⁹ But environmentalist groups, such as the EDF, continue to report methane emissions from oil and natural gas activity in New Mexico five times greater than the amounts that the current EPA data suggests.¹²⁰

F. California’s Comprehensive Scheme

The California Air Resources Board (CARB) finalized a strict regime of methane emissions regulations that went into effect in January 2018.¹²¹ This scheme regulates a range of methane-emitting industries within the state, from oil and gas to dairy cows.¹²² The regulations, which are aimed at helping California to achieve its goal of reducing methane emissions by 40% below 1990 levels by 2030, have been praised as the “strictest methane rule in the nation.”¹²³ The only exempt producers in the state are located on tribal lands; the comprehensive regulations cover emissions produced by new and existing sources offshore and onshore on state, private, and federal property.¹²⁴ State regulators expect that the regulations will decrease methane emissions as much as 45% over the next nine years and have a mitigating effect on climate change equivalent to “taking 280,000 cars off the road for a year.”¹²⁵

Like Colorado’s regulations, the CARB scheme implements a system of

¹¹⁸ McVay et al., *supra* note 114, at 8.

¹¹⁹ Susan Montoya Bryan, *New Mexico Regulators Report Drop in Methane Emissions*, ALBUQUERQUE JOURNAL (Nov. 3, 2017), <https://www.abqjournal.com/1087591/new-mexico-regulators-report-drop-in-methane-emissions.html> (citing statements of Ryan Flynn, Head of the New Mexico Oil and Gas Association).

¹²⁰ See Matt McGee, *Report: New Mexico’s Methane Problem Worsens as Permian Production Soars*, ENVTL. DEF. FUND (April 11, 2019), <https://www.edf.org/media/report-new-mexicos-methane-problem-worsens-permian-production-soars>.

¹²¹ See generally CAL. CODE REGS. tit. 17, §§ 95665–95677 (2017). See Debra Kahn, *California Adopts Strict Rules for Methane Emissions*, SCI. AM. (Mar. 24, 2017), <https://www.scientificamerican.com/article/california-adopts-strict-rules-for-methane-emissions/>.

¹²² See Kahn, *supra* note 121.

¹²³ Rob Nikolewski, *California Adopts Strictest Methane Rule in the Nation*, THE SAN DIEGO UNION-TRIBUNE (Mar. 23, 2017), <http://www.sandiegouniontribune.com/business/energy-green/sd-fi-methane-vote-20170323-story.html>.

¹²⁴ CAL. CODE REGS. tit. 17, § 95666(a) (2017); see Nikolewski, *supra* note 123.

¹²⁵ See Nikolewski, *supra* note 123.

pipeline leak detection and repair.¹²⁶ California oil and gas producers are required to test “all [well] components” for leaks “[a]t least once each calendar quarter.”¹²⁷ All pipes must be “audio-visually inspect[ed] . . . for leaks or indications of leaks at least once every 12 months,” with more frequent daily or weekly inspections required for “all hatches, pressure-relief valves, well casings, stuffing boxes, and pump seals.”¹²⁸ The regulations also set out a progressive series of timetables during which leaks of various concentrations must be repaired in 2018, 2019, and 2020.¹²⁹ For the 2018 calendar year, leaks with a concentration under 10,000 ppmv are considered *de minimis* and do not fall under a mandatory repair timeline,¹³⁰ whereas, “on or after January 1, 2020,” the regulations stipulate that “[l]eaks with measured total hydrocarbon concentrations greater than or equal to 1,000 ppmv but not greater than 9,999 ppmv shall be successfully repaired or removed from service within 14 calendar days of initial leak detection.”¹³¹ CARB mandates that producers report annually “the results of each leak detection and repair inspection” as well as “initial and final leak concentration measurements” for any well components that exceed the allowable leak threshold.¹³²

To combat venting and flaring, the CARB regulations implement a gas capture by mandating that oil and gas producers use “vapor collection systems” and “vapor control devices” to funnel emissions from all applicable gas and oil wells into specified gas systems or disposal wells.¹³³ A compliant “vapor control device must achieve at least 95 percent vapor control efficiency of total emissions,”¹³⁴ and, if this requirement cannot be met, the control device “must be removed from service.”¹³⁵ The regulations provide for a thirty-day maintenance period during which vapor collection systems and control devices may be taken out of service, and there is an exception to the device usage requirements for “device shutdowns that result from utility power outages.”¹³⁶

Operators who fail to inspect, repair, and report all leakages will be held to be in violation of the CARB regulations.¹³⁷ But the regulations do not

¹²⁶ See CAL. CODE REGS. tit. 17, § 95669 (2017).

