

CHICAGO-KENT JOURNAL OF
*ENVIRONMENTAL
AND ENERGY LAW*

VOLUME 10 • ISSUE 2 • SPRING 2021

CHICAGO-KENT JOURNAL OF ENVIRONMENTAL AND ENERGY LAW

IIT Chicago-Kent College of Law

Program in Environmental and Energy Law

565 West Adams Street | Chicago, IL 60661-3691

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The *Chicago-Kent Journal of Environmental and Energy Law* is edited and produced by the students of IIT Chicago-Kent College of Law.

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Please cite the *Journal* as

10 CHI.-KENT J. ENV'T ENERGY L. ____ (2021)

Citations conform generally to *The Bluebook: A Uniform System of Citation* (Columbia L. Rev. Ass'n et al. eds., 21st ed. 2020).

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Chicago-Kent Journal of Environmental and Energy Law

Volume 10

Spring 2021

Issue 2

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POWER AND POLLUTION: APPROACHING COAL-FIRED POWER PLANTS AND RENEWABLE ENERGY THROUGH A RACIAL JUSTICE LENS

Nathan Frischkorn & Samuel Waxman

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Racial justice protests erupted across the United States in the summer of 2020, ignited by the public killing of George Floyd by a Minneapolis police officer. Although the struggle for racial justice in this country has spanned decades, one part of that struggle involves ongoing environmental injustices plaguing many U.S. minority neighborhoods. The disproportionate siting of coal-fired power plants in minority and low-income communities is one contributor to this problem. Environmental justice principles require efforts to decommission these coal plants and replace them with cleaner, more equitable energy infrastructure that benefits rather than burdens these communities. This article frames the nation's urban coal-fired power plants through the lenses of environmental justice, climate justice, energy justice, and energy democracy, and identifies several policies capable of driving that transition. Achieving environmental and energy justice for Black and low-income communities will require a resolute commitment from state governments, municipalities, and utilities, with each playing important policy roles. This article explains how renewable portfolio standard carve-out provisions, public benefit funds, Property Assessed Clean Energy programs, and community benefit could be tailored to help drive a just transition from coal-fired power plants to renewable energy projects.

INTRODUCTION

In summer 2020, the United States experienced what was possibly the largest movement for racial justice since the 1960s.¹ Months of protests were ignited by the public killing of George Floyd, a Black man, by a Minneapolis police officer.² In a video viewed by millions of people around the world, the officer knelt on George Floyd's neck and back while Floyd was handcuffed, repeatedly stating he could not breathe. After eight minutes and forty-six seconds, his body laid lifeless on the pavement.³ While Black Americans

¹ Elliott C. McLaughlin, *How George Floyd's Death Ignited a Racial Reckoning that Shows No Signs of Slowing Down*, CNN (Aug. 9, 2020), <https://www.cnn.com/2020/08/09/us/george-floyd-protests-different-why/index.html> [perma.cc/HG24-BT3W].

² *Id.*

³ *Id.*

have long been targeted by excessive police violence, the particularly outrageous way in which Floyd was murdered caused protests to erupt nationwide.⁴

Unfortunately, Black Americans continue to also face myriad forms of governmental violence from entities other than law enforcement. The 7,000 people who live in the part of Detroit, Michigan encompassed by zip code 48217—often called America’s most toxic zip code—have been subjected to decades of extremely poor air quality.⁵ Coal-fired power plants and other industrial polluters have caused this predominantly Black, low-income community to suffer from shortened lifespans, as well as a significantly degraded quality of life with high rates of asthma, cancer, and other illnesses.⁶ Both the plight of the residents of zip code 48217 and the killing of George Floyd are rooted in the deep-seated systemic racism pervading this country; both are a result of structural and systematic devaluing of Black lives.

This article spotlights connections between the racism exhibited by police brutality and the racism perpetuating environmental and energy injustices in U.S. cities, and offers specific strategies for addressing the latter problem. Specifically, this article highlights how coal-fired power plants impose disproportionate health hazards on many Black and low-income communities. This article also outlines policy changes capable of remedying these disproportionate impacts by incentivizing cleaner, more sustainable, and more equitable forms of energy development within those communities.

Part I briefly describes the history of the movements for racial justice and environmental justice, as well as the impacts of coal-fired power plants and available technological alternatives. Both an analytical framework and specific policies are needed to understand and address the racially disparate impacts caused by coal-fired power plants, and to help guide a transition to a more equitable energy system. Part II describes the analytical framework of a just transition for communities plagued by pollutive energy facilities, focusing on environmental, energy, and climate justice, as well as energy democracy. Part III applies this analytical framework to specific policies that

⁴ *Id.*

⁵ Ossiana Tepfenhart, *Life Inside America’s Most Toxic Zip Code: A Warning of What Happens When Democracy Fails*, VOCAL (2016), <https://vocal.media/theSwamp/life-inside-america-s-most-toxic-zip-code-a-warning-of-what-happens-when-democracy-fails> [<https://perma.cc/4ZLP-VA3U>]; Steve Neavling, *Struggling to breathe in 48217, Michigan’s most toxic ZIP code*, DETROIT METRO TIMES (Jan. 8, 2020), <https://www.metrotimes.com/detroit/struggling-to-breathe-in-48217-michigans-most-toxic-zip-code/Content?oid=23542211> [<https://perma.cc/P3J9-6Q83>].

⁶ Neavling, *supra* note 5.

support and facilitate a just transition from urban coal-fired power plants toward more racially just and environmentally sustainable energy strategies.

I. JUSTICE MOVEMENTS & TECHNOLOGY: OFFERING A NEW WAY FORWARD

The racial and environmental injustices near many coal-fired power plants across the United States are longstanding and deeply connected. Part I outlines these injustices and how they continue to impact Black communities today. Section A provides a brief overview of the sordid history of race relations in the United States and how it has shaped the present demographic composition of both metropolitan and rural areas. Section B briefly summarizes the history of the environmental justice movement, which arose out of the civil rights movement. Section C explores the racial disparity in the distribution of coal-fired power plants and the disproportionate health burdens minority communities suffer as a result. That section also explains why merely replacing coal-fired plants with natural gas generation is inadequate. Section D provides an overview of energy storage and distributed generation technologies—alternatives to coal-fired power that could replace these facilities and benefit the communities that host them.

A. *The Fight for Racial Justice*

The United States has an abysmal record on racial justice, and this ugly history still impacts where many Black Americans live and work today. After the American Civil War ended chattel slavery in the United States, former slave-owning states in the South enacted a multitude of racist and segregationist laws—known as Jim Crow laws—while simultaneously embarking on a campaign of violent intimidation, lynching thousands of Black Americans.⁷ These racist policies and accompanying violence caused a mass migration of Black Americans from the rural South to industrial northern cities such as Philadelphia, Chicago, and Detroit.⁸ However, many cities' racist housing policies forced most Black Americans to live in segregated neighborhoods filled with substandard housing.⁹ Legal mechanisms, such as restrictive covenants and federal government policies combined with industry practices such as “redlining,” were used to systemically deprive Black Americans of the promise of opportunity most white Americans had full access to.¹⁰ From the 1930s through the 1950s,

⁷ *The Great Migration*, HISTORY, <https://www.history.com/topics/black-history/great-migration> [<https://perma.cc/ZM2J-AMB7>].

⁸ *Id.*

⁹ MICH. C.R. COMM'N, *THE FLINT WATER CRISIS: SYSTEMIC RACISM THROUGH THE LENS OF FLINT* 39-42 (2017).

¹⁰ See *id.*; Linda Villarosa, *Pollution Is Killing Black Americans. This Community*

many suburbs were created explicitly and exclusively as white communities.¹¹ When these communities eventually changed and Black families were allowed to move into them, white people left in droves, moving elsewhere in a phenomenon known as “white flight.”¹² The current shape and composition of urban and suburban neighborhoods are a direct result of these racist policies and practices.

Driven by concerns about ubiquitous racism throughout the United States, a long-standing campaign of protests and civil disobedience, now known as the civil rights movement, arose in the 1950s and 1960s.¹³ This movement sought to challenge not only Jim Crow laws but also segregationist policies in southern and northern states alike.¹⁴ The civil rights movement expressly challenged the doctrine of “separate but equal” that had been enshrined into law by the United States Supreme Court decision in *Plessy v. Ferguson*.¹⁵ However, this legal doctrine found the beginning of its end in 1954, as a result of that Court’s decision in *Brown v. Board of Education*, which held that segregation in public schools violated the Equal Protection clause of the 14th Amendment.¹⁶ The following year, Rosa Parks challenged the “separate but equal” doctrine in a public transportation setting, refusing to give her seat on a public bus to a white man, resulting in her arrest and the 381-day Montgomery Bus Boycott.¹⁷ Her arrest and the subsequent protests, coupled with the decision in *Brown v. Board of Education*, catapulted the civil rights movement onto the national stage.¹⁸

B. The Movement for Environmental Justice

Arising out of the civil rights movement in the late 1970s, the environmental justice movement focuses on the disproportionate distribution

Fought Back, N.Y. TIMES (Jul. 28, 2020), <https://www.nytimes.com/2020/07/28/magazine/pollution-philadelphia-black-americans.html> [<https://perma.cc/ED8X-UD9C>].

¹¹ KIRWAN INST., STRUCTURAL RACIALIZATION: A SYSTEMS APPROACH TO UNDERSTANDING THE CAUSES AND CONSEQUENCES OF RACIAL INEQUITY (May 29, 2012) [<https://perma.cc/3MF6-8AVV>].

¹² *Id.*

¹³ *Civil Rights Movement*, HISTORY, <https://www.history.com/topics/black-history/civil-rights-movement> [<https://perma.cc/5D3K-VFE3>].

¹⁴ *Id.*

¹⁵ *Id.*; *Plessy v. Ferguson*, 163 U.S. 537 (1896).

¹⁶ *Civil Rights Movement*, *supra* note 13; *Brown v. Board of Education of Topeka*, 347 U.S. 483 (1954).

¹⁷ *Civil Rights Movement*, *supra* note 13.

¹⁸ *Id.*

of environmental harms and benefits.¹⁹ The term “environmental justice” embodies the idea that everyone should equally benefit from environmental protection and have an equal opportunity to participate in environmental decision-making.²⁰ The goal of environmental justice is to make environmental decision-making more democratic by asking “who gets what, why and how much.”²¹

The environmental justice movement began in 1978 when the Ward Transformer Company illegally dumped 30,000 gallons of toxic PCB-contaminated waste along highways in North Carolina.²² This criminal action necessitated the removal of 60,000 tons of contaminated soil.²³ To dispose of the contaminated soil, state and U.S. Environmental Protection Agency (“EPA”) officials decided to construct a toxic waste landfill in Warren County—a rural county where the majority of residents were Black.²⁴ In 1982, residential, environmental, and civil rights interests converged to launch a massive campaign of civil disobedience to prevent construction of the landfill.²⁵ To prevent dump trucks loaded with contaminated soils from entering the landfill site, protestors laid across the road, blocking traffic from entering the facility.²⁶ More than 500 people were arrested during this campaign, which was led not by environmental leaders, but by civil rights leaders such as Rev. Dr. Benjamin Chavis, who incorporated civil disobedience strategies that had been perfected during the civil rights movement of the 1960s.²⁷

¹⁹ Uma Outka, *Environmental Justice Issues in Sustainable Development: Environmental Justice in the Renewable Energy Transition*, 19 J. ENV'T & SUSTAINABILITY L. 60, 92 (2012).

²⁰ James M. Van Nostrand, *Energy and Environmental Justice: How States Can Integrate Environmental Justice into Energy-Related Proceedings*, 61 CATH. U. L. REV. 701, 702 (2012). “Simply put, the concept of environmental justice provides that everybody has an equal right to live in a clean, healthy and safe environment, and when it comes to decisions that involve or affect their environment, everybody should have an equal voice.” MICH. C.R. COMM’N, *THE FLINT WATER CRISIS: SYSTEMIC RACISM THROUGH THE LENS OF FLINT* 89-90 (2017).

²¹ Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENV’T L. REP. 10681, 10683 (2000).

²² Linda Villarosa, *Pollution Is Killing Black Americans. This Community Fought Back*, N.Y. TIMES (Jul. 28, 2020), <https://www.nytimes.com/2020/07/28/magazine/pollution-philadelphia-black-americans.html> [<https://perma.cc/ED8X-UD9C>].

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*; MICH. C.R. COMM’N, *supra* note 20, at 87; Ember D. McCoy, *Which Came First*,

The following year the U.S. General Accounting Office conducted a study that found that three of the four hazardous-waste landfills in EPA Region IV were sited in predominantly Black communities.²⁸ In 1987, the United Church of Christ Commission for Racial Justice—directed by Rev. Dr. Chavis—released a report titled *Toxic Wastes and Race in the United States* (“the UCC report”), which found a direct correlation between race and proximity to toxic waste sites.²⁹ Notably, race was a more significant predictor of proximity to those facilities than socioeconomic status.³⁰ The study additionally found that 60% of all Black and Hispanic Americans lived in communities blighted by toxic waste sites.³¹

In 1990, Dr. Robert Bullard—often called “the father of environmental justice”—published *Dumping in Dixie: Race, Class, and Environmental Quality*.³² Supporting his arguments with specific case studies, Dr. Bullard concluded that pollution from landfills and hazardous waste facilities, coupled with industrial emissions, were devastating Black communities.³³ A 1992 study of commercial waste disposal facilities in the Detroit area found that those facilities were concentrated in Black neighborhoods and that race was a more significant predictor of proximity to toxic waste sites than socioeconomic status.³⁴

The studies provided empirical evidence of the problem around which the blossoming environmental justice movement could coalesce. In 1991, hundreds of environmental justice activists, advocates, and leaders met in Washington, D.C. for the First National People of Color Environmental Leadership Summit. There they drafted a “constitution” establishing 17

Coal-Fired Power Plants or Communities of Color? (Aug. 2017) (unpublished M.S. Thesis, University of Michigan) [<https://perma.cc/R5EN-REEC>].

²⁸ McCoy, *supra* note 27, at 6.

²⁹ BENJAMIN F. CHAVIS JR. ET AL., UNITED CHURCH OF CHRIST, COMM’N FOR RACIAL JUST., TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES, at xv (1987) [<https://perma.cc/PN8N-DQFN>]. See Villarosa, *supra* note 22; McCoy, *supra* note 27, at 6.

³⁰ Villarosa, *supra* note 22; McCoy, *supra* note 27, at 6.

³¹ Villarosa, *supra* note 22.

³² ROBERT D. BULLARD, DUMPING IN DIXIE: RACE, CLASS, AND ENVIRONMENTAL QUALITY (Westview Press 1990)

³³ *Id.*

³⁴ McCoy, *supra* note 27, at 7.

principles of environmental justice—principles that are still used to guide most environmental justice activism today.³⁵

In response to this movement, the EPA established the Office of Environmental Equity in 1992, renamed in 1994 as the Office of Environmental Justice.³⁶ President Clinton issued Executive Order 12,898 in the same year, requiring all federal agencies to “develop an environmental justice strategy to identify and address ‘disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.’”³⁷ President Clinton also established a National Environmental Justice Advisory Council to advise the EPA on environmental justice concerns and issues.³⁸

In 2007, Dr. Bullard issued a follow-up to the UCC Report titled *Toxic Wastes and Race at Twenty: 1987-2007*.³⁹ In this new report, Dr. Bullard found that the racial disparity between communities with toxic waste sites and those without was even more significant than previous studies had indicated.⁴⁰ Specifically, he found that, on average, the majority of residents within 1.8 miles of a polluting facility were people of color.⁴¹ Also, consistent with previous studies, he found race to be a more significant predictor of proximity to toxic waste than socioeconomic status.⁴² A different study published the following year “found that African-American families with incomes of \$50,000 to \$60,000 were more likely to live in environmentally polluted neighborhoods than white households with incomes below \$10,000.”⁴³

³⁵ Villarosa, *supra* note 22; Maya Lewis, *Civil Rights Are Green: A Concise History of Environmental Racism and Justice in the US*, EVERYDAY FEMINISM (Oct. 6, 2017), <https://everydayfeminism.com/2017/10/history-environmental-racism/> [<https://perma.cc/S5JZ-4Q8F>]; ADRIAN WILSON ET AL., COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE 4-5 (2012), <https://naacp.org/resources/coal-blooded-putting-profits-people> [<https://perma.cc/2HR9-5WLZ>].

³⁶ Lewis, *supra* note 35.

³⁷ Uma Outka, *Fairness in the Low-Carbon Shift: Learning from Environmental Justice*, 82 BROOK. L. REV. 789, 795 (2017).

³⁸ *Id.* at 979.

³⁹ ROBERT D. BULLARD ET AL., UNITED CHURCH OF CHRIST, JUST. & WITNESS MINISTRIES, TOXIC WASTES AND RACE AT TWENTY: 1987-2007 (2007) [<https://perma.cc/WK7S-JJXL>]

⁴⁰ Villarosa, *supra* note 22.

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

In the wake of the environmental justice movement, new social forces have emerged seeking rectification of the inequalities inherent in traditional energy systems as well as recognition of the dire situation of an increasingly warming climate. The energy justice movement emphasizes that all humans should have an energy source that is reliable, safe, affordable, and protects against disproportionate harms from energy system activities.⁴⁴ Energy justice further seeks procedural fairness and representation of affected communities in energy related decision-making.⁴⁵ Energy justice advocates envision a community-led transition to renewable energy systems that include community-owned renewable projects.⁴⁶ The climate justice movement similarly promotes greater recognition of the unequal burdens of global warming placed on the most vulnerable populations globally, nationally, and locally.⁴⁷ In recent years, these movements have coalesced into strong social-political forces calling for a bold and rapid transformation of the nation's energy system.

Environmental justice concerns burst into the national conversation again in 2015 with public revelation of the Flint water crisis in Michigan, which, at that point, had been ongoing for more than a year.⁴⁸ Environmental justice, energy justice, and climate justice continued garnering attention over the following year as the Flint water crisis continued, and the public battle over the Dakota Access Pipeline—a controversial oil pipeline which encroached on tribal sovereignty in the Great Plains—began.⁴⁹ While the fight for environmental justice and the fight against police brutality highlighted above

⁴⁴ Aladdine Joroff, *Energy Justice: What it Means and How to Integrate it into State Regulation of Electricity Markets*, 47 ENV'T. L. REP. NEWS & ANALYSIS 10927, 10927 (2017).

⁴⁵ Benjamin K. Sovacool & Michael H. Dworkin, *Energy Justice: Conceptual Insights and Practical Applications*, 142 APPLIED ENERGY 435, 440 (2015).

⁴⁶ See generally NAACP ENV'T & CLIMATE JUST. PROGRAM, JUST ENERGY POLICIES: MODEL ENERGY POLICIES GUIDE (2017) [<https://perma.cc/RC27-FK7Y>]; NAACP, CLIMATE JUSTICE INITIATIVE TOOLKIT (2010) [<https://perma.cc/76B2-HJRN>].

⁴⁷ Outka, *supra* note 37, at 789-90 (energy and climate justice concerns focus on “inequality in the distribution of environmental harms, as well as access to the environmental, economic, and social benefits associated with the energy sector and climate policy.”); CLIMATE JUSTICE INITIATIVE TOOLKIT, *supra* note 46, at 3-4.

⁴⁸ Melissa Denchak, *Flint Water Crisis: Everything You Need to Know*, NAT'L RES. DEF. COUNCIL (Nov. 8, 2018), <https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know> [<https://perma.cc/VP9L-SJQL>]

⁴⁹ While Indigenous communities face environmental injustices as frequently as Black communities do, this paper is focused on pollution from coal-fired power plants in urban settings, and thus focuses largely on Black communities.

may seem like different battles, both are rooted in the systemic and systematic devaluing of Black and Brown lives that has long plagued this country.

C. The Disproportionate Impacts of Coal-fired Power Plants and the Inadequacy of Natural Gas Conversion

One form of environmental injustice that continues to afflict many Black communities in the U.S. is the disproportionate siting of coal-fired power plants in or near those communities. In recent years, there has been a growing push across the country to decommission coal-fired power plants. Greenhouse gas emissions from fossil-fuel power plants are a leading contributor to climate change, and coal-fired power is especially detrimental to a stable climate.⁵⁰ Burning coal also releases a variety of pollutants—including sulfur dioxide, nitrogen oxides, mercury, ozone, and particulate matter—that cause a multitude of health problems, including major respiratory problems.⁵¹

Because many U.S. coal-fired power plants are in sited urban areas, and because Black Americans are frequently concentrated in urban areas due in large part to the racist policies discussed above, they are disproportionately impacted by emissions from these plants.⁵² A 2002 study found that 71% of Black Americans live in counties that violate federal air pollution standards, whereas only 58% of white Americans live in such counties. Additionally, 68% of Black Americans live within 30 miles of a coal plant, compared to 56% of white Americans.⁵³ Among those who live within a 3-mile radius of a coal-fired power plant, per capita income is lower than the national average. And, in this group, the proportion of residents who are people of color is higher than the national average.⁵⁴ Furthermore, not all coal plants equally impact surrounding communities: “a small number of coal power plants have a disproportionately large and destructive effect on the public’s health, especially on the health of low-income people and people of color.”⁵⁵ A 2012 NAACP study analyzed coal-fired power plants through an environmental justice lens and found that of the 75 worst-performing plants, 53% of nearby

⁵⁰ CLIMATE JUSTICE INITIATIVE TOOLKIT, *supra* note 46, at 8.

⁵¹ BLACK LEADERSHIP F., AIR OF INJUSTICE: AFRICAN AMERICANS AND POWER PLANT POLLUTION 7-8 (2002) [<https://perma.cc/QC7P-7C3J>].

⁵² *Id.* at 2.

⁵³ *Id.* at 3.

⁵⁴ ADRIAN WILSON ET AL., COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE 4-5 (2012) [<https://perma.cc/2HR9-5WLZ>].

⁵⁵ *Id.* at 9.

residents were people of color, and of the 12 worst, 76% of nearby residents were people of color.⁵⁶

Black Americans' disproportionate exposure to coal-fired power plant emissions has resulted in similarly disproportionate health impacts on these communities. Studies suggest that particulate matter from coal plants causes 1,530 excess deaths in the U.S. annually, and that coal plant pollution is responsible for 13,200 premature deaths and 9,700 hospitalizations annually.⁵⁷ As a result of exposure to air pollution, Black Americans suffer from asthma at three times the rate that White Americans do.⁵⁸ Black mothers are twice as likely to live in the most polluted counties compared to white mothers, and the Black infant mortality rate is twice the white infant mortality rate.⁵⁹ Cities with poor air quality have a rate of infant mortality 10% higher than other cities, and cities with high levels of particulate matter see a 26% increased risk of Sudden Infant Death Syndrome and a 40% increased risk of respiratory mortality.⁶⁰ Air pollution also increases mortality from heat stress—a problem that is especially pervasive in urban areas due to the urban heat island effect.⁶¹ Increased air pollution is likewise associated with increased mortality from heart disease and cancer.⁶²

Air pollution falls along the color line: “In every single one of the 44 major metropolitan areas in the U.S., Blacks are more likely than Whites to be exposed to higher air toxics concentrations.”⁶³ In 1992, the EPA concluded that people of color “experience higher than average exposures to selected air pollutants [and] hazardous waste facilities.”⁶⁴ Black Americans suffer a burden of exposure to particulate matter 2.5 micrometers in diameter or less (PM2.5) that is 1.54 times the exposure burden facing white Americans.⁶⁵

⁵⁶ *Id.* at 27, 30.

⁵⁷ *Id.* at 17.

⁵⁸ BLACK LEADERSHIP F., *supra* note 51, at 9-10.

⁵⁹ CONG. BLACK CAUCUS FOUND., INC., AFRICAN AMERICANS AND CLIMATE CHANGE: AN UNEQUAL BURDEN 10-11 (2004) [<https://perma.cc/4HKX-5QJ5>].

⁶⁰ BLACK LEADERSHIP F., *supra* note 51, at 11.

⁶¹ CONG. BLACK CAUCUS FOUND., *supra* note 59, at 20, 31. The urban heat island effect describes the way in which concrete and buildings absorb and radiate heat, which is compounded by a lack of tree canopy; urban areas are frequently significantly hotter than surrounding suburban or rural areas.

⁶² *Id.* at 40.

⁶³ CONG. BLACK CAUCUS FOUND., *supra* note 59, at 2.

⁶⁴ Uma Outka, *Fairness in the Low-Carbon Shift: Learning from Environmental Justice*, 82 BROOK. L. REV. 789, 795 (2017).

⁶⁵ Ihab Mikati et al., *Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status*, 108 AM. J. PUB. HEALTH 480, 480 (2018).

Race is a more significant predictor of exposure than socioeconomic status.⁶⁶ A higher exposure to particulate matter leads to higher rates of asthma and increased mortality.⁶⁷ Estimates of PM2.5-related deaths from electricity generation range from 10,400 to 52,000 premature deaths every year.⁶⁸ The rate of premature deaths is higher in areas with coal-heavy electric grids, with mortality rates being the highest for Black Americans; racial disparities persist “even after accounting for differences in income.”⁶⁹

Although Black Americans bear more of the health and other burdens of coal-fired power plants, they do not equally share in the benefits of these facilities. One study found that “African American households emit twenty percent less carbon dioxide than white households,” while at the same time spending a significantly higher portion of their income on direct energy purchases.⁷⁰ Even though white Americans consume more energy and create more pollution, people of color are exposed to higher levels of pollution.⁷¹ Generally, white Americans “experience [approximately] 17% less air pollution exposure than is caused by their consumption,” while Black and Hispanic Americans “on average bear a ‘pollution burden’ of 56% and 63% excess exposure, respectively, relative to the exposure caused by their consumption.”⁷² Shutting down coal-fired power plants would not only reduce carbon dioxide emissions, but also reduce the emissions of other pollutants, mitigating many health hazards for Black communities.⁷³

While there has been a movement away from reliance on coal-fired power plants in the last decade, efforts to replace these plants with power generation facilities that run on natural gas could replicate many of the same inequalities. From 2011 to 2019, 121 U.S. coal-fired plants were repurposed to burn other types of fuels, 103 of which were converted to or replaced by natural gas fired

⁶⁶ *Id.* at 481-82.

⁶⁷ *Id.* at 484.

⁶⁸ Mahinder P.S. Thind et al., *Fine Particulate Air Pollution from Electricity Generation in the US: Health Impacts by Race, Income, and Geography*, 53 ENV'T SCI. & TECH. 14010, 14010 (2019). These numbers are not limited to pollution from coal plants but are inclusive of pollution from all sources of electricity generation.

⁶⁹ *Id.* at 14012-13.

⁷⁰ CONG. BLACK CAUCUS FOUND., *supra* note 59, at 3.

⁷¹ Christopher W. Tessum et al., *Inequity in Consumption of Goods and Services Adds to Racial-Ethnic Disparities in Air Pollution Exposure*, 116 PROC. NAT'L ACAD. SCI. 6001, 6003 (2019).

⁷² David Roberts, *Trump's EPA Blast at a Chance to Save Black Lives*, VOX (Jun. 16, 2020), <https://www.vox.com/energy-and-environment/2020/6/16/21290591/trump-black-lives-epa-air-pollution-covid-19> [<https://perma.cc/BAF4-3NP2>].

⁷³ CONG. BLACK CAUCUS FOUND., *supra* note 59, at 5.

plants.⁷⁴ Discovery of domestic shale deposits and developments in hydraulic fracturing significantly contributed to a rapid growth in natural gas production in the U.S. over this time frame.⁷⁵ The economic incentive of dramatically decreased costs primarily drove this shift away from coal-fired plants, but many utilities also saw it as a way to meet emissions targets, framing their decisions in terms of reduced harms to the environment.⁷⁶ Significantly, many of the worst offending coal-fired plants from an environmental justice standpoint, identified by the 2012 NAACP study, have been shut down or converted to natural gas since its publication.⁷⁷

Unfortunately, emissions from the nation's growing number of natural gas-fired plants also pose health threats to Black and low-income communities. Natural gas-fired plants also emit a significant amount of nitrogen oxides ("NOx"), especially when starting up.⁷⁸ Prolonged exposure to high concentration of nitrogen oxides can cause increased rates of respiratory problems, such as asthma, and can form dangerous chemicals in the air—including particulate matter and ozone—with serious health effects.⁷⁹ The extraction of natural gas likewise presents many environmental

⁷⁴ Lindsay Aramayo, *More Than 100 Coal-Fired Plants Have Been Replaced or Converted to Natural Gas Since 2011*, U.S. ENERGY INFO. ADMIN. (Aug. 5, 2020), <https://www.eia.gov/todayinenergy/detail.php?id=44636> [<https://perma.cc/635K-KXG5>].

⁷⁵ *Shale Gas 101*, U.S. OFFICE OF FOSSIL ENERGY, <https://www.energy.gov/fe/shale-gas-101> [<https://perma.cc/Q3SH-8E35>]; Emily Geary, *U.S. Natural Gas Production Grew Again in 2019, Increasing by 10%*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/todayinenergy/detail.php?id=43115> [<https://perma.cc/77VF-T5AD>].

⁷⁶ *Cleaner Energy, Natural Gas Has Made the U.S. an Environmental Leader*, AM. GAS ASS'N, <https://www.aga.org/natural-gas/clean-energy/> [<https://perma.cc/EE64-Y487>].

⁷⁷ The three worst offending plants on the study's environmental justice rating have been fully shut down, and the fourth was converted to natural gas in 2015. Julie Wernau, *Closure of Chicago's Crawford, Fisk Electric Plants Ends Coal Era*, CHI. TRIBUNE (Aug. 30, 2012), <https://www.chicagotribune.com/business/ct-xpm-2012-08-30-chi-closure-of-chicagos-crawford-fisk-electric-plants-ends-coal-era-20120830-story.html> [<https://perma.cc/c/AFN3-ZQQM>]; James M. O'Neil, *2 N.J. Coal Power Plants Close for Good, Ensuring Cleaner Air*, N. JERSEY (May 31, 2017), <https://www.northjersey.com/story/news/environment/2017/05/31/coal-power-plants/355425001/> [<https://perma.cc/7S7P-3RHR>]; Chuck Quirnbach, *Milwaukee Coal Plant Completes Conversion to Natural Gas*, WISC. PUB. RADIO (Nov. 24, 2015), <https://www.wpr.org/milwaukee-coal-plant-completes-conversion-natural-gas> [<https://perma.cc/VQT9-PBNR>].

⁷⁸ ASPEN ENV'T GRP. ET AL., SENATE BILL 350 STUDY: THE IMPACTS OF A REGIONAL ISO-OPERATED POWER MARKET ON CALIFORNIA 99 (2016) ("combined cycle natural gas-fired units emit about as much NOx during a startup as approximately 7 hours of full-load operation, and simple cycle units about as much NOx during a startup as approximately 3 hours of full operation").

⁷⁹ Mark Specht, *No, Natural Gas Power Plants Are Not Clean*, UNION OF CONCERNED SCIENTISTS (Nov. 9, 2018), <https://blog.ucsusa.org/mark-specht/natural-gas-power-plants->

and environmental justice problems, including a significant risk of groundwater contamination near fracking sites and substantial climate impacts from methane leaks.⁸⁰ Minimal research exists analyzing the environmental justice impacts of the transition from coal-fired to natural gas plants beyond issues related to extraction, but concentrating emissions at existing centralized locations will almost certainly contribute to continued inequalities in health effects for populations located near converted plants in urban settings.⁸¹ This shift in energy strategies recognized the environmental degradation and inequalities created by coal-fired power at local, national, and climate scales. However, it represents a measure based on economic realities rather than social justice and environmentalism.

Because of the disproportionate impacts of coal-fired power plants on Black communities, decommissioning these plants is not only important to mitigate the effects of climate change—it is also imperative as a matter of racial justice. As stated succinctly in the 2012 NAACP study, “the only truly effective way to stop coal fired power plants from polluting the communities in which they are located, is to close them.”⁸²

D. Distributed Generation and Energy Storage

The growing push to replace coal-fired power with cleaner, renewable power presents an important opportunity to also reduce energy injustices from coal-fired power across the United States. When coal-fired power plants are decommissioned, they generally must be replaced with different energy systems. From an environmental policy perspective, the best substitute for fossil fuel electricity generation is renewable energy systems, which emit no carbon dioxide or other pollutants in producing electricity.⁸³ While centralized fossil fuel electricity generation can be replaced with centralized renewable energy generation, existing systems can also be replaced with distributed generation—facilities that produce electricity at or near the point where it is used.⁸⁴ Most “distributed energy resources” (“DERs”) are

are-not-clean [<https://perma.cc/ABM3-YDCM>].