¹²⁷ *Id.* § 95669(g).

¹²⁸ *Id.* § 95669(e)(1).

¹²⁹ *Id.* §§ 95669(h)(i).

¹³⁰ *Id.* § 95669(h).

¹³¹ *Id.* § 95669(i)(1).

¹³² *Id.* §§ 95673(12)(13).

¹³³ See *id.* § 95671.

¹³⁴ *Id.* § 95671(d)(1).

¹³⁵ *Id.* § 95671(e).

¹³⁶ *Id.* § 95671(f).

¹³⁷ *Id.* § 95675(a).

stipulate what the specific penalties for most violations will be. Rather, implementation and enforcement of the regulations is left to the discretion of the “local air district,” which can assess and retain penalty fees against noncompliant producers, and the CARB Executive Officer, who “may enter into an agreement or agreements with any local air district to further define funding, implementation and enforcement processes.”¹³⁸ Local air districts also have the authority to implement their own, *more stringent* rules, though the CARB “Executive Officer retains authority to determine whether an Air District requirement is more stringent than any requirement” of the CARB regulations.¹³⁹

Because the CARB rules will not be fully implemented until January 2020, it is difficult to assess their practical efficacy. In theory, the rules regulate the largest variety of emissions sources and processes and impose the strictest requirements upon oil and gas producers. Whether the California rules will be effectively enforced by local air districts and the CARB Executive Officer remains to be seen. Furthermore, it is worth noting that oil and gas industry methane waste comprises only a small percentage of California’s total methane emissions.¹⁴⁰ The majority of methane emissions in California come from the state’s 1.7 million dairy cows.¹⁴¹ Even perfect industry compliance with the CARB rules will result in only a modest reduction in methane emissions from the state as a whole.

II. FEDERAL METHANE EMISSIONS REGULATIONS

Greenhouse gases (GHGs) have been federally regulated under the Clean Air Act (CAA) since 2007, when, in *Massachusetts v. EPA*, the Supreme Court determined that GHGs “fit well within the Act’s capacious definition of ‘air pollutant,’” and, thus, held that the EPA had the statutory authority under the CAA to regulate GHG emissions from new motor vehicles.¹⁴² Even though methane is a potent GHG and one of the most plentiful hydrocarbons in the Earth’s atmosphere, it does not fall under the Act’s definition of a “volatile organic chemical” (VOC) that assists in the formation of ground-

¹³⁸ *Id.* § 95674.

¹³⁹ *Id.* § 95676.

¹⁴⁰ See Nikolewski, *supra* note 123 (noting that “[t]he Western States Petroleum Association attributes just 4 percent of [California’s] methane emissions to the oil and gas sector,” and “[b]y CARB’s own estimates, oil and gas operations account for 15 percent of statewide methane emissions.”).

¹⁴¹ See Editorial Board, *California’s Holy-Cow Idea*, BLOOMBERG (Dec. 4, 2017), <https://www.bloomberg.com/view/articles/2017-12-04/california-s-holy-cow-idea>.

¹⁴² *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497, 532 (2007). See generally 42 U.S.C. §§ 7401–7431 (2012).

level ozone.¹⁴³

Prior to 2016, the EPA's rule revisions to emissions standards in the oil and natural gas industry were primarily aimed at reducing the amount of VOC emissions, with no direct regulation of fugitive methane emissions.¹⁴⁴ In 2014, the Obama Administration's "Climate Action Plan: Strategy to Reduce Methane Emissions" made curbing methane emissions a national priority.¹⁴⁵ Subsequently, near the end of President Obama's second term, the EPA and the Bureau of Land Management (BLM) both promulgated methane emissions regulations. But, the 2016 election of President Trump brought both a transfer of power and a transfer of priorities to both agencies.

A. The EPA Methane Regulations

In 2016, the EPA announced its final "Emission Standards for New, Reconstructed, and Modified Sources" in the oil and natural gas sector.¹⁴⁶ These rules amended the New Source Performance Standards (NSPS) pursuant to CAA section 111(b) for both GHGs and VOC emissions.¹⁴⁷ The CAA defines a "standard of performance" as an air pollution emissions standard that reflects an "adequately demonstrated" "best system of emission reduction."¹⁴⁸ In particular, the 2016 rules set limitations in subpart OOOOa specifically for emissions of methane "across a variety of additional emission sources in the oil and natural gas source category."¹⁴⁹

These "additional emission sources" included fugitive emissions from well sites and compression systems as well as equipment leaks.¹⁵⁰ The rules also required that oil and gas industry producers monitor and repair leaks from well sites and compressor stations within thirty days.¹⁵¹ The EPA anticipated in 2016 that, once they were fully implemented, the new regulations would prevent 300,000 tons of methane emissions in 2020.¹⁵² But,

¹⁴³ Stafford, *supra* note 4, at 358 (claiming that "[m]ethane (CH₄), one of the world's most common hydrocarbons, is not included in the EPA's definition of VOCs because the agency's scientists concluded that it has negligible photochemical activity").

¹⁴⁴ *See id.* at 366-67.

¹⁴⁵ *See* Climate Action Plan: Strategy to Reduce Methane Emissions, THE WHITE HOUSE (Mar. 2014), https://obamawhitehouse.archives.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf.

¹⁴⁶ *See generally* Oil and Natural Gas Sector: Emission Standards for New Reconstructed, and Modified Sources, 81 Fed. Reg. 35,824 (June 3, 2016) (to be codified at 40 C.F.R. pt. 60) [hereinafter EPA Methane Regulations].

¹⁴⁷ *See id.*

¹⁴⁸ 42 U.S.C. § 7411(a) (2012).

¹⁴⁹ EPA Methane Regulations, *supra* note 146, at 35,824.

¹⁵⁰ *See id.* at 35,825.

¹⁵¹ *Id.* at 35,826.

¹⁵² *Id.* at 35,827.

because they only set new source performance standards (NSPS), the 2016 rules did not regulate any methane emissions from existing sources.¹⁵³

On March 28, 2017, President Trump called for administrative agencies to reconsider regulatory policies and “appropriately suspend, revise, or rescind” those that could “potentially burden the development or use of domestically produced energy resources.”¹⁵⁴ This review process led the EPA to issue a letter on April 16, 2017, in response to numerous petitions from the oil and natural gas industry, announcing that it would exercise its authority under CAA section 307 to issue a ninety-day stay of the compliance date for the new methane regulations.¹⁵⁵ This letter, which was issued without notice or comment, provided that sources would not “need to comply” with the regulation’s “requirements while the stay [was] in effect.”¹⁵⁶ Under CAA section 307, the EPA must reconsider a rule where the petitioner demonstrates that the objection to the final rule could not have been raised during the proposed rule’s comment period, and the EPA Administrator has concluded that the petitioner’s “objection is of central relevance to the outcome of the rule.”¹⁵⁷ With regards to the methane regulations, the EPA Administrator determined that the petitioners from the oil and natural gas industry raised objections that were “impracticable to raise during the comment period” and were “of central relevance to the rule.”¹⁵⁸

In *Clean Air Council v. Pruitt*, the D.C. Circuit Court of Appeals held that the EPA’s ninety-day stay of the regulation was unauthorized by section 307 of the CAA.¹⁵⁹ The court determined that the EPA’s decision to grant the stay was “arbitrary, capricious, [and] . . . in excess of [its] . . . statutory . . . authority,” because it was “not ‘impracticable’ for industry groups to have raised such objections during the notice and comment period,” since the administrative record made it “clear that industry groups had ample opportunity to comment on all four issues on which EPA granted reconsideration.”¹⁶⁰ The D.C. Circuit finally emphasized that nothing in its decision in any way limited the EPA’s “authority to reconsider the final rule and to proceed with its June 16 NPRM [notice of proposed rulemaking].”¹⁶¹ The EPA

¹⁵³ *Id.* at 35,824.

¹⁵⁴ Linda Tsang, *EPA’s Methane Regulations: Legal Overview*, CONGRESSIONAL RESEARCH SERVICE 1 (Jan. 24, 2018), <https://fas.org/sgp/crs/misc/R44615.pdf> (citing Exec. Order No. 13783, 82 Fed. Reg. 16,093 (Mar. 31, 2017)).