⁸⁰Anthony J. Marchese & Dan Zimmerle, *The US Natural Gas Industry is Leaking Way More Methane than Previously Thought*, THE CONVERSATION (Jul. 2, 2018), <https://theconversation.com/the-us-natural-gas-industry-is-leaking-way-more-methane-than-previously-thought-heres-why-that-matters-98918> [<https://perma.cc/T3NS-A696>].

⁸¹Sprecht, *supra* note 79.

⁸²ADRIAN WILSON ET AL., COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE 47 (2012) [<https://perma.cc/2HR9-5WLZ>].

⁸³See NAACP ENV’T AND CLIMATE JUST. PROGRAM, JUST ENERGY POLICIES: MODEL ENERGY POLICIES GUIDE 3 (2017) [<https://perma.cc/RC27-FK7Y>].

⁸⁴*Distributed Solar*, SOLAR ENERGY INDUS. ASS’N., <https://www.seia.org/initiatives/>

relatively small in scale.⁸⁵ As of 2017, over 90% of the current distributed generation in the U.S. came from photovoltaic cell solar panels. DERs also include small-scale wind turbines, fuel cells, and other forms of renewable generation.⁸⁶ Wind and solar are the fastest growing renewable energy markets, accounting for nearly two of every five construction jobs in the electric generation sector in 2019.⁸⁷ Currently, most distributed generation is tied to the major utility grids that provide power to nearly all people in the U.S., with power providers in many states allowing customers to capture economic benefits of distributed generation by selling excess power generated by their systems back to the grid.⁸⁸

Many forms of distributed generation are owned by individuals and corporations to meet specific energy needs, but community ownership of renewably powered distributed generation is increasingly seen as a major goal of those advocating for a rapid shift to a green economy.⁸⁹ The most common examples of community-owned renewable energy—solar gardens and small-scale wind energy installations—allow a group of people to collectively purchase all or part of a project located on or near their residence.⁹⁰ Advocates argue that this increased democratic control over energy systems ensures that the benefits of these innovations are equitably allocated.⁹¹

Presently, renewable energy technologies alone cannot satisfy all the nation's energy demands because wind and solar energy resources are intermittent, only producing electricity when the sun is shining or when the wind is blowing. Energy storage technologies will thus be crucial to overcome this intermittency problem.⁹² Many forms of energy storage, such as reservoirs with hydroelectric dams and chemical batteries, have been

rooftop-solar [<https://perma.cc/9QBK-8WY7>].

⁸⁵ See AM. PUB. POWER ASS'N., *DISTRIBUTED GENERATION: AN OVERVIEW OF RECENT POLICY AND MARKET DEVELOPMENTS* 3 (2013) (explaining that most DERs range from 3 kilowatts to 10 megawatts depending on the size and efficiency of the installation).

⁸⁶ *Id.*

⁸⁷ *Clean Jobs America 2019*, ENV'T ENTREPRENEURS (Mar. 13, 2019), <https://e2.org/reports/clean-jobs-america-2019/> [<https://perma.cc/TDR7-2PNX>]

⁸⁸ Richard L. Revesz & Burcin Unel, *Managing the Future of the Electricity Grid: Distributed Generation and Net Metering*, 41 HARV. ENV'T L. REV. 43, 45 (2017).

⁸⁹ MODEL ENERGY POLICIES GUIDE, *supra* note 83, at 3.

⁹⁰ *Id.* at 32

⁹¹ *Id.*

⁹² Revesz & Unel, *supra* note 88, at 140 (“Energy storage in this context refers to technologies capable of receiving electric energy from the grid and storing it for the purpose of releasing it back to the grid at a later time”).

utilized in power generation for centuries. But new technologies and applications of energy storage within the electricity system have emerged due to significant innovation and decreased costs from economies of scale.⁹³ Traditionally, energy storage alleviates problems caused by having fixed capacity for power generation with a fluctuating demand for electricity over time by providing a new dispatchable source of backup power in periods of high load demand.⁹⁴ Energy storage capacity has long been considered a key enabling factor in the integration of renewable resources into energy systems because storage technologies allow surplus energy to be saved for periods when demand is greater than generation and to address the intermittency problem.⁹⁵

International and domestic energy providers are increasingly looking toward energy storage paired with distributed renewable generation as a clean-energy solution.⁹⁶ Many scholars and analysts argue that energy storage and distributed generation can entirely replace coal generation in the U.S. with existing technologies, without increasing consumer electric rates.⁹⁷ Rapid advancement may make the same true for all fossil fuels.⁹⁸ Notably, stakeholders in European power systems have recently begun looking to replace fossil-fuel burning power plants with energy storage facilities tied to centralized and distributed renewable generation.⁹⁹

These technological developments—energy storage and distributed generation—could also play important roles in mitigating the serious

⁹³ Developments have been made in mechanical systems, such as compressed air, flywheel, and pumped hydroelectric storage systems, electrochemical systems such as flow batteries, as well as other forms of thermal energy storage systems. APPARAO DEKKA ET. AL., *A SURVEY ON ENERGY STORAGE TECHNOLOGIES IN POWER SYSTEMS* 105 (2015).

⁹⁴ U.S. DEP'T OF ENERGY, *GRID ENERGY STORAGE* 5 (2013).

⁹⁵ Revesz & Unel, *supra* note 88, at 147.

⁹⁶ Michael L. Buchsbaum, *Germany Plans to Convert Coal Plants into Renewable Energy Storage Sites*, ENERGY TRANSITION (May 15, 2019), <https://energytransition.org/2019/05/coal-plants-into-renewable-energy-storage-sites> [<https://perma.cc/QPS3-E8XY>] (noting that 50+ MW batteries help balance Australia's grid, and development plans for 300 MW of storage in California by 2023 and plans for 850 MW of storage by Arizona Public Services by 2025).

⁹⁷ George Hilton, *Decommissioning Coal – an Opportunity for Energy Storage?*, PV MAG. (Apr. 14, 2020), <https://www.pv-magazine.com/2020/04/14/decommissioning-coal-an-opportunity-for-energy-storage/> [<https://perma.cc/U7CQ-UNT8>].

⁹⁸ *Id.*

⁹⁹ See Buchsbaum, *supra*, note 96; See also Chris Baraniuk, *The Giant Coal Plant Converting to Green Energy*, BBC (Aug. 2018), <https://www.bbc.com/future/article/20180821-the-giant-coal-plant-converting-to-green-energy> [<https://perma.cc/5A2H-XLBX>].

problems this article seeks to address. Centralized coal-fired power plants located in minority communities must be decommissioned or transitioned to non-fossil fuel uses to address the drastic racial disparities in public health. While existing and emerging technologies can address this crisis, existing policies still lag far behind in leveraging those technologies accordingly. Various government programs and policies mandate or incentivize transitions away from coal-fired power, but these laws do not do enough to promote cleaner replacement facilities or to otherwise help historically disadvantaged host communities. Fortunately, existing frameworks advanced by the environmental justice, energy justice, and climate justice movements provide analytical tools that can be helpful in developing policies to better address these shortcomings.

II. ENVIRONMENTAL MOVEMENT FRAMEWORK

The environmental justice framework and related scholarship have undergone significant development in the decades since the idea's inception. Environmental justice principles have been incorporated into some environmental laws and policies relevant to analyzing the racial inequalities associated with coal-fired power plants.¹⁰⁰ These developments should serve as guidance in shaping new energy systems. Contemporary attempts to address racial inequality in the distribution of environmental burdens and benefits have been shaped by new understandings of past and current harms, novel issues relating to a changing climate, and innovation in renewable energy technology and related environmental policy. This article attempts to address problems created by active and former coal-fired power plants and lay the groundwork for laws and policies that prevent replication or exacerbation of environmental inequalities and ensure a "just transition" to renewable-based energy generation.

Competing definitions of a just transition exist throughout environmental, labor, and climate-related scholarship; the most common usage of the term centers on the need to address employment and economic impacts resulting from the rapid drawdown of the fossil fuel industry.¹⁰¹ However, this article focuses more on addressing the environmental and health impacts of urban coal-fired power plants on host communities than on the labor-related impacts of decommissioning those plants. While labor concerns may be the

¹⁰⁰ Cf. Robert D. Bullard, *Wasted People: Environmental Racism, a 20-Year Saga*, BLACK AGENDA REP. (Apr. 4, 2007), <https://blackagenda.com/content/wasted-people-environmental-racism-20-year-saga> [<https://perma.cc/794L-579W>].

¹⁰¹ Anne M. Eisenberg, *Just Transitions*, 92 S. CAL. L. REV. 273, 285-87 (2019); Samantha Smith, *Just Transition: A Report for the OECD*, JUST TRANSITION CTR. (2017).

predominant use of the just transition framework, this article is not the first to apply the framework to environmental justice, energy justice, and climate justice concerns.¹⁰² In the context of this article, facilitating a just transition involves transitioning away from coal-fired power in ways that provide corrective justice for communities that have long borne disproportionate burdens of environmentally harmful activities and have been left out of related decision making.¹⁰³

Considering the abundance of data and evidence tying urban coal-fired power plants to racial inequalities in the distribution of environmental harms and associated health effects as presented above, decommissioning those generation sites is imperative under an environmental justice framework. However, strategies for replacing fossil-fuel based generation must likewise incorporate environmental justice principles to reshape the energy economy into one that is sustainable, equitable, and just for all.¹⁰⁴ One contemporary environmental justice scholar, Robert R. Kuehn, describes the framework as having four distinct dimensions in application: distributive, procedural, corrective, and social, with each having implications for efforts to replace urban coal-fired power plants with more just energy systems.¹⁰⁵ This article presents a discussion of three social movements that have arisen from this framework addressing these concerns: energy justice, climate justice, and energy democracy.¹⁰⁶ The principles of each of these movements are relevant

¹⁰² See Beth Gardiner, *Unequal Impact: The Deep Links Between Racism and Climate Change*, YALE ENV'T 360 (Jun. 9, 2020), <https://e360.yale.edu/features/unequal-impact-the-deep-links-between-inequality-and-climate-change> [<https://perma.cc/99KJ-P8QK>]; Eisenberg, *supra* note 101, at 280; NAACP ENV'T AND CLIMATE JUST. PROGRAM, JUST ENERGY POLICIES: MODEL ENERGY POLICIES GUIDE 13, 41 (2017) [<https://perma.cc/RC27-FK7Y>].

¹⁰³ A just transition is about making sure no group of people shoulders a disproportionate burden when it comes to transitioning to a renewable resource economy. Effective climate policy will not only phase out fossil fuels in favor of renewables, but it will also make the transition as fair as possible. To ensure equity and self-sufficiency, policies must engage and empower communities with the information and resources to transition a resource economy.

Deborah Behles, *From Dirty to Green: Increasing Energy Efficiency and Renewable Energy in Environmental Justice Communities*, 58 VILL. L. REV. 25 (2013).

¹⁰⁴ MODEL ENERGY POLICIES GUIDE, *supra* note 102, at 4.

¹⁰⁵ Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENV'T L. REP. 10681, 10683 (2000).

¹⁰⁶ ADRIAN WILSON ET AL., COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE 7 (2012) [<https://perma.cc/2HR9-5WLZ>]; Raphael J. Heffron & Darren McCauley, *The Concept of Energy Justice Across the Disciplines*, ENERGY POL'Y (Jun. 2017) [<https://perma.cc/J588-QTRG>]; Jennie C. Stephens, *Energy Democracy: Redistributing*

when evaluating the problems associated with coal-fired power plants and identifying strategies for building a more equitable system—a just transition plan that informs “both where we are going and how we will get there.”¹⁰⁷ The following sections describe these various frameworks. Section A describes the environmental justice framework. The principles of energy justice are described in Section B, and climate justice in Section C. Section D explores the concept and framework provided by the energy democracy movement.

A. *Dimensions of the Environmental Justice Framework*

The environmental justice framework calls for equal protection for all citizens from environmental degradation and related health effects, for efforts to redress institutional failures, and to address and evenly distribute environmental burdens and harms.¹⁰⁸ According to Dr. Bullard, distributive justice issues are often the fundamental concern of environmental justice advocates, involving “the equitable distribution of burdens resulting from environmentally threatening activities or of the environmental benefits of government and private-sector programs.”¹⁰⁹ For decades, academic and citizen-science research has generated ample empirical evidence correlating race and demographics with unequal environmental and health burdens as a result of proximity to environmentally degrading activities and locally unwanted land uses.¹¹⁰ Distributive injustice has been rampant in the context of urban coal-fired power plants.¹¹¹ As the nation transitions to renewables, future distributive justice considerations abound in determining which cities, towns, and communities are prioritized in gaining access to clean energy infrastructure and in the siting of new technologies that benefit, rather than harm, host communities.

Another central area of concern under the environmental justice framework is procedural justice, which focuses on how decisions are made in the pursuit of policy goals and who participates in or influences decision-

Power to the People Through Renewable Transformation, ENV'T: SCI. & POL'Y FOR SUST. DEV. (Feb. 13, 2019) [<https://perma.cc/TD6N-9GSR>].

¹⁰⁷ *Just Transition: A Framework for Change*, CLIMATE JUST. ALL. (2016), <https://climatejusticealliance.org/just-transition/> [<https://perma.cc/AG23-9P2N>].

¹⁰⁸ See Robert D. Bullard, *Environmental Justice for All: It's the Right Thing to Do*, 9 OR. J. ENV'T L. & LITIG. 281, 286 (1994).

¹⁰⁹ Kuehn, *supra* note 105, at 10684.

¹¹⁰ *Supra* Section I.C.

¹¹¹ *Id.*

making processes.¹¹² Procedural justice analysis examines the public accessibility of information relating to those decisions, the conscious and unconscious biases held by decision makers, and the general accessibility to legal processes for achieving redress when decisions are made against the wishes of a community.¹¹³ In the environmental justice realm, distributive injustice is often the outcome of actual or perceived procedural injustice; unjust outcomes often result from inequality in decision-making influence or control.¹¹⁴ Procedural injustice occurs in the context of urban coal-fired power plants where affected populations have little or no control over the processes for siting decisions and in influencing the amount, nature, and expediency of studies of associated health effects by political and non-governmental actors.¹¹⁵

In the environmental justice context, corrective justice calls for accountability for polluters, as well as compensation and reparation for the communities damaged. Some forms of corrective injustice overlap with procedural injustice—for example, where the penalties imposed for environmental violations in white areas differ from those in minority neighborhoods. Other forms of corrective injustice relate to the unequal government response to and distribution of resources in these minority communities to address environmental harms.¹¹⁶ In this context, Dr. Bullard describes minority populations as “invisible communities” in the eyes of the government, explaining how agencies often fail to utilize the broad corrective justice authority afforded to them when undertaking environmental enforcement in minority communities.¹¹⁷

The social justice elements of the environmental justice framework look beyond specific instances of distributive or procedural injustice and assess

¹¹² Kuehn, *supra* note 105, at 10688.

¹¹³ *Id.*

¹¹⁴ See HANNE SVARSTAD ET AL., POLICY MIX, THREE TYPES OF ENVIRONMENTAL JUSTICE (K. Margrethe Kvam Tingstad ed., 2011).

¹¹⁵ Richard J. Tobin & Richard A. Carpenter, *Public Participation in the Environmental Review Process, with Special Reference to Coal-fired Power-plant Siting*, ENV'T CONSERVATION 318 (1983) (noting that historically public involvement occurred too late in the siting process to be effective or useful).

¹¹⁶ See Logan Judy, *Liberty and Environmental Justice for All? An Empirical Approach to Environmental Racism*, 53 WAKE FOREST L. REV. 739, 756-757 (2018) (finding that levels of EPA enforcement are lower when there is a higher population of minorities in a congressional district, while median household income level per district had neither positive nor negative effect on enforcement severity).