¹⁵⁵ See generally ENVTL. PROTECTION AGENCY, LETTER RE: CONVENING A PROCEEDING FOR RECONSIDERATION OF FINAL RULE ‘OIL AND GAS SECTOR: EMISSION STANDARDS FOR NEW, RECONSTRUCTED AND MODIFIED SOURCES, (Apr. 18, 2017) [hereinafter EPA Reconsideration Letter].

¹⁵⁶ *Id.*

¹⁵⁷ 42 U.S.C. § 7607(d)(7)(B) (2012). See also Tsang, *supra* note 154, at 4.

¹⁵⁸ EPA Reconsideration Letter, *supra* note 155.

¹⁵⁹ See generally *Clean Air Council v. Pruitt*, 862 F.3d 1 (D.C. Cir. 2017).

¹⁶⁰ *Id.* at 14.

¹⁶¹ *Id.*

is free to reconsider and revise its own regulations as long as it abides by the notice and comment rulemaking process, and “the new policy is permissible under the statute . . . there are good reasons for it, and . . . the agency believes it to be better.”¹⁶² The court’s reversal of the EPA’s stay did not ultimately save the 2016 methane regulation from amendments limiting the scope of its provisions.¹⁶³

On March 2, 2017, without giving notice or offering an opportunity for comments, the EPA also stopped its process of producing new performance standards for existing methane emissions sources.¹⁶⁴ In April 2018, fourteen states filed suit against the EPA over the agency’s failure “to issue regulations for curbing emissions of methane, a potent greenhouse pollutant, from existing oil and gas operations as required under the Clean Air Act.”¹⁶⁵ Specifically, these states led by New York alleged that the EPA “unreasonably” delayed its development of new methane emissions performance standards for existing sources, which, in turn, delayed the date by which states must submit their own methane control plans and the date by which the new standards could be implemented.¹⁶⁶ The plaintiff states claimed that this delay harmed “their citizens by significantly contributing to air pollution that causes climate change.”¹⁶⁷ The outcome of this new multi-state litigation remains to be seen.

Meanwhile, the EPA proposed amendments in September 2018 to loosen the 2016 New Source Performance Standards.¹⁶⁸ A public hearing regarding the proposed rollback was held in Denver in November 2018.¹⁶⁹

¹⁶² *Id.* (quoting *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009)).

¹⁶³ See Charlie Passut, *EPA Amends Methane Rules, Proposes Withdrawing Oil, Gas Guidelines for VOCs*, NATURAL GAS INTEL (Mar. 2, 2018), <http://www.naturalgasintel.com/articles/113564-epa-amends-methane-rules-proposes-withdrawing-oil-gas-guidelines-for-vocs>.

¹⁶⁴ Joel Connelly, *EPA’s Pruitt Violates Clean Air Act, AG Ferguson Charges in Lawsuit*, SEATTLEPI (Apr. 6, 2018), <https://www.seattlepi.com/local/politics/article/EPA-s-Pruitt-flouts-violates-Clean-Air-Act-AG-12810444.php>.

¹⁶⁵ Steve Gorman, *EPA Sued by 14 States Over Delay in Methane Emission Standards*, REUTERS (Apr. 5, 2018), <https://uk.reuters.com/article/us-usa-epa-methane/epa-sued-by-14-states-over-delay-in-methane-emission-standards-idUKKCN1HC2X9>.

¹⁶⁶ See *id.*; see also Jeff Barker, *Maryland Among States Suing EPA Over Methane Emission Guidelines*, THE BALTIMORE SUN (Apr. 6, 2018), <http://www.baltimoresun.com/news/maryland/politics/bs-md-methane-lawsuit-maryland-20180406-story.html>.

¹⁶⁷ *Id.*

¹⁶⁸ See generally ENVTL. PROTECTION AGENCY, EPA PROPOSES AMENDMENTS TO THE 2016 NEW SOURCE PERFORMANCE STANDARDS FOR THE OIL AND NATURAL GAS INDUSTRY: FACT SHEET (2019), <https://www.epa.gov/sites/production/files/2018-09/documents/oil-and-gas-technical-proposal-fact-sheet.9.11.18-0.pdf>.

¹⁶⁹ See Judith Kohler, *Denver Ground Zero for Public Airing of Trump Administration’s Proposed Rollback of Methane Rules*, THE DENVER POST (Nov. 14, 2018), <https://www.denverpost.com/2018/11/14/epa-holds-hearing-on-methane-rule/>.

Although these proposed changes could save the oil and gas industry a projected seventy-five million dollars a year,¹⁷⁰ major industry actors, such as Shell, ExxonMobil, BP, and Equinor, have all publicly expressed support for enforcement of the current federal methane regulations.¹⁷¹ Shell internally set its 2025 fugitive methane emissions targets to below 0.2 % production, far exceeding EPA standards, and has recently urged the Trump administration to strengthen the existing regulatory framework.¹⁷²

B. The BLM Methane Waste Rule Regulations

While the EPA in 2016 was finalizing its new source methane regulations, the Department of the Interior Bureau of Land Management (BLM) was drafting its own framework for the regulation of fugitive methane emissions on onshore federal and Indian lands.¹⁷³ The 2016 BLM Methane Waste Rule borrowed its regulatory strategy from Colorado and North Dakota in its regulation of both methane leakages and flares.¹⁷⁴ Unlike the 2016 EPA methane regulations, the BLM Waste Rule applied to both new and existing emissions sources.¹⁷⁵

Like Colorado's Regulation Number 7, the Waste Rule called for regular leak detection and repair.¹⁷⁶ Oil and gas operators were required to conduct semiannual inspections at well sites and quarterly inspections at compressor stations to detect leaks using an instrument-based approach.¹⁷⁷ Operators could choose to use "optical gas imaging equipment, portable analyzers deployed according to the protocol prescribed in EPA's Method 21, 17 or an alternative leak detection device approved by the BLM."¹⁷⁸ Consistent with the 2016 EPA regulations, the Waste Rule also provided that

¹⁷⁰ *Id.*

¹⁷¹ See Mark Brownstein, *Industry's Shift on Methane Must Continue*, ENVTL. DEFENSE FUND (May 29, 2019), <http://blogs.edf.org/energyexchange/2019/05/29/industrys-shift-on-methane-must-continue/>.

¹⁷² Ron Bousso, *Shell Urges Trump White House to Tighten Methane Leak Rules*, REUTERS (Mar. 12, 2019), <https://www.reuters.com/article/us-ceraweek-energy-emissions/shell-urges-trump-white-house-to-tighten-methane-leak-rules-idUSKBN1QT2DT>.

¹⁷³ See generally Waste Prevention, Production Subject to Royalties, and Resource Conservation, 81 Fed. Reg. 83,008 (Nov. 18, 2016) (to be codified at 43 C.F.R. pts 3100, 3160 and 3170) [hereinafter BLM Methane Waste Rule].

¹⁷⁴ See Becker, *supra* note 26 ("Colorado's rule is working so well, the federal government has used it as a model for new guidelines for capturing wasted methane across the country."); see also BLM Methane Waste Rule, *supra* note 173 at 83,010 ("The BLM aligned the requirements of this new rule with similar requirements adopted by the EPA and States.").

¹⁷⁵ See BLM Methane Waste Rule, *supra* note 173, at 83,008.

¹⁷⁶ See BLM Methane Waste Rule, *supra* note 173, at 83,011.

¹⁷⁷ See *id.*

¹⁷⁸ *Id.*

“[o]perators must repair a leak within 30 days of discovery, absent good cause, and verify that the leak is fixed.”¹⁷⁹

Like North Dakota’s methane regulations, the BLM Waste Rule prohibited venting of natural gas and restricts flaring using a progressive set of gas capture goals that oil and gas operators must meet.¹⁸⁰ But the BLM’s gas capture goals were not as strict as those that have been implemented in North Dakota. The BLM only set out an eighty-five percent gas capture goal for 2020, whereas the North Dakota regulations, in their original form, require that operators capture 91% that year.¹⁸¹ But, the BLM’s initial gas capture goal exceeded the 74% goal that North Dakota set for its first phase of implementation in 2014.¹⁸² Unlike North Dakota’s regulations, the BLM Rule gave oil and gas operators the option to meet their capture goals by calculating an “average basis over all of their Federal or Indian production from development oil wells county-by-county or State-by-State.”¹⁸³ Operators were also required under the BLM Waste Rule to submit a Waste Minimization Plan when they apply for a permit to drill a new development oil well to “ensure[] the operator carefully considers and plans for how it will capture the gas that will be produced, before the operator drills a well.”¹⁸⁴ Failure to submit such a plan could result in the denial of a permit to drill.¹⁸⁵