¹¹⁷ Robert D. Bullard, *Environmental Racism and “Invisible” Communities*, 96 W. VA. L. REV. 1037, 1037 (1993-1994).

macro-level environmental equality between groups.¹¹⁸ Environmental justice as social justice provides an inclusive lens, allowing assessment of non-governmental actions and their overall environmental justice implications, and should serve as guidance in developing clean-energy solutions to replace coal-fired power plants and in shaping the institutions controlling those new systems.¹¹⁹

B. Energy Justice

The energy justice movement applies the principles of environmental justice to the energy economy, with a focus on ensuring that systems fairly disseminate both the benefits and costs of energy services and promote representative and impartial energy decision-making.¹²⁰ Energy justice shifts the traditional energy policy focus from the protection of adequate supplies of conventional fuels to a focus on the long-term consequences of energy policies on individuals and cultures.¹²¹ It also calls for responding to energy injustices—such as the unequal imposition of costs, hazards, and externalities of energy systems on low-income communities predominantly composed of people of color—with policies that promote greater energy efficiency, renewable energy development, and community driven clean-energy projects.¹²² Energy justice advocates demand that future benefits from energy policies and programs be distributed equally, especially considering evidence that some renewable energy programs reflect and exacerbate the inequities of traditional energy systems.¹²³

Energy justice also has procedural elements—demanding meaningful involvement, participation, informed consent in decision-making and public

¹¹⁸ Kuehn *supra* note 105, at 10699.

¹¹⁹ *Id.*

¹²⁰ Benjamin K. Sovacool & Michael H. Dworkin, *Energy Justice: Conceptual Insights and Practical Applications*, 142 *APPLIED ENERGY* 435, 440 (2015) (“[energy democracy] includes procedural justice, which is about free prior informed consent for energy projects, representation in energy decision-making, and access to high quality information about energy”).

¹²¹ *Id.*

¹²² NAACP ENV’T & CLIMATE JUST. PROGRAM, *JUST ENERGY POLICIES: MODEL ENERGY POLICIES GUIDE* 33 [<https://perma.cc/RC27-FK7Y>] (explaining that energy efficiency measures are essential in the fight for environmental and energy justice). *See also* Kathiann M. Kowalski, *Clean Energy Programs Can Help Address Some Racial Disparities, Advocates Say*, *ENERGY NEWS NETWORK* (Jul. 2, 2020), <https://energynews.us/2020/07/02/clean-energy-programs-can-help-address-some-racial-disparities-advocates-say/> [<https://perma.cc/6VK9-APGL>].

¹²³ *See* Deborah A. Sunter et al., *Disparities in Rooftop Photovoltaics Deployment in the United States by Race and Ethnicity*, 2 *NATURE SUST.* 71 (2019).

availability of information about the energy sector—and embraces corrective notions of intergenerational equity in questioning the fairness of resource extraction, energy generation, and resulting pollution using a whole-systems approach.¹²⁴ Energy justice has important implications under the just transition framework as both an analytical tool in assessing past harms and as a decision-making tool guiding energy sector policies and programs.¹²⁵ One example of using energy justice as an analytical tool is by reprioritizing affordability in energy policy, allowing decision-making based on factors outside of traditional cost-benefit considerations.¹²⁶ The NAACP’s Just Energy Action Toolkit is instructive of the types of solutions that come from this decision-making framework, including advocating for community-led energy justice legislative campaigns, programs to increase utility accountability, community-created and community-owned clean energy projects and energy cooperatives, as well as other organizing tools for energy justice.¹²⁷

C. Climate Justice

Climate justice applies the principles of environmental justice to the problem of climate change, reframing it as an ethical and political issue. Climate justice is a social movement that seeks equal protection from the impacts of climate change and aims to ensure that those most responsible for creating those impacts bear the costs of transitioning to a green economy.¹²⁸ It responds to the reality that those least responsible for climate change are feeling its effects to a greater extent than actors bearing responsibility by demanding that principles of democracy, sustainability, and social justice be prioritized over market-based solutions in the transition to a clean energy economy.¹²⁹ The climate justice framework recognizes that low-income communities and people of color will suffer most from climate change’s

¹²⁴ Benjamin K. Sovacool, *Energy Decisions reframed as Justice and Ethical Concerns*, NATURE ENERGY, May 2016, at 1 [<https://perma.cc/3UN8-NXT9>].

¹²⁵ Sovacool & Dworkin, *supra* note 120, at 435 (arguing that energy justice decision making should promote availability, affordability, due process, good governance, sustainability, inter and intra-generational equity, and responsibility).

¹²⁶ Raphael J. Heffron & Darren McCauley, *The Concept of Energy Justice Across the Disciplines*, ENERGY POL’Y (Jun. 2017) (“The creation and support of short-term policies that are not sustainable and that contribute to energy injustices but deliver better prices should be sacrificed for medium to longer term sustainable and energy just policies”).

¹²⁷ MODEL ENERGY POLICIES GUIDE, *supra* note 122.

¹²⁸ ENV’T JUST. LEADERSHIP F. ON CLIMATE CHANGE, PRINCIPLES OF CLIMATE JUSTICE (2009) [<https://perma.cc/FH88-EVHC>].

¹²⁹ INT’L CLIMATE JUST. NETWORK, BALI PRINCIPLES OF CLIMATE JUSTICE (2002), [<https://perma.cc/QR3U-Z4Y7>].

impacts globally, nationally, and locally, while also encouraging greater procedural availability and involvement of the most affected communities at all levels of government and community engagement.¹³⁰ Climate justice and energy justice have significant overlap. The energy sector is one of the largest sources of carbon emissions globally and nationally; thus, climate justice initiatives often require rectification of past energy injustices.¹³¹

D. Energy Democracy

Energy democracy provides a set of organizing principles for democratically restructuring the energy and electricity sectors through the transition from traditional fossil-fuel-based systems to renewable energy systems in response to environmental injustice and the threat of climate change.¹³² In many ways, energy democracy is a movement born from the convergence of social, environmental, energy, and climate justice principles. It seeks to harness the social change potential of a just transition by embracing a vision of more distributed, locally based energy systems entirely powered by a regionally appropriate mix of different renewable sources.¹³³ Energy democracy principles are founded on a rejection of traditional centralized fossil-fuel-based energy systems, seeking to reconfigure patterns of ownership, profits, and management in recognition of the perpetuation of environmental inequality by government and corporate interests.¹³⁴ Advocates propose that energy infrastructure managed by smaller, local, cooperatively owned businesses would result in more direct community-level economic benefits than traditional energy systems.¹³⁵ Energy democracy provides a socio-political framework aligned with the principles of a just transition, connecting environmentalism with social justice and racial equity.¹³⁶

Community ownership of energy systems is the central feature of energy

¹³⁰ *Id.*

¹³¹ Vivian Foster & Daron Bedrosyan, *Understanding CO2 Emissions from the Global Energy Sector*, WORLD BANK LIVE WIRE (2014), <https://openknowledge.worldbank.org/bitstream/handle/10986/17143/851260BRI0Live00Box382147B00PUBLIC0.pdf?sequence=6> [<https://perma.cc/PE2C-ZNTR>].

¹³² Matthew J. Burke, *Energy Democracy: Goals and Policy Instruments for Sociotechnical Transitions*, ENERGY RSCH. & SOC. SCI. (Nov. 2017).

¹³³ Jennie C. Stephens, *Energy Democracy: Redistributing Power to the People Through Renewable Transformation*, ENV'T: SCI. & POL'Y FOR SUST. DEV. (Feb. 13, 2019).

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

democracy theory.¹³⁷ Publicly owned utilities have been common in the United States since the 1800s, yet proponents of energy democracy argue that democratic participation and oversight of energy systems has fallen short and produced an inequitable system that yields to fossil-fuel interests.¹³⁸ By focusing incentives and motivations away from profit generation, publicly owned utilities could facilitate a rapid transition to decentralized renewable-based energy, providing increased public involvement in energy policy and decision-making, new employment opportunities, and increased community wealth.¹³⁹ Additionally, decentralized utility systems with greater community representation under the energy democracy framework would allow local preferences and location-specific renewable resource availability to shape each community's transition.¹⁴⁰

III. POLICY ANALYSIS

Correcting racial injustices from coal-fired power plants is possible with the advancement of two primary objectives. First, states, municipalities, and utilities should begin work to promptly decommission the nation's remaining coal-fired power plants as a matter of racial and environmental justice. Second, states and municipalities should aggressively incentivize the replacement of coal-fired electricity generation with a combination of energy storage facilities and community-owned distributed renewable energy generation to avoid replicating or exacerbating existing inequalities in host communities. Part III analyzes several policy mechanisms that could be used to incentivize an equitable transition from coal plants to energy storage and community-owned renewable energy, viewing each of these policies through the lenses of environmental justice, climate justice, energy justice, and energy democracy.

Because of urban coal-fired power plant sites' proximity to load centers and to transmission and distribution systems,¹⁴¹ many of these sites are also

¹³⁷ John Farrell, *Energy Democracy in 4 Powerful Steps*, INST. FOR SELF-RELIANCE (Mar. 1, 2017), <https://ilsr.org/energy-democracy-in-4-steps> [<https://perma.cc/AER9-KHTJ>] (arguing that "4 D's of Energy Democracy" are key in shifting away from the traditional energy system model: distributed power, decentralization, *democracy from ownership*, and disruptive technology) [emphasis added].

¹³⁸ Johanna Bozuwa, *Public Ownership for Energy Democracy*, NEXT SYS. PROJECT (Sept. 2018), <https://thenextsystem.org/learn/stories/public-ownership-energy-democracy> [<https://perma.cc/MJK5-U83K>].

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ Cf. Michael L. Buchsbaum, *Germany Plans to Convert Coal Plants into Renewable Energy Storage Sites*, ENERGY TRANSITION (May 15, 2019),

excellent locations for large energy storage facilities.¹⁴² The location of many of these plants in environmental justice communities also makes them ideally located in relation to community-owned renewable generation.¹⁴³ Energy storage and renewables should be in close geographic proximity; redeveloping these sites into energy storage facilities will transform them from being environmental burdens into environmental benefits.¹⁴⁴ Such conversions would not be entirely new; existing projects in other countries aim to convert coal-fired power plants into energy storage facilities. For instance, government agencies in Germany are working with private companies to develop Carnot batteries—which store energy as molten salt—in decommissioned coal plants.¹⁴⁵ That method of converting coal plants into energy storage facilities involves replacing coal boilers with thermal storage tanks and would be replicable at any coal plant.¹⁴⁶

Converting coal-fired power plants into large energy storage facilities would be the best use of these sites for several reasons. As highlighted above, merely transitioning these facilities from coal to natural gas is inadequate from a climate justice perspective.¹⁴⁷ Moreover, centralized natural gas plants do no more than centralized coal plants to advance the goals of energy democracy. From an environmental justice perspective, natural gas plants also produce other pollutants that have negative health impacts on nearby

<https://energytransition.org/2019/05/coal-plants-into-renewable-energy-storage-sites> [<https://perma.cc/QPS3-E8XY>] (“Additionally, centralized battery stations can also be seamlessly plugged into the grid, helping to balance load with demand and further taking advantage of clean production opportunities”); Chris Baraniuk, *The Giant Coal Plant Converting to Green Energy*, BBC (Aug. 2018), <https://www.bbc.com/future/article/20180821-the-giant-coal-plant-converting-to-green-energy> [<https://perma.cc/5A2H-XLBX>] (“The plants have expensive connections to national grids – meaning that simply knocking them down might not be so smart”).

¹⁴² Cf. David Roberts, *Clean Energy Technologies Threaten to Overwhelm the Grid, Here’s How it Can Adapt*, VOX (Nov. 11, 2019), <https://www.vox.com/energy-and-environment/2018/11/30/17868620/renewable-energy-power-grid-architecture> [<https://perma.cc/BB8R-QMGB>].

¹⁴³ Cf. ADRIAN WILSON ET AL., *COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE* 15 (2012) [<https://perma.cc/2HR9-5WLZ>].

¹⁴⁴ See generally George Hilton, *Decommissioning Coal – an Opportunity for Energy Storage?*, PV MAG. (Apr. 14, 2020), <https://www.pv-magazine.com/2020/04/14/decommissioning-coal-an-opportunity-for-energy-storage/> [<https://perma.cc/U7CQ-UNT8>]; Buchsbaum, *supra* note 141.

¹⁴⁵ Buchsbaum, *supra* note 141.

¹⁴⁶ *Id.* This type of energy storage technology is not new, as concentrated solar power plants have relied on molten salt thermal storage for over a decade.

¹⁴⁷ *Supra* Section I.D.

communities.¹⁴⁸ Replacing coal facilities with non-energy-related development would also be inefficient in many cases because of these sites' advantageous locations for energy systems. Additionally, energy storage is the ideal strategy to overcome the intermittency problem inherent in renewable energy systems, and utilizing existing infrastructure is more efficient than developing additional infrastructure.¹⁴⁹

Converting the nation's remaining coal-fired power plants to energy storage facilities and building out community-owned renewable energy infrastructure will also require significant labor and investment, providing opportunities to economically benefit energy justice communities. In furtherance of a just transition, policy mechanisms should prioritize training and hiring those formerly employed by the coal-fired power plants and local community members to work in the new energy facilities that replace them.

There are many different policies capable of supporting a shift from centralized fossil fuel energy production to distributed renewable energy production. But when analyzing these policies through environmental justice, energy justice, climate justice, and energy democracy lenses, not all policies are equal. Part III first presents a mechanism for municipalities to define populations once burdened by former coal plants as energy justice communities, then analyzes several policies—including renewable portfolio standards, net metering, public benefit funds, Property Assessed Clean Energy programs, and community benefit agreements—through the lenses described above to identify the most equitable policies for achieving a just transition.

A. Defining Energy Justice Communities

To effectively advance the corrective justice goals highlighted above in the context of coal plants, policymakers must first ensure their policy strategies for doing so are narrowly targeted at those communities that have most suffered the burdens of coal-fired power plants. A possible first step toward crafting such policies would be to define and identify these communities and enact policies that more directly channel benefits to them. This article uses the term “energy justice community” rather than “environmental justice community” to place its focus specifically on urban communities that have been harmed by coal plants. While achieving corrective justice for all environmental justice communities is necessary, the policy approaches described here are specifically targeted at energy justice

¹⁴⁸ Hilton, *supra* note 141.

¹⁴⁹ *Id.*

communities. While there is significant overlap between the two, using this narrower definition will ensure that communities harmed by coal plants will receive the benefits of these policies.

Defining an energy justice community is not a straightforward task, and definitions will vary across jurisdictions and programs. When defining such communities, government entities should first identify a geographic radius of land impacted by a specific coal plant's pollution. Public health data, property values, and other relevant metrics can all be helpful in making this determination. For some smaller coal plants, the relevant energy justice community may be a single neighborhood. By contrast, for some larger plants the relevant energy justice community might encompass an entire zip code. Regardless, policymakers defining such communities will need to focus on the adverse impacts of coal pollution when defining the energy justice community to avoid claims of arbitrary or discriminatory standards.¹⁵⁰

Depending on the policy or program being implemented, energy justice communities may be defined by state legislatures, local governments, or administrative agencies. State and local governments must ensure that the energy justice communities themselves have significant input in crafting these definitions. Failure to ensure community input would contravene energy democracy principles and procedural justice, replicating the power dynamics that have historically disenfranchised these communities. Solutions must come from the communities themselves; proposing a one-size-fits-all policy would be antithetical to the goals of energy democracy.

It is important to note that proving direct causation that links harm to a specific coal plant will be impossible in most places because there are multiple industrial polluters that frequently harm environmental justice communities. However, where corrective justice is the guiding principle for policy implementation, proving causation is not necessary; where a coal plant is one of the polluters harming a community, that community should be considered an energy justice community. For the policies proposed below, the units of government implementing those policies must keep corrective justice as the central focus. This will ensure that policies intended to benefit affected communities actually do benefit those communities and address those communities' disproportionate burdens.

¹⁵⁰ Cf. James C. Bonbright et al., *PRINCIPLES OF PUBLIC UTILITY RATES* (2nd ed. 1988), PPUR CH20, 2005 WL 998355.

B. Renewable Portfolio Standards, Carveouts, and Multipliers

Once energy justice communities are clearly defined, policymakers can then begin adapting existing energy policy programs to drive targeted investment in those communities. Renewable portfolio standards (RPSs) are one type of policy that could be adapted in this way. RPSs have long been impactful state-level renewable energy policies, requiring utilities to integrate renewable resources into their energy mix and phase out generation from coal-fired power plants and other nonrenewable energy sources. However, state policymakers can also use “carveout” provisions in RPSs to drive investments in specific types of renewable energy development. Such provisions could similarly be adapted to drive the transition from coal plants to energy storage and community solar projects highlighted above.