President Trump’s call for administrative agencies to reconsider any regulations that might burden the energy sector led the BLM in December 2017 to announce a final rule suspending key provisions of the Waste Rule for one year citing “concerns regarding the statutory authority, cost, complexity, feasibility, and other implications of the 2016 final rule.”¹⁸⁶ California and New Mexico immediately challenged this suspension in the Northern District of California.¹⁸⁷ The court in *California v. Bureau of Land Management* granted a preliminary injunction against the BLM,

¹⁷⁹ *Id.*

¹⁸⁰ *See id.*

¹⁸¹ *Id.* (providing that “beginning one year from the effective date of the final rule, operators must capture 85 percent of their adjusted total volume of gas produced each month. This percentage increases to 90 percent in 2020, 95 in 2023, and 98 percent in 2026.”). *See* “North Dakota Industrial Comm’n Order 24665 Policy/Guidance Version 102215,” <https://www.dmr.nd.gov/oilgas/GuidancePolicyNorthDakotaIndustrialCommissionorder24665.pdf>.

¹⁸² *See id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ Waste Prevention, Production Subject to Royalties, and Resource Conservation: Delay and Suspension of Certain Requirements, 82 Fed. Reg. 58,050 (Dec. 8, 2017) (to be codified at 43 C.F.R. pt. 3160, 3170).

¹⁸⁷ *See generally* *California v. Bureau of Land Management*, 286 F. Supp.3d 1054 (N.D. Cal. 2018).

temporarily preventing it from suspending its Methane Waste Rule.¹⁸⁸ The district court determined that the plaintiff states showed “irreparable injury caused by the waste of publicly owned natural gas, increased air pollution and associated health impacts, and exacerbated climate impacts,” and “[t]he BLM’s reasoning behind the Suspension Rule [was] untethered to evidence contradicting the reasons for implementing the Waste Prevention Rule.”¹⁸⁹

But, as soon as the Northern District of California granted its injunction, the Independent Petroleum Association of America and the Western Energy Alliance asked the District Court of Wyoming to “immediately freeze provisions” of the 2016 BLM Rule, claiming that they could not yet meet the burdens of compliance.¹⁹⁰ On April 4, 2018, the District Court of Wyoming issued an order staying implementation of the Waste Rule pending final revision by the BLM “in order to preserve the status quo, and in consideration of judicial economy and prudential ripeness and mootness concerns.”¹⁹¹ The court determined that a stay would provide “certainty and stability for the regulated community and the general public while BLM completes its rulemaking process” and would save industry operators from “the unrecoverable expenditure of millions of dollars in compliance costs.”¹⁹²

In February 2018, the BLM issued notice that it proposed to replace the Waste Rule’s venting and flaring regulations with “requirements similar to those that were in force prior to the 2016 final rule.”¹⁹³ In September 2018, the Bureau did just that, as it formally finalized its new rule, replacing the 2016 Waste Rule with a new regulation that effectively reinstated the pre-2016 guidelines.¹⁹⁴ On September 18, 2018, California and New Mexico sued the BLM in the Northern District of California, to challenge the roll-back of the 2016 Waste Prevention Rule.¹⁹⁵ The plaintiff states argue that

¹⁸⁸ See *id.* at 1058.

¹⁸⁹ *Id.*

¹⁹⁰ Ellen M. Gilmer, *Drillers Can’t Comply with Methane Reg., Ask Court to Nix It*, ENERGYWIRE (Mar. 1, 2018), <https://www.eenews.net/energywire/stories/1060075129?t=https%3A%2F%2Fwww.eenews.net%2Fstories%2F1060075129>.

¹⁹¹ *Wyoming v. U.S. Department of Interior*, 366 F.Supp.3d 1284, 1291–92 (D. Wyo. 2018).

¹⁹² *Id.* at 1285.

¹⁹³ US DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., BLM OFFERS REVISION TO METHANE WASTE PREVENTION RULE, (Feb. 12, 2018), <https://www.blm.gov/press-release/blm-offers-revision-methane-waste-prevention-rule>.