RPSs require utilities to source a minimum percentage of their electricity from renewable sources by a specified deadline, representing one of the most important existing policy mechanisms for promoting renewable energy.¹⁵¹ The majority of states have an RPS mandating renewable energy generation at varying amounts.¹⁵² Some utilities own renewable energy facilities—such as solar arrays or wind farms—whereas others purchase the electricity to meet the state RPS.¹⁵³ Some states with an established RPS allow utilities to purchase renewable energy certificates (RECs), indicating that a specified amount of electricity was produced by a renewable source.¹⁵⁴ Of the states that utilize RECs, utilities can purchase the REC either bundled—where the utility also purchases the electricity that comes with the certificates—or unbundled, depending on the structure of the state regulatory regime.¹⁵⁵

Some states have added “carveout” provisions to their RPSs to incentivize investments in specific technologies or strategies.¹⁵⁶ Carveout provisions require utilities to procure a specified percentage of energy from a specified source, usually solar energy or distributed generation.¹⁵⁷ While the use of

¹⁵¹ Steven Ferrey, *Threading the Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power*, 7 TEX. J. OIL GAS & ENERGY L. 59, 62 (2012).

¹⁵² *Id.* at 62-63.

¹⁵³ *Id.* at 63.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* at 67.

¹⁵⁷ See Richard L. Revesz & Burcin Unel, *Managing the Future of the Electricity Grid: Distributed Generation and Net Metering*, 41 HARV. ENV'T L. REV. 43, 45 (2017) (more than half of the states with an RPS include a carveout provision as of 2017).

carveout provisions varies widely among states, some of these programs use multipliers to encourage certain types of renewable development.¹⁵⁸ In Texas, for example, non-wind energy installed after 2005 is provided with a 2x multiplier, meaning that non-wind renewable energy qualifies for twice as many RECs as wind energy per megawatt of energy produced.¹⁵⁹

Although existing RPSs reduce the amount of fossil fuel production—advancing the goals of environmental justice—they ultimately fall short under an energy democracy lens because they fail to transform ownership of energy systems through democratic control and lack corrective justice elements. However, RPS carveout provisions that require a portion of a state’s or utility’s power be sourced from distributed generation have initiated a restructuring of energy systems; under an energy justice lens, these provisions have been instrumental in integrating renewable energy into power systems. In fact, some existing RPS policies may even increase inequalities to the extent they allow the purchase and sale of unbundled RECs, which effectively allows utilities to “pay to pollute” in certain locations, often with racially and socioeconomically disproportionate effects.¹⁶⁰ To effectuate the policy goals laid out in this article, RPSs with carveouts and multipliers should be adopted in all states. These standards and related policies should also be designed to promote greater procedural influence from local community members in new energy development projects, with mechanisms to ensure consistent democratic participation. This will help ensure that environmental and energy injustice is not replicated or exacerbated by applying energy democracy principles and will incentivize community-owned distributed generation.

Ideally, states would first enact RPS carveout provisions that require utilities to phase-out coal-fired facilities, prioritizing the conversion of coal-fired power plants in energy justice communities. Multiplier provisions could then offer substantial additional benefits for renewable and energy storage development within energy justice communities. States without a distributed generation carveout would need to add one.

Specifically, carveouts should focus on communities that have suffered harm from former coal plants. Such a carveout can be structured either as a mandate that requires utilities to source a specified percentage of energy from distributed generation within energy justice communities, or to purchase

¹⁵⁸ Ferrey, *supra* note 151, at 67-68.

¹⁵⁹ *Id.* at 73-74.

¹⁶⁰ See Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENV’T L. REP. 10681, 10683 (2000) (examining the fairness of RECs in energy systems).

RECs from facilities within those communities.¹⁶¹ If a state decides to structure a carveout with RECs, that state should require that: 1) RECs be purchased as a bundle, with the utility purchasing both the REC and the electricity; and 2) RECs from distributed generation in energy justice communities are given at least a 2x multiplier relative to commercial or utility-scale generation to incentivize utilities to purchase RECs from these communities. For the greatest transformative potential, states could enact these two policies together. Leveraging RPSs in this way would advance corrective justice goals while also laying the groundwork for a more equal distribution of benefits under the just transition framework.

C. Public Benefit Funds

Merely incentivizing community-owned distributed generation in energy justice communities through new RPS multipliers and carveouts is inadequate if financial resources are not available to support the buildout of such renewable energy sources. States with established public benefit funds should utilize those funds to finance community-owned renewable energy in energy justice communities, and states that have not yet established public benefit funds should do so. However, states should exercise great care to ensure that community-owned renewable energy is not financed at the expense of energy efficiency measures, which may currently be supported by public benefit funds.

Public benefit funds are financed by levying system benefits charges onto all electricity customers within a state or within a utility's service area to help finance or subsidize renewable energy and energy efficiency projects.¹⁶² As of May 2016, 20 states and the District of Columbia had public benefit funds, ranging from a voluntary fund that has raised \$100,000 annually (Maine) to a fund seeking to raise \$5.3 billion by 2025 (New York).¹⁶³ Some of these funds target renewable energy, some target energy efficiency, and some target both.¹⁶⁴ Public benefit funds are typically supported by levying customers on a per kilowatt-hour basis, by monthly surcharges, or by

¹⁶¹ Cf. Ferrey, *supra* note 151.

¹⁶² Ferrey, *supra* note 151, at 70-71; Steven Ferrey, *Ring-Fencing the Power Envelope of History's Second Most Important Invention of All Time*, 40 WM. & MARY ENV'T L. & POL'Y REV. 1, 39 (2015).

¹⁶³ Edward A. Holt, *Public Benefits Funds, by State*, CLEAN ENERGY STATES ALL., [<https://perma.cc/A8SE-D4RH>].

¹⁶⁴ *Id.*

requiring investor-owned utilities to spend a specified amount on energy efficiency and renewable energy projects.¹⁶⁵

Public benefit funds can be an important mechanism for encouraging the development of distributed renewable energy generation in energy justice communities, if structured appropriately. Regardless of whether they finance renewable energy systems or energy efficiency upgrades, these funds are important for achieving energy justice objectives because either type of project reduces the energy burden on electricity customers.¹⁶⁶ However, of the two, distributed renewable energy better achieves energy democracy objectives. Energy efficiency programs alone do little to advance energy democracy objectives when a community's electricity generation is controlled by a centralized utility.¹⁶⁷ Public benefit funds that support community-owned renewable energy generation in energy justice communities, on the other hand, can further both energy justice and energy democracy objectives.

Public benefit funds should be specifically targeted to benefit energy justice communities. Currently, many public benefit funds already target low-income communities where residents have high energy burdens.¹⁶⁸ When the initial cost of installing a renewable energy system is prohibitive, public benefit funds should be used to cover up-front costs through grants or through low-interest or interest-free loans. Grants for community-owned renewable energy systems would immediately benefit the community by reducing energy costs and enabling profit from selling excess energy back to the grid. Alternatively, a revolving loan system may allow funds to benefit more communities in the same amount of time.¹⁶⁹ It is important to ensure that funds actually do benefit energy justice communities. Legal rules that require public benefit funds to only be used to finance renewable energy development owned by energy justice communities or its residents would ensure that such policy changes advance both corrective justice and energy democracy goals.

¹⁶⁵ *Id.*

¹⁶⁶ *Cf.* NAACP ENV'T AND CLIMATE JUST. PROGRAM, JUST ENERGY POLICIES: MODEL ENERGY POLICIES GUIDE 29 [<https://perma.cc/RC27-FK7Y>].

¹⁶⁷ *Id.* at 14.

¹⁶⁸ *See* Holt, *supra* note 163.

¹⁶⁹ *Cf. Revolving Loan Funds*, OFFICE ENERGY EFFICIENCY & RENEWABLE ENERGY, U.S. DEP'T ENERGY, <https://www.energy.gov/eere/slsc/revolving-loan-funds> [<https://perma.cc/F3HN-7DMB>].

Policymakers adopting such reforms should also be careful to preserve existing energy efficiency funding for energy justice communities. This is crucial from an energy justice standpoint because increasing energy efficiency in homes can significantly reduce occupants' energy burdens.¹⁷⁰ Analyzing these funds through both energy justice and energy democracy lenses demonstrates the importance of carefully designing such funds, as achieving both objectives requires careful planning and consideration. Which projects qualify for public benefit fund financing, which communities are targeted, and whether funds are distributed as grants or as loans are all considerations with important implications for achieving energy justice and energy democracy objectives.

D. Property Assessed Clean Energy Programs

Another policy mechanism that can be used to support a just transition in energy justice communities is Property Assessed Clean Energy (PACE) programs. PACE programs fall into two categories: Residential PACE (R-PACE) and Commercial PACE (C-PACE). State legislatures should leverage these programs to advance the goals highlighted above by enacting PACE-enabling statutes that authorize municipalities to implement PACE programs in energy justice communities. Local governments should then use C-PACE programs to finance the conversion of coal-fired power plants into energy storage facilities. R-PACE programs should be used to promote the buildout of distributed renewable energy generation in energy justice communities where most homes are owner-occupied.

PACE programs provide property owners a financing mechanism for their initial investment in a renewable energy or energy efficiency system.¹⁷¹ These programs typically operate through special voluntary assessments attached to land—rather than the owner—and are repaid over a set period of time, such as 20 years.¹⁷² The PACE assessment then remains with the

¹⁷⁰ Cf. MODEL ENERGY POLICY GUIDE, *supra* note 166 at 29.

¹⁷¹ *Property Assessed Clean Energy Programs*, OFFICE ENERGY EFFICIENCY & RENEWABLE ENERGY, U.S. DEP'T ENERGY, <https://www.energy.gov/eere/slsc/property-assessed-clean-energy-programs> [<https://perma.cc/SZ2F-6MV4>].

¹⁷² A special assessment is a recording of a liability to the local government in exchange for an investment that benefits the property owner. In the case of C-PACE, a property improvement usually involves energy enhancements. A lien on the property secures the assessment and obligates the property owner to repay the investment in the improvement. C-PACE assessments are voluntary and typically viewed as special tax assessments because they are separate from actual real property taxes

property—even if the property is transferred to another owner—and is repaid in the same manner as property taxes.¹⁷³ PACE-enabling statutes outline the administrative roles of local governments, which are empowered to authorize PACE programs in their jurisdictions.¹⁷⁴ It is important that both the state enabling statute and the local authorization of PACE programs provide proper consideration to procedural justice concerns.

The advantages of PACE financing programs include the elimination of a large down payment, frequently a barrier to the installation of distributed renewable energy, and lower interest rates.¹⁷⁵ However, PACE is only advantageous to property owners—not renters—and can require a lot of administrative work, which may be prohibitive for some communities.¹⁷⁶ Perhaps because of these limitations, PACE is not widely used for residential properties, with only 17 active programs existing in three states.¹⁷⁷ C-PACE is more widely used, with programs existing in over 35 states.¹⁷⁸

R-PACE programs will frequently be of little utility in advancing energy justice or energy democracy objectives. Black Americans are much less likely to own the homes they live in; more than 50% of Black Americans live in rented homes.¹⁷⁹ Similarly, one of the largest barriers to distributed generation in low-income communities is the renter/homeowner divide; homeowners are less likely to cover the initial cost of installing a renewable energy system if the tenant, rather than the homeowner, receives the benefit.¹⁸⁰ Conversely, if the benefit accrues to the homeowner, distributed

and are voluntary rather than mandated—they do not apply to all properties in a jurisdiction.

Id.; GREG LEVENTIS & LISA SCHWARTZ, COMMERCIAL PACE FINANCING AND THE SPECIAL ASSESSMENT PROCESS: UNDERSTANDING ROLES AND MANAGING RISKS FOR LOCAL GOVERNMENTS 2, fn. 3 (2019).

¹⁷³ *Property Assessed Clean Energy Programs*, *supra* note 171.

¹⁷⁴ LEVENTIS & SCHWARTZ, *supra* note 172, at 2, 5. In some states, local governments administer all components of a PACE program, while other states delegate certain administrative functions to third parties. Delegation of administrative functions can greatly reduce the labor commitment required of local governments. *Id.* at 10.

¹⁷⁵ *Id.*

¹⁷⁶ *Id.* An analysis conducted by the Commercial PACE Working Group found that administrative labor commitment was the primary concern of municipalities that were hesitant to create PACE programs. *Id.* at 2.

¹⁷⁷ *Property Assessed Clean Energy Programs*, *supra* note 171.

¹⁷⁸ *Id.*

¹⁷⁹ CONG. BLACK CAUCUS FOUND., INC., AFRICAN AMERICANS AND CLIMATE CHANGE: AN UNEQUAL BURDEN 21 (2004) [<https://perma.cc/4HKX-5QJ5>].

¹⁸⁰ Deborah Behles, *From Dirty to Green: Increasing Energy Efficiency and Renewable Energy in Environmental Justice Communities*, 58 VILL. L. REV. 25, 60 (2013).

renewable energy systems do little to advance the corrective justice concerns of tenants.¹⁸¹ R-PACE programs also would not increase electricity consumers' control over the production of electricity because decisions would be made by landlords.

However, R-PACE programs illustrate the importance of a community-by-community approach. Where most houses are owner-occupied, R-PACE programs may be an important part of a comprehensive strategy for achieving a just transition. Local governments should analyze whether the energy justice communities within their jurisdiction consist of predominantly owner-occupied or renter-occupied housing. Where most homes are renter-occupied, local governments should refrain from authorizing R-PACE programs because authorization would fail to advance energy justice and energy democracy. While replacing fossil fuel energy generation with renewable energy systems addresses the disproportionate distribution of environmental harms, R-PACE programs may not equitably distribute benefits due to the renter/homeowner distinction.

On the other hand, C-PACE programs can be used to facilitate the conversion of coal plants to energy storage facilities and are likely more beneficial in achieving the policy objectives set forth in this article. C-PACE could alleviate some expenditures of this conversion process by providing the financial investment required to install energy storage technology. Installation of large energy storage facilities would further energy justice and energy democracy goals by providing infrastructure that supports the development of community-owned renewable energy generation and addresses the intermittency problem. However, if the funds used to cover the costs of installing energy storage systems are diverted from a source that would otherwise support the development of community-owned renewable energy, utilizing C-PACE could have detrimental effects from an energy democracy perspective. It is important to scrutinize C-PACE funding sources to ensure that states and utilities do not pursue utility-owned energy storage at the expense of community-owned renewable energy generation.

The two categories of PACE programs have different implications for achieving policy goals. While R-PACE programs offer limited potential for achieving justice and equity objectives, C-PACE programs have potential to be an important part of the just transition.

¹⁸¹ *Id.* at 63.

E. Community Benefits Agreements

Community benefits agreements (“CBAs”) are another mechanism with potential to make the renewable energy transition more equitable for energy justice communities. Widespread implementation of CBAs, which require involving all stakeholders in renewable energy development agreements, could ensure that the distributive and procedural injustices found in traditional energy systems are not replicated. Particularly for energy justice communities, states and municipalities should mandate CBAs for energy developments. This would entail replacing fossil-fuel systems with renewable generation and energy storage developments to ensure that environmental, economic, and employment related benefits are captured within those communities.

CBAs are contracts negotiated between prospective developers and a coalition of community representatives that ensure the inclusion of communities most impacted in the planning of the project and retention of its economic benefits.¹⁸² In a typical CBA, developers are given assurances of community support for a specific proposal in return for inclusion of provisions that provide immediate and long-term benefits to the community.¹⁸³ For example, developers can include “local hire” and job training programs; minority hiring minimums; inclusion of affordable housing in the development; funding for community services and programs; and environmental remediation guarantees.¹⁸⁴ Essentially, CBAs convert what were once “handshake” promises developers made to affected communities, into provisions that are legally enforceable.¹⁸⁵ CBAs have had relative success in increasing democratic participation and ensuring sustainable development, with potential to be a transformative tool in shaping the distribution of benefits from technological innovation.¹⁸⁶

¹⁸² Amy Levine & Patricia E. Salkin, *Understanding Community Benefit Agreements: Equitable Development, Social Justice and Other Considerations for Developers, Municipalities and Community Organizations*, 26 *UCLA J. ENV'T L. & POL'Y* 291 (2008).

¹⁸³ *Id.*

¹⁸⁴ JULIAN GROSS, *COMMUNITY BENEFITS AGREEMENTS: MAKING DEVELOPMENT PROJECTS ACCOUNTABLE* 9-10 (2005).

¹⁸⁵ Julian Gross, *Community Benefits Agreements: Definitions, Values, and Legal Enforceability*, 17 *J. AFFORDABLE HOUS. & CMTY. Dev. L.* 31 (2007).

¹⁸⁶ *See Policy & Tools: Community Benefits Agreements and Policies in Effect*, P'SHIP FOR WORKING FAMS., <https://www.forworkingfamilies.org/page/policy-tools-community-benefits-agreements-and-policies-effect> [<https://perma.cc/3ECX-XW26>].

Because of their inherent flexibility, CBAs could be tailored to provide specific guarantees related to environmental justice, economic benefits, and employment for energy justice communities.¹⁸⁷ Depending on their priorities, communities where energy storage and large-scale renewable energy projects are proposed could use CBAs. CBAs help communities negotiate for procedural fairness in development and provide for compliance with the contract's terms by establishing or allocating money to community programs thereafter.¹⁸⁸ This would be especially true if CBAs were incorporated into renewable energy projects subsidized by public benefits funds and C-PACE programs within energy justice communities. CBAs within development agreements for projects that require an employment representative of the host community can redress distributive injustice by ensuring economic benefits stay within those communities. Similarly, allocating funding for community services and programs from the project's revenue would advance corrective justice goals and could have enduring impacts on historically harmed communities. For example, CBA provisions that publicize confidential data of a proposed development could directly address common procedural injustices.

Alternatively, using community benefits agreements in renewable energy developments has drawbacks when considered as a mechanism to foster a just transition. As proposed energy-related development grows in scale, the potential for positive change grows through the inclusion of CBAs within the development agreement. However, the largest generation and storage facilities will likely be centrally owned and operated, which fails to promote community ownership of energy systems and goes against the principles of energy democracy. CBAs negotiated without the involvement of all stakeholders may exacerbate injustice. When populations within communities are unable to participate in negotiations—because they lack the necessary means to organize successfully, lack motivation due to historic distrust, or otherwise—decisions will likely still replicate the inequalities of traditional energy systems. Additionally, communities have encountered issues enforcing the provisions of CBAs because of poor drafting or lost support for upholding the CBAs terms when ownership is transferred during development.¹⁸⁹

However, carefully crafted CBAs that have buy-ins from all stakeholders and developers could play an important role in achieving greater equity in

¹⁸⁷ Levine & Salkin, *supra* note 182.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.*

energy systems during the transition period. While states or municipalities would be free to determine whether all energy-related development or only developments meeting a monetary threshold would be required to engage in negotiations with affected communities before projects could be approved, major projects should be included as well. Major projects include the construction of utility-scale renewable generation and the conversion of former coal-plants into energy storage facilities. By doing so, developers will have an expectation that community support for projects will rely on effective compromise with communities that have historically been harmed by energy related development.

With a White House that seems committed to promoting corrective justice and equitable transitions in energy justice communities, there has arguably never been a better time for federal, state, and local governments to pursue these policy goals. In January 2021, newly inaugurated President Biden signed Executive Order 14,008, requiring “the identification and delivery of Federal resources to revitalize the economies of . . . power plant communities”, and establishing a goal that “40 percent of the overall benefits [of certain Federal investments] flow to disadvantaged communities,” among other things.¹⁹⁰ Focus areas for these investments include clean energy, energy efficiency, training and workforce development, and remediation and reduction of legacy pollution.¹⁹¹ Enacting the proposed policies would not only advance environmental justice, energy justice, climate justice, and energy democracy, but would also align with the policy goals of President Biden’s Executive Order, potentially attracting significant federal investment to local communities. Including CBAs in projects that utilize this federal funding could help ensure that energy justice communities see the benefits of these programs.

CONCLUSION

Coal-fired power plants that have long contributed to racial and environmental injustices should be replaced with cleaner and more sustainable forms of energy development. These forms of energy development can be used to promote corrective justice and economic vitality within low-income and communities of color. Fortunately, there are many useful policy mechanisms for facilitating this transition, which environmental justice advocates have recommended for years. The environmental justice movement arose from the racial justice movement and has a long, rich history

¹⁹⁰ Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7628, 7632 (Feb. 1, 2021) [alteration added].

¹⁹¹ *Id.* at 7632.

in this country. The racial justice movement, which has once again forced a national reckoning with the abysmal history of race relations in the U.S. following the public killing of George Floyd in the summer of 2020, compels the nation to intensify its focus on environmental and energy injustices.

Systemic racism has long exhibited itself in the disproportionate distribution of polluting energy facilities, including coal-fired power plants, just as clearly as it exhibits itself through the disproportionately high rate of police killings of Black Americans. Because racial justice, environmental justice, and energy justice are interconnected, truly achieving justice and equity in the U.S. will require a whole-systems approach to these problems.

Analyzing coal-fired power through the lenses of environmental justice, energy justice, climate justice, and energy democracy reveals potential strategies to better address these problems. Policies to incentivize a just transition in coal power host communities must prioritize community input and channel targeted benefits to those who have suffered the most harm from energy injustices. Additionally, care must be taken to ensure that existing inequalities are not exacerbated or replicated in the transition. Merely shifting from fossil-fuel energy generation to renewable energy is inadequate, as that strategy can exacerbate and replicate existing inequalities if it is not approached in a way that is mindful of justice and equity considerations. Transitioning from centralized energy systems to distributed generation puts the power back into the hands of people who are affected by these decisions. Fully decommissioning coal-fired power plants—especially those located in low-income and communities of color—must be prioritized.

Also, utility control over energy systems should be reexamined under the framework of this article. Policies such as RPS carveouts and multiplier provisions that incentivize community ownership, public benefit funds, PACE programs that make financing available for energy justice communities, and community benefits agreements within renewable energy development proposals should be used to address the inequalities rampant in traditional energy systems. Intently crafting and advancing such policies would bring the nation closer to a truly sustainable and equitable energy system.

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THE WILD AND FREE-ROAMING HORSES AND BURROS ACT OF 1971: CUSTODIANS OF THE HORSES AND BURROS OF NORTH AMERICA OR CAUTIONOARY TALE OF GROSS GOVERNMENTAL MISMANAGEMENT?

*Chloe Cummings**

INTRODUCTION

In early August 2018, a mother and foal made their way across the public lands of Wyoming.¹ But this was not a routine day of grazing and feeding for the pair; a helicopter would soon come into view just over the horizon and begin a roundup. Not all the horses could keep up with the frantic pace of a roundup, namely the foal born just a few days prior. The young foal struggled to keep pace with its herd and eventually stopped in the middle of the range, its body refusing to go further. His mother, also exhausted, returned to tend to her offspring. After a struggle, the foal and mother were roped and brought to a Bureau of Land Management (BLM) holding pen. However, the foal ultimately succumbed to the stress of the roundup and died the next day in its pen.² This tragic story of fight or flight is not new for the BLM – the foal was one of four that died within the first six days of the Wyoming roundup.³

Such events have prompted a nationwide debate about the BLM, the agency tasked with carrying out the Free Roaming Wild Horses and Burros Act. Activists such as Simone Netherlands, the founder and President of the horse advocacy organization Respect4Horses, claims that the BLM is neglecting its responsibilities under the law. Netherlands states the BLM is tasked with protecting horses, “and in fact, they are doing the exact opposite – they are exterminating them.”⁴ Yet the Bureau sees its approach as necessary to maintain herd health and asserts that there are more wild horses

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¹*Harrowing New Video Shows Ongoing Abuse at BLM Wild Horse Roundups*, AM. WILD HORSE CAMPAIGN (Aug. 13, 2018), <https://americanwildhorsecampaign.org/media/harrowing-new-videos-show-ongoing-abuse-blm-wild-horse-roundups> [https://perma.cc/J5TF-93BL].

² *Id.*

³ *Id.*

⁴ Kim Segal & John Zarrella, *Wild Horse Roundup Triggers Controversy*, CNN (Jan. 3, 2011), <http://edition.cnn.com/2011/US/01/03/wild.horses.government.roundup/> [https://perma.cc/5E7S-56V3].

and burros today than at the roundup program's inception in 1971.⁵ At the heart of this ideological deadlock is the Wild and Free Roaming Horses and Burros Act, a law originally intended to provide stewardship and protection to wild horses and burros living on public rangelands. To fully understand the conflict between animal advocates and legislators, it is necessary to delve into the Act itself, examining not only its origins, but the Bureau's administration of the Act as well.

The purpose of this article is to provide a background on recent events surrounding a 2019 proposal for wild horse management that explicitly prohibits the sale of healthy wild horses and burros to slaughter.⁶ However, the 2019 proposal also advocates for roundups in densely populated areas that cannot support populations of wild horses and burros.⁷

Part I of this article explores the tradeoffs and consequences of wild horse management programs by examining the Wild and Free Roaming Horses and Burros Act of 1971. Part II of this article discusses the background and purpose of the Act, Part III discusses the need to control population growth in order to combat overgrazing, and Part IV discusses fertility control solutions to the problem of overpopulation. Part V discusses the overview and conclusion of topics discussed in this paper.

I. THE WILD AND FREE-ROAMING HORSES AND BURROS ACT

American culture is peppered with references to the famed American frontier: the wild west. The "wild west" has become central to the depiction and expression of American culture since the 19th century, and wild horses are quintessential to that famed western landscape. Wild horses have been a staple in American culture since their introduction to North America in 1519.⁸ However, nearly 400 years after horses were introduced, their population in the United States began to decline.⁹ In fact, free-roaming horses and burros were considered wildlife fair for public taking until the 1960s.¹⁰ Due to a lack

⁵ *Id.*

⁶ Scott Sonner, *Some Horse Advocates Buck at New Plan to Save Wild Mustangs*, AP NEWS (Apr. 15, 2019), <https://apnews.com/article/48b7fdb07a334ffcaa006b071ca09916> [<https://perma.cc/6L72-NF9Q>].

⁷ *Id.*

⁸ Jay Kirkpatrick & Patricia Fazio, *Wild Horses as Native North American Wildlife*, ANIMAL WELFARE INST., <https://awionline.org/content/wild-horses-native-north-american-wildlife> [<https://perma.cc/LMN7-36X9>].

⁹ Emily R. Kilby, *The Demographics of the U.S. Equine Population*, in 4 STATE OF THE ANIMALS 175, 176 (Deborah J. Salem ed., 2007) [<https://perma.cc/8ALZ-VHNV>].

¹⁰ *Id.*

of law governing wild horse management, methods of horse capture caught the attention of wildlife activists across the nation. In response, President Richard Nixon signed into law the Wild and Free Roaming Horses and Burros Act (“WFRHBA” or “Act”) of 1971.¹¹ The Act remains the primary legislative authority on the management of wild horses and burros.

A. Purpose, Delegated Authority, and Procedures

In 1971, Congress determined that wild and free roaming horses and burros were “living symbols of the historic and pioneer spirit of the west” deserving of protection in the form of federal legislation—the WFRHBA.¹² The primary purpose of the WFRHBA is to “provide for the necessary management, protection, and control of wild horses and burros on public lands.”¹³

The Secretaries of the Interior and Agriculture have the authority to jointly administer and enforce the WFRHBA.¹⁴ The Secretary of the Interior has jurisdiction over public lands administered through the Bureau of Land Management (BLM), while the Secretary of Agriculture retains jurisdiction over public lands administered through the Forest Service.¹⁵ The Secretary of the Interior (“Secretary”) has broad administrative power in carrying out the purpose of the WFRHBA.¹⁶ In protecting and managing wild and free-roaming horses and burros, the Secretary may designate ranges as sanctuaries for their protection.¹⁷ Concerning management, the Secretary is charged with maintaining a “thriving natural ecological balance” on public lands.¹⁸ In achieving this balance, the Secretary must consult with biology and ecology scientists, some of whom are independent from Federal and State Agencies.¹⁹ This finding is crucial in determining the appropriate management level of

¹¹ Pub. L. No. 92-195, 85 Stat. 649 (1971) (codified as amended at 16 U.S.C. §§ 1331-1340) [hereinafter “WFRHBA” or “the Act”]. See *Wild Horses and Burros Program History*, BUREAU LAND MGMT., <https://www.blm.gov/programs/wild-horse-and-burro/about-the-program/program-history> [<https://perma.cc/S5CY-YCG4>].

¹² *Range Issues and Problems with the Wild Horses and Burros Act and its Implementation: Field Hearing Before the Subcomm. on Nat'l Parks & Pub. Land of the H. Comm. on Res.*, 105th Cong. 7 (1998) (statement of Hon. James Hansen, Chairman, S. Comm. on Nat'l Parks & Pub. Land).

¹³ Bureau of Land Mgmt., *supra* note 11.

¹⁴ 16 U.S.C. § 1333.

¹⁵ 16 U.S.C. § 1332(a).

¹⁶ 16 U.S.C. § 1333.

¹⁷ 16 U.S.C. § 1333(a).

¹⁸ *Id.*

¹⁹ *Id.*

animals on public lands.²⁰ Moreover, these scientific studies must be carried out in accordance and consultation with the wildlife agency of the state in which the wild horses and burros are located.²¹

In addition to consulting with scientists, the Secretary may also consult members of a Joint Advisory Board established in § 1337 of the WFRHBA.²² This Board is appointed by the Secretary of Interior and consists of not more than nine members, who are tasked with advising the Secretary on “any matter relating to wild free-roaming horses and burros and their management and protection.”²³ Members of the Board may not be employed by the Federal or State governments and must have “special knowledge about protection of horses and burros, management of wildlife, animal husbandry, or natural resources management.”²⁴ Board members also do not receive compensation for their position except for travel and expenditures connected with service to the position.²⁵

The Act affords comprehensive consultation to the Secretary because the scientific studies are intended to aid them in making informed decisions regarding population control. For example, the Secretary can order old, sick, or lame animals to be humanely “destroyed” or removed when they determine that the environment can no longer support the animal population.²⁶ Humanely removing these animals is possible under 16 U.S.C. §1333. The Secretary has authority to remove all excess animals in order to achieve appropriate management levels to “restore a thriving natural ecological balance to the range, and protect the range from deterioration associated with overpopulation.”²⁷ The Secretary humanely captures and removes additional numbers of horses and burros that do not fall into the categories of either old, sick, or lame and places those horses for private maintenance and care.²⁸ However, critics of the practice question whether removed animals are actually treated humanely.

²⁰ *Id.*

²¹ 16 U.S.C. § 1333(b)(1).

²² 16 U.S.C. § 1337.

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ 16 U.S.C. § 1333(b)(2)(A).

²⁷ 16 U.S.C. § 1333(b)(2)(iv).

²⁸ 16 U.S.C. § 1333(b)(2)(B).

B. Controversial WFRHBA Provisions

One of the most widely contested facets of the WFRHBA is the Secretary of Interior's determinations regarding animal populations. The 1978 amendments to the WFRHBA require the BLM to "determine appropriate management levels for wild free-roaming horses and burros on [designated] public lands."²⁹ However, the WFRHBA is a small portion of BLM's total responsibilities—the Bureau manages more than 245 million acres of America's lands and more than 700 million acres of subsurface mineral estates.³⁰ In managing these public lands, the BLM is responsible for energy development, livestock grazing, mining, timber harvesting, and conserving natural resources.³¹

Despite the BLM's enormous management load, the WFRHBA tasks the BLM with stewardship of horses on public lands. The WFRHBA "makes BLM responsible for deciding how appropriate management levels (AMLs) of free-ranging horses and burros should be achieved"³² The BLM has interpreted the AML determination as capping the population of wild horses to a number that is supported by the environment in the affected area.³³ To achieve these AMLs, the Bureau has used tactics such as removal of animals from the range, destruction of animals, and sterilization.³⁴

However, until 2008, the BLM had not put forth formal guidance as to how AMLs should be established.³⁵ In response, the Bureau issued the Wild Horses and Burros Management Handbook.³⁶ This handbook detailed the BLM's recommended methods for establishing and reviewing AMLs.³⁷

²⁹ NAT'L RSCH. COUNS. OF THE NAT'L ACADS., USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD 223 (2013) (quoting the Wild Free-Roaming Horses and Burros Act of 197, Pub. L. No. 92-195, 85 Stat. 649 (1971) (codified as amended at 16 U.S.C. §§ 1331-1340) (amended by the Public Rangelands Improvement Act of 1978, Pub. L. No. 95-514, 92 Stat. 1083 (1978) (codified at 43 U.S.C. § 1901))) [<https://perma.cc/4LW4-ZUAG>].