¹⁹⁴ See Jenny Mandel and Nilna H. Farah, *EPA Chief Floats Change to Methane Oversight*, E&E NEWS (May 24, 2019), <https://www.eenews.net/stories/1060387889> (finding that “EPA is considering a change to how oil and gas industry methane emissions are counted that could push them below required reporting levels under the Clean Air Act”).

¹⁹⁵ See Complaint for Declaratory and Injunctive Relief, *California v. Zinke*, No. 3:18-cv-05712 (N.D. Cal. Sept. 18, 2018).

the recent repeal violated the Administrative Procedure Act (APA) and National Environmental Policy Act (NEPA) because the “BLM failed to offer a reasoned explanation for repealing requirements that, just two years ago, the agency determined were necessary to fulfill its statutory mandates.”¹⁹⁶ The outcome of that challenge is yet to be determined.

CONCLUSION

The District Court of Wyoming once aptly referred to the BLM’s methane regulations as a “ping-ponging regulatory regime.”¹⁹⁷ Considering how drastically methane emissions regulations changed at the federal level with the transition between administrations, it is clear that the 2016 federal regulatory schemes lacked the continuity and longevity needed to tackle a challenge so great as mitigating climate change by reducing methane emissions from the oil and gas industry. While the EPA is poised to reconsider whether methane emissions must be reported under the Clean Air Act, Colorado regulators reaffirm that “[r]egardless of what happens at the federal level, Colorado’s commitment to ensuring that oil and gas development in the state will be conducted in an environmentally responsible manner will not waver.”¹⁹⁸

Federal emissions standards should, pursuant to the Clean Air Act, set a baseline regulatory floor, but methane regulation is better achieved at the state level. Individual states are best equipped to create their own plans that tackle local challenges, such as gas flaring in North Dakota, or natural gas infrastructure maintenance in Pennsylvania. While some states, such as New Mexico, which is heavily dependent upon the energy sector, will inevitably be constrained by compliance costs and will have to work with industry leaders to implement a mutually agreeable regulatory approach, other states like California will have the ability to implement broad plans that go above and beyond any of the federal standards.

By regulating emissions from leakage and flaring from both new and existing sources, California’s regulations cover the greatest quantity of potential emissions sources. But California’s rules do not provide a one-size-fits-all regulatory framework that other states should be forced to follow regardless of their state-specific needs and compliance costs. Additionally, even California’s methane regulations could be even more comprehensive. For example, all states, including California, have shown reluctance to

¹⁹⁶ *Id.* ¶¶ 4–5, at *3.

¹⁹⁷ *Wyoming v. U.S. Dep’t of the Interior*, 366 F. Supp. 3d at 1292.

¹⁹⁸ Judith Kohler, *Top State Air Regulator Says Colorado Won’t Waver in Enforcing Methane Rule*, THE DENVER POST (Sept. 13, 2018), <https://www.denverpost.com/2018/09/13/epa-methane-rule-roll-back/>.

regulate methane emissions from “orphaned” unplugged or abandoned oil and gas wells.¹⁹⁹

If natural gas is to serve as a true “bridge fuel” between coal and sustainable renewable energy sources in the United States, methane emissions must be curbed. The costs of compliance with any effective regulatory scheme may be high, but they should be largely outweighed by the environmental and economic rewards that regulation could bring. Methane leakage is damaging to the environment, where it precipitates climate change, to taxpayers, whose states lose royalty revenue when gas generated on federal or state trust lands is lost—not sold, and to oil and gas industry producers who, instead of allowing leaks to continue, could capture and sell additional gas if they were adequately incentivized to repair their existing infrastructure. The current methane emissions rules arguably form the weakest link in the framework for greenhouse gas regulation under the Clean Air Act. But, where federal regulations are reconsidered or remain unenforced, more states should draft and implement their own state-specific regulatory regimes.

¹⁹⁹ See generally, Cameron Rotblat, *Caring for the Orphans: Approaches for Mitigating Fugitive Methane Emissions from Orphaned Oil and Gas Wells*, 47 ENVTL. L. REP. NEWS & ANALYSIS 10529 (2017) (claiming that “[r]ecent scientific research indicates fugitive methane emissions from abandoned oil and gas wells may contribute more to climate change than methane leakage from oil and gas production. Yet current orphaned well regulations fail to ensure that such wells are plugged in a timely fashion.”).