³⁰ *National History*, BUREAU OF LAND MGMT., <https://www.blm.gov/about/history/timeline> [<https://perma.cc/BVR8-NG6P>].

³¹ *Id.*

³² NAT'L RSCH. COUNS. OF THE NAT'L ACADS., *supra* note 29, at 223.

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.* at 224.

³⁶ BUREAU OF LAND MGMT., U.S. DEP'T OF THE INTERIOR, BLM HANDBOOK NO. H-4700-1, WILD HORSES AND BURROS MANAGEMENT HANDBOOK (Jun. 7, 2010) [<https://perma.cc/WD93-XXAZ>].

³⁷ *Id.*

AMLs are defined in the handbook as:

decision[s] [that] determine the number of WH&B [wild horses and burros] to be managed within an HMA [herd management area] or complex of HMAs. AML is expressed as a population range with an upper and lower limit. The AML upper limit is the number of WH&B which results in a TNEB [thriving natural ecological balance] and avoids a deterioration of the range. The AML lower limit is normally set at a number that allows the population to grow to the upper limit over a 4-5-year period, without any interim gathers to remove excess wild horses and burros.³⁸

Additionally, the AML may be adjusted through site-specific environmental analysis as required by the National Environmental Policy Act of 1970 (NEPA).³⁹ These adjustments represent a multi-tiered process in determining AMLs.⁴⁰ Tier one assesses habitat factors, tier two evaluates the amount of sustainable forage, and tier three addresses concerns with genetic populations.⁴¹

Assessing these factors requires a thorough understanding of ecosystems and rangeland dynamics. Agencies, in turn, must support their determinations and conclusions with scientific evidence. However, according to the National Academy of Science (NAS), “[h]ow AMLs are established, monitored, and adjusted is not transparent to stakeholders, supported by scientific information, or amenable to adaptation with new information”⁴² For example, over the past two decades scientists have developed techniques to assess ecosystem dynamics that utilize a wide variety of models capable of simulating environmental responses to both climate change and the presence of herbivores such as horses.⁴³ However, the Bureau does not use these techniques in making AML determinations that respond to vegetation and ecosystem concerns.⁴⁴ In fact, the Committee could “not identify a science-based rationale used by the BLM to allocate forage and habitat resources to various uses within the constraints of protecting rangeland health and listed species”⁴⁵

³⁸ *Id.* at 67.

³⁹ *Id.* at 10.

⁴⁰ *Id.* at 67.

⁴¹ *Id.*

⁴² NAT’L RSCH. COUNS. OF THE NAT’L ACADS., USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD 12 (2013).

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.* at 303.

This lack of scientific backing causes a negative public perception of the BLM. Though science would not alter every negative perception of the BLM, the Bureau's reputation would likely improve if it used science to "explain and defend its management actions."⁴⁶ Additionally, the BLM should consider making its scientific studies available to the public and allowing public participation in decision-making to increase the public's confidence in and perception of the Bureau.⁴⁷

1. Techniques to Achieve AML: The Fight or Flight Response

In addition to considering the appropriate management levels of horses, the Act also contemplates how to carry out these objectives. The Act mandates that animals should be "destroyed in the most humane manner possible" or "humanely captured."⁴⁸ However, the Act itself allows the Secretary to use "motor vehicles, fixed-winged aircraft, or helicopters, or contract for such use, in furtherance of the management of the National Park System" in the transportation of captured animals.⁴⁹ Many activists argue that the use of such heavy machinery in the attempt to corral feral animals is inhumane due in part to the fact that horses have survived as prey animals for thousands of years.⁵⁰

The prey instinct inherent in wild horses has allowed them to survive and thrive in environments in which natural predators include cougars, wolves, and bears.⁵¹ Thus, due to their natural instinct as prey animals, horses easily "spook."⁵² "Spooking" and "shying", refer to a flight response.⁵³ A horse's flight response can be easily triggered; anything that moves suddenly or emits an unexpected or unnatural noise can cause the animal to bolt.⁵⁴ Activists argue that this uncontrolled flight response can lead to catastrophic results during helicopter roundups. As recently as 2018, spooked horses have been

⁴⁶ *Id.* at 304.

⁴⁷ *Id.* at 305.

⁴⁸ 16 U.S.C. § 1333(b)(2)(A)-(B).

⁴⁹ 16 U.S.C. § 1338a.

⁵⁰ Carey A. Williams, Ph.D., *The Basics of Equine Behavior*, RUTGERS N.J. AGRIC. EXPERIMENT STATION (Jul. 22, 2004), https://esc.rutgers.edu/fact_sheet/the-basics-of-equine-behavior/ [<https://perma.cc/9MPR-AN9Q>].

⁵¹ *Id.*

⁵² U.S. FOREST SERV. TECH. & DEV. PROGRAM, U.S. DEP'T OF AGRIC., 0723-2816-MTDC, EQUESTRIAN DESIGN GUIDEBOOK FOR TRAILS, TRAILHEADS, AND CAMPGROUNDS (2007) [<https://perma.cc/VN5B-6WNC>].

⁵³ *Id.*

⁵⁴ *Id.*

euthanized due to injuries sustained during aerial roundups.⁵⁵

In addition to being touted as an inhumane practice, helicopter roundups and removals may be inadvertently propelling population growth. In 2013, the National Academies of Science reported that the continued removal of horses actually “facilitates high population growth.”⁵⁶ Roundups hold population levels below the density needed to deplete resources to the point of slowing reproduction rates.⁵⁷ In essence, if the population increased to the point that less food was available for all horses, fewer mares would become pregnant, horses would compete for food and resources, and the population would decrease as a result.⁵⁸ However, BLM roundups remove animals before the population reaches the level needed to spur this naturally selective decrease in population density.

2. Population Control and the Sterilization Problem

Another oft-cited controversial consequence of WFRHBA’s AML provision is the BLM’s attempt to control the fertility of wild horses and burros. In 2018, as a result of an environmental assessment in Warm Springs, Colorado, the BLM proposed to surgically spay female horses present on public lands by removing their ovaries.⁵⁹ Some activists claimed that the proposed sterilization plan opposed the Act’s original purpose of maintaining “healthy herds on healthy rangelands.”⁶⁰ Others have argued that this procedure is barbaric and, in addition to being painful, presents a high risk of complications.⁶¹

⁵⁵ *Four Wild Horses Euthanized After Being Spooked in Helicopter Round-Up*, AM. WILD HORSE CAMP. (Aug. 13, 2018), <https://americanwildhorsecampaign.org/media/four-wild-horses-are-euthanized-after-they-were-spooked-helicopter-was-trying-round-them-and> [<https://perma.cc/R2LX-V5KP>].

⁵⁶ NAT’L RSCH. COUNS. OF THE NAT’L ACADS., *USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD* 5 (2013)

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ E-mail from Brieanah Schwartz, Gov’t Rels. & Pol’y Couns., Am. Wild Horse Campaign, to Lisa Grant, Bureau of Land Mgmt., Burn Dist. Off. (Jul. 30, 2018) [<https://perma.cc/FZ46-388F>].

⁶⁰ *Wild Horse Advocates Pan Sterilization Plan*, AM. WILD HORSE CAMP., <https://americanwildhorsecampaign.org/media/wild-horse-advocates-pan-sterilization-plan> [<https://perma.cc/5PEX-4988>].

⁶¹ Kristen Kovatch, *CSU Withdraws Partnership from BLM Ovariectomy Plan*, HORSE NATION (Aug. 13, 2018), <http://www.horsenation.com/2018/08/13/csu-withdraws-partnership-from-blm-ovariectomy-plan/> [<https://perma.cc/XK3B-PSMR>].

Veterinarians perform ovariectomies by inserting their arm into the mare's abdominal cavity through an incision in the vaginal wall.⁶² The veterinarian then twists, severs, and forcibly removes the ovaries from the animal.⁶³ Such an invasive procedure also comes with inherent risks to the animal's health and can result in life-threatening complications.⁶⁴

In addition to complications, ovariectomies can cause irreversible social instability to wild herds.⁶⁵ Ovariectomized horses bodies' cease producing the hormone progesterone.⁶⁶ A lack of progesterone causes mares to perpetually present as if they are in heat and ready for breeding.⁶⁷ In herd social dynamics, the stallion's job is to impregnate as many mares as possible when they are available for breeding within his herd.⁶⁸ The inability to achieve this biological objective could throw the herd into a state of imbalance, resulting in the potential for increased breeding injuries for both mare and stallion.⁶⁹ Further, there is a high potential for post-operative mares to be ostracized by their herd entirely.⁷⁰ Thus, although sterilization would solve the problem of uncontrolled population growth, it is met not only with great opposition by animal rights activists, but also with objectively steep costs to the natural way of life for wild horses. In fact, the National Academy of Science declared the procedure was "inadvisable due to health risks."⁷¹

In response to the BLM's 2018 ovariectomy proposal, the Cloud Fund, American Wild Horse Campaign, Animal Welfare Institute, and Carol Walker--wildlife photographer and Director of Field Documentation for Wild Horse--filed a complaint in the District Court of Portland, Oregon.⁷² The complaint focused on the BLM's stringent limitations on public viewings of ovariectomies.⁷³ Specifically, the complaint alleged that the BLM's non-viewing policy infringed on the First Amendment rights of persons

⁶² *Mare Ovariectomy Experiments*, AM. WILD HORSE CAMPAIGN, <https://americanwildhorsecampaign.org/mare-ovariectomy-experiments> [<https://perma.cc/4XME-E95J>].

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ E-mail from Brieanah Schwartz to Lisa Grant, *supra* note 59, at 15-16.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Mare Ovariectomy Experiments*, *supra* note 62.

⁷² Complaint at 4, Kathrens et al v. Zinke et al, No. 3:18-CV-01691 (D. Or. Sept. 21, 2018) [<https://perma.cc/G3Q4-GUED>].

⁷³ *Id.* at 3.

conducting information for “important newsgathering and information dissemination functions.”⁷⁴

On November 2, 2018, a judge of the U.S. District Court for the District of Oregon issued a preliminary injunction on the First Amendment Claims.⁷⁵ This action halted the experiments, eventually leading the BLM to discontinue their efforts in implementing the program.⁷⁶ However, this was not the Bureau’s first attempt at implementing an ovariectomy birth control program; the BLM attempted to implement the same program in 2016.⁷⁷ Ultimately, the BLM cancelled the program due to backlash. The decision to discontinue the program centered around the fact that the plaintiff’s success in litigation would cause BLM staff and research partners’ risk by allowing others to view the procedure and to confine them to a small space.⁷⁸

The BLM’s perceived obsession with such highly controversial procedures has influenced perception of the BLM’s intentions in managing wild horses. However, following recent BLM behavior, it is necessary to ask whether the agency actions are merely perceived to be “bad acts” or are “bad acts in actuality.” Following the failed 2016 program, activists have accused the BLM of selling ten female horses to a pro-slaughter group, Protect the Harvest, to spay the horses as a result of the original program being cancelled.⁷⁹ Activists also call for the BLM to cease using the terms “spaying” or “neutering” in referring to ovariectomy.⁸⁰ Critics claim that the BLM uses these terms in order to normalize the procedure to the public because most people are familiar with the noninvasive spay and neutering procedures performed on domesticated dogs and cats.⁸¹ Activist groups

⁷⁴ *Id.* at 5.

⁷⁵ *Spay Experiments: What Our Preliminary Injunction Means*, AM. WILD HORSE CAMPAIGN (Nov. 5, 2018), <https://americanwildhorsecampaign.org/media/spay-experiments-what-our-preliminary-injunction-means> [<https://perma.cc/H2TY-6TQE>].

⁷⁶ *Id.*

⁷⁷ Yesenia Robles, *BLM Pulls Plans to Sterilize Wild Horses in Oregon*, DENVER POST (Sept. 9, 2016) <https://www.denverpost.com/2016/09/09/blm-horses-sterilization-plan-stopped/> [<https://perma.cc/3PB2-D27P>].

⁷⁸ Steven Dubois, *BLM Drops Plan to Surgically Sterilize Wild Horses*, AM. WILD HORSE CAMPAIGN (Sept. 9, 2016), <https://americanwildhorsecampaign.org/media/blm-drops-plan-surgically-sterilize-wild-horses> [<https://perma.cc/U4K7-SRCQ>].

⁷⁹ *BLM Colludes with Livestock Industry Lobbying Group to Surgically Sterilize Wild Mares*, AM. WILD HORSE CAMPAIGN (Sept. 2017), <https://americanwildhorsecampaign.org/media/blm-colludes-livestock-industry-lobbying-group-surgically-sterilize-wild-mares> [<https://perma.cc/ALJ9-WYS9>].

⁸⁰ *Id.*

⁸¹ *Id.*

contend that these terms are inaccurate because wild horses are not afforded the same follow-up care, restricted movement, or pain relief as domesticated animals.⁸²

Overall, it is difficult to reason why the BLM goes to such great lengths to promote a seemingly extreme and publicly unpopular protocol, unless that protocol actually served the BLM in a beneficial manner. Further, experts agree that the overpopulation problem should be addressed in a calculated and scientific manner that considers the welfare of horses among a variety of factors.⁸³ Thus, although the BLM is facing a population crisis, ovarioectomy as a population control tactic should not be used on America's wild horses.

III. THE PITFALLS OF OVERPOPULATION

With continuing controversy surrounding the WFRHBA, many have questioned the necessity of continued population management. Criticism of the Act in its terms of humane treatment of animals in captivity, though valid, masks greater ecological consequences of overpopulation.⁸⁴ This section does not pose the question of whether management is appropriate, but rather asks how to achieve successful rangeland management.

A. *Consequences of Overgrazing*

The current estimated population of wild and free-roaming horses and burros is approximately 95,000 animals.⁸⁵ This figure means that horses and burros currently exceed the AML mandated by the Secretary by over 65,000 animals.⁸⁶ This staggering excess causes dire consequences to a habitat, making it unable to support the current population. Overgrazing is particularly alarming in terms of wild horses, due to the fact that “[h]orses consume more forage per unit of body weight than do ruminants.”⁸⁷ Furthermore, the consequences of overgrazing are amplified in areas such as

⁸² *Id.*

⁸³ See NAT'L RSCH. COUNS. OF THE NAT'L ACADS., USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD 306 (2013)

⁸⁴ Ben Masters, *Wild Horses: The Consequences of Doing Nothing*, NAT'L GEOGRAPHIC (Feb. 7, 2017), <https://www.nationalgeographic.com/adventure/features/environment/wild-horses-part-two/> [<https://perma.cc/463C-QKSP>].

⁸⁵ Population current as of March 2020. BUREAU OF LAND MGMT., WILD HORSE AND BURRO POPULATION ESTIMATES 26 (Mar. 1, 2020) [<https://perma.cc/VE2L-848X>].

⁸⁶ *Id.*

⁸⁷ NAT'L RSCH. COUNS. OF THE NAT'L ACADS., *supra* note 83, at 235.

America's western rangelands, where ecological mismanagement and the effects of overpopulation can be severe.⁸⁸

Wild horses contribute to overgrazing simply because of their high population numbers. Typically, the BLM manages the timing, duration, and intensity of grazing for not only wild horses but also livestock animals.⁸⁹ Grazing management is imperative for the health and regeneration of the rangeland. In previous years, the BLM controlled population levels by rounding up excess animals.⁹⁰ However, the BLM's budget is consumed with supporting already captured horses, and the BLM has consequently decreased the number of roundups conducted in recent years.⁹¹ As a result, wild horse populations in certain areas have skyrocketed to ten times the AML mandated by the Secretary.⁹²

Due to unchecked population increases, wild horses are allowed to graze on public lands every day of the year.⁹³ This grazing inherently changes the ecological makeup of the rangeland and, "[e]ventually, that landscape reaches a threshold where native high-forage-value plants lose the ability to compete with unpalatable, undesirable, or nonnative species."⁹⁴ For example, a lower threshold of native plants could potentially allow invasive plants, such as cheatgrass, to spread rapidly.⁹⁵ Cheatgrass is particularly damaging to the rangeland ecosystem because of its ability to alter the "normal fire pattern in vegetated areas when its populations become dense and dominant."⁹⁶

However, it is important to note that scientists primarily study cattle when evaluating the effects of rangeland grazing.⁹⁷ In fact, researchers studying the wild horses and burro program agree that further scientific data regarding

⁸⁸ See Masters, *supra* note 84.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ U.S. FOREST SERV. SW. REGION, U.S. DEP'T OF AGRIC., TP-R3-16-04, FIELD GUIDE FOR MANAGING CHEATGRASS IN THE SOUTHWEST 1 (Jun. 2017) [<https://perma.cc/SX2V-3LK2>].

⁹⁷ Vickery Eckhoff, *BLM and USFS Livestock Grazing Stats: Examining Key Data in the Debate Over Wild Horses on Western Public Lands*, DAILY PITCHFORK at 3 (Nov. 11, 2015) [<https://perma.cc/EFZ8-HJ88>].

grazing patterns and climate change will improve wild horse and burro management.⁹⁸ Further, cattle and horses have distinctly different grazing patterns, making it nearly impossible to conduct a one-size-fits-all type of study.⁹⁹ For example, horses often travel great distances to obtain food and water. As a result of this lengthy travel, horses generally spend less time at watering holes and springs than other livestock animals.¹⁰⁰ Ultimately, “although feral horses have inhabited western North America since the end of the 16th century, relatively little synecological research has been conducted to quantitatively characterize how they interact with ecosystem components.”¹⁰¹

The rangeland itself is not the only aspect of the western ecosystem potentially at stake. Experts caution that the overpopulation problem will eventually catch up to wild horses. Bad winters, extended droughts, or lack of foraging materials have the potential to equalize the population.¹⁰² This form of “natural regulation” could cause wild horses and other big game animals, such as mule, deer, and elk, to begin starving by the tens of thousands.¹⁰³

B. Current AML Practices: The Adoption and Sale Conundrum

Though it is apparent that population control is necessary, the BLM has continually struggled to properly constrain the wild horse and burro population to appropriate management levels. This is partially due to the overwhelming number of horses contained in permanent off-range corral adoption and purchase centers. As of 2017, there were 45,000 horses in government holding pens.¹⁰⁴ To care and provide for this colossal number of horses costs the federal government fifty million dollars annually.¹⁰⁵

⁹⁸ *Id.*

⁹⁹ *Discuss the Livestock Dynamics on Pastures and Grazing*, OR. STATE UNIV. <https://forages.oregonstate.edu/nfgc/eo/onlineforagecurriculum/instructormaterials/availabletopics/grazing/livestock> [<https://perma.cc/2MBX-JFCU>].

¹⁰⁰ Erik A. Beever & Peter F. Brussard, *Examining Ecological Consequences of Feral Horse Grazing Using Exclosures*, 60 W. N. AM. NATURALIST 236, 236 (2000) [<https://perma.cc/B2UF-GJUU>].

¹⁰¹ *Id.*

¹⁰² Ben Masters, *Wild Horses: The Consequences of Doing Nothing*, NAT'L GEOGRAPHIC (Feb. 7, 2017), <https://www.nationalgeographic.com/adventure/features/environment/wild-horses-part-two/> [<https://perma.cc/463C-QKSP>].

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

These high costs partially stem from the implementation of the BLM's adoption and sale program. The Secretary is authorized to sell excess animals, with some limitations, under 16 U.S.C. § 1331(e) of WFRHBA.¹⁰⁶ To date, the BLM "has placed more than 240,000 wild horses and burros into private care."¹⁰⁷ In fact, the BLM offers incentives to the public as an effort to increase adoptions. This incentive program allows qualified adopters to receive \$500 within sixty days of adoption, and an additional \$500 within sixty days of receiving title for the animal.¹⁰⁸

In the program, adopters are required to complete an application that proves their capabilities of providing a suitable and humane environment for animals.¹⁰⁹ However, due to low numbers of adoption, Congress passed a sales-authority law (also known as the Burns Amendment) stating that "any excess horse (and burro), or the remains of any excess horse shall be sold if the horse is more than 10 years of age or if the horse has been offered unsuccessfully for adoption at least three times."¹¹⁰ At the inception of the Burns Amendment, any horse or burro could be sold without limitation at auction houses or livestock sale facilities until areas reach appropriate management levels.¹¹¹ However, the BLM placed limitations on the sale procedure in 2005 that "required buyers to provide 'good homes and humane care' to prevent horses from being sent to slaughter."¹¹²

Yet, in recent years, the BLM has failed to follow these sales practices. In 2012, the Department of the Interior issued a report detailing the BLM's failure to manage the sale of wild horses and burros. This resulted in the sale of approximately 1700 wild horses to a kill buyer, Tom Davis, who in turn sold the horses to slaughterhouses in Mexico.¹¹³ Davis purchased horses from the BLM by the truck.¹¹⁴ According to Davis, each truckload contained

¹⁰⁶ 16 U.S.C. §1331(e).

¹⁰⁷ *Adoption and Sales*, BUREAU OF LAND MGMT., <https://www.blm.gov/programs/wild-horse-and-burro/adoption-and-sales> [https://perma.cc/DF35-DKRT]

¹⁰⁸ *Bureau of Land Management Offers New Incentives To Encourage More Adoptions of Wild Horses and Burros*, BUREAU OF LAND MGMT. (Mar. 12, 2019), <https://www.blm.gov/press-release/bureau-land-management-offers-new-incentives-encourage-more-adoptions-wild-horses-and> [https://perma.cc/D4TF-CVJE].

¹⁰⁹ *Id.*

¹¹⁰ OFFICE OF INSPECTOR GEN., U.S. DEP'T OF THE INTERIOR, INVESTIGATIVE REPORT OF BUREAU OF LAND MANAGEMENT WILD HORSE BUYER 2 (Oct. 23, 2015) [https://perma.cc/A5Q3-JC8X].

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

approximately 35 horses.¹¹⁵ He further argued that “in selling so many loads of horses, the BLM had to know the horses would end up at a slaughterhouse.”¹¹⁶

Whether a gross oversight, or something more sinister, events such as the sale of BLM horses to slaughter shed light on a grossly underfunded program with few options. Not only is the BLM failing to maintain an ecological balance, as directed by statute, but the horses and burros under management are also not being sold in accordance with policy. Furthermore, although limitations on horse sales attempt to ensure humane treatment, it is worth noting that these limitations operate contrary to the purpose of legislation: to limit or destroy horses in excess of AMLs.¹¹⁷

C. Wild Horses: A Piece of “Americana” or Feral?

Since 2012, the BLM strengthened its adoption and sale policies to mitigate the risks of horses being unknowingly sold into slaughter. Currently, the BLM requires approval from the Assistant Director to sell more than four horses to an individual within a six-month period.¹¹⁸ Though sale procedures have improved, problems still exist within the concept of adopting wild horses for public use.

The adoption incentive program offers \$1,000 to those interested in adopting a horse. However, critics say this plan “leave[s] the door open for people with dollar signs in their eyes [who] know nothing about horse training.”¹¹⁹ In fact, the wild horse adoption program is riddled with negative experiences of wild horse ownership. The wild horse temperament is one unlike any other horse; even knowledgeable horse owners may still need the

¹¹⁵ *Id.* at 3.

¹¹⁶ *Id.*

¹¹⁷ BLM officials stated that operating contrary to implemented legislation by limiting sales and not destroying horses has contributed to an unmanageable number of horses. The WH&B senior advisor reasoned, however, that selling without limitation or destroying horses would be “political suicide,” and Congress does not want to deal with those issues. A WH&B division chief said that although BLM has attempted to manage the wild horse and burro population for years, BLM has been unsuccessful, and the same issues continue to occur without resolution. The division chief believed that these problems were due in part to “political pressures.” *Id.* at 5.

¹¹⁸ *Id.* at 10.

¹¹⁹ Nicole Rivard, *The True Cost of Wild Horse Adoption*, FRIENDS OF ANIMALS <https://friendsofanimals.org/news/the-true-cost-of-wild-horse-adoption/> [<https://perma.cc/5CGU-Q6V8>].

help of a trainer to gentle and socialize the animals.¹²⁰ Even if owners clear the hurdle of providing adequate socialization to make wild horses “pets,” there is an immense cost burden of maintaining a wild horse. Though adopted mustangs have current vaccinations, owners spend upwards of “\$50 every eight to ten weeks to have their feet professionally trimmed.”¹²¹ The shoeing bill is hardly the most expensive cost of owning a horse, with horses eating 1.5 to 2.5% of their body weight each day in hay and grain.¹²² Food costs alone are approximately one-third of the total cost of ownership, averaging more than \$1,000 each year.¹²³

If adoption is not the answer to an ever-growing problem, what is the best cause of action to ameliorate the number of horses living in government holding pens? Some experts say euthanasia is the only alternative. Ben Masters, member of the BLM Advisory Board and longtime wild horse advocate, is steadfast in his opinions that wild horses must remain in the wild, stating: “we need every tool available including euthanasia, to get the wild horse population back to living entirely where they belong: in the wild.”¹²⁴

Other experts agree that wild horses must remain in the wild but disagree that euthanasia is the only alternative. Rather, these experts say inadequate land delegation is to blame. In addition to managing the wild horse and burro program, the BLM also issues grazing allotments to private ranchers.¹²⁵ Many critics doubt that the BLM can effectively balance both the interests of private cattle farmers and the interests of wild horses. In fact, both sides of the aisle are unhappy in this showdown between ranchers and wild horses.¹²⁶ Ranchers claim that wild horses are “nothing more than feral animals, and if the government is not going to do anything about them then they should remove

¹²⁰ Aubrey Pavia, *Adopt a Wild Horse*, EQUISEARCH (Sept. 27, 2017), <https://www.equisearch.com/articles/wild-horse-adoption> [<https://perma.cc/LNB6-GNST>].

¹²¹ Christine Hauser, *Want to Adopt a Wild Horse? The Government Will Pay You \$1,000*, N.Y. TIMES (Mar. 26, 2019), <https://www.nytimes.com/2019/03/26/us/mustang-burro-adoption.html> [<https://perma.cc/N4YD-JX8Y>].

¹²² Laura Williams, *Annual Cost of Owning a Horse and Six Alternatives to Buying*, MONEY CRASHERS, <https://www.moneycrashers.com/cost-owning-horse-alternatives-buying/> [<https://perma.cc/GE98-3CU6>].

¹²³ *Id.*

¹²⁴ Ryan Bell, *Is the West’s Wild Horse Population Crisis So Bad Only Euthanasia Can Fix It?*, NAT’L GEOGRAPHIC (Sept. 12, 2016), <https://www.nationalgeographic.com/adventure/features/environment/wild-horses-euthanasia/> [<https://perma.cc/2S37-D6EY>].

¹²⁵ James McWilliams, *Western Cattlemen Square Off Against 60,000 Mustangs*, PAC. STANDARD (Jun. 14, 2017), <https://psmag.com/environment/western-cattlemen-square-off-against-60000-mustangs> [<https://perma.cc/H6BC-4YFF>].

¹²⁶ *Id.*

the Act from the books.”¹²⁷ Yet activists feel as though the government works to manage the wild horses and burros program in favor of ranching livestock.¹²⁸

Though it is hard to filter between the echoing voices on both sides demanding a higher quantity of finite resources, the numbers don’t lie. Cattle outnumber wild horses and burros by only 37:1 and are allocated approximately 97% of public lands foraging material.¹²⁹ Further, these public acres supply “less than 3 percent of the forage used by the nation’s livestock industry.”¹³⁰ However, some say that this should not be a battle of horses versus cattle. Rangeland deterioration occurs in some areas due to horses and in some areas due to cattle; both instances of deterioration are negative for the health of the rangeland and the ecosystem it supports.¹³¹ Moreover, critics question the validity of a plan giving a larger allotment of land to the BLM given the gross mismanagement of public lands in recent days.¹³²

IV. POTENTIAL SOLUTIONS

An abundance of problems faces the BLM in its implementation of WFRHBA; however, potential solutions to these problems are not as clear. This section of the paper proposes possible solutions to combat the uncontrolled population growth of wild horses in the western United States.

A. *Equine Birth Control: The PZP Vaccination*

The PZP immunocontraceptive vaccine is used to fool the equine body into developing antibodies that attach to a mare’s eggs.¹³³ When antibodies bind to the egg, sperm are prevented from entering, thus providing a form of birth control.¹³⁴ The PZP vaccine can be over 90% effective in horses and only costs \$24 per dose.¹³⁵ For PZP to be effective, the animal must receive

¹²⁷ *Id.*

¹²⁸ *Id.*

¹²⁹ Vickery Eckhoff, *BLM and USFS Livestock Grazing Stats: Examining Key Data in the Debate Over Wild Horses on Western Public Lands*, DAILY PITCHFORK 3 (Nov. 11, 2015) [<https://perma.cc/EFZ8-HJ88>].

¹³⁰ *Id.* at 15.

¹³¹ Ryan Bell, *supra* note 124.

¹³² *Id.*

¹³³ Ben Masters, *Can Fertility Control Keep Wild Horse Herds in Check?*, NAT’L GEOGRAPHIC (Feb. 8, 2017), <https://www.nationalgeographic.com/adventure/features/environment/wild-horses-part-three/> [<https://perma.cc/YRW2-Z9VR>].

¹³⁴ *Id.*

¹³⁵ *Id.*

two doses and an annual booster each subsequent year.¹³⁶ Additionally, the vaccine does not have an effect on a mare's hormonal system.¹³⁷ By maintaining the hormonal system of the horse, wild horses preserve their natural behaviors and way of life.¹³⁸ Furthermore, vaccinated females tend to show better body condition than non-vaccinated females.¹³⁹ This is because non-reproductive females do not face the physical demands of pregnancy and lactation.¹⁴⁰ In addition to its effectiveness, the vaccine does not harm an already pregnant mare, fetus, or nursing foal in any way.¹⁴¹

However, despite the positive effects of PZP, the BLM has been historically hesitant to implement PZP programs. The BLM contends that for PZP to remain effective, mares would need to be continuously located, identified, and darted.¹⁴² Further, the BLM argues that this is "logistically infeasible" given the vast expanse of herd management areas.¹⁴³ Although it may be difficult to administer widespread PZP immunocontraceptives, PZP has proven effective when used with smaller herds.

In fact, after staff turnovers and the possibility of roundups on the horizon, the BLM approved a PZP program in Spring Creek Basin, Colorado.¹⁴⁴ Since the approval of this program, the BLM has not conducted a roundup in Spring Creek Basin.¹⁴⁵ The AML for Spring Basin Creek are between thirty-five and sixty-five horses.¹⁴⁶ In 2011, the population of wild horses at Spring Basin Creek was approximately eighty-two horses.¹⁴⁷ The last roundup in Spring Creek Basin was conducted in 2011, resulting in the

¹³⁶ *Id.*

¹³⁷ *Fertility Control*, AM. WILD HORSE CAMPAIGN, <https://americanwildhorsecampaign.org/media/pzp-fertility-control> [<https://perma.cc/C6ZF-AJLD>].

¹³⁸ *Id.*

¹³⁹ NAT'L RSCH. COUNS. OF THE NAT'L ACADS., USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD 96 (2013)

¹⁴⁰ *Id.*

¹⁴¹ Kathryn Wilder, *PZP: Where Hope, Science, and Mustangs Meet*, HIGH COUNTRY NEWS (Jan. 5, 2016), <https://www.hcn.org/articles/pzp-where-hope-science-and-mustangs-meet> [<https://perma.cc/TZ3R-2K4V>].

¹⁴² BUREAU OF LAND MGMT. BURN DIST. OFFICE, U.S. DEP'T OF THE INTERIOR, DOI-BLM-ORWA-B050-2018-0016-EA, SPAY FEASIBILITY AND ON-RANGE BEHAVIORAL OUTCOMES ASSESSMENT AND WARM SPRINGS HMA POPULATION MANAGEMENT PLAN 15 (Jun. 29, 2018) [<https://perma.cc/DZ6E-HBPT>].

¹⁴³ *Id.*

¹⁴⁴ Masters, *supra* note 133.

¹⁴⁵ Wilder, *supra* note 141.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

capture of approximately forty horses.¹⁴⁸ However, since the implementation of a successful PZP program, horses have stayed below the AML and, as a consequence, out of the clutches of BLM roundups.

The PZP vaccine has also proven its effectiveness in controlling free-roaming horse populations in other areas of the country. PZP is used to control the population of the famous swimming ponies of Assateague Island. The PZP Assateague program, currently thirty-three years old, has not only controlled the population to an extent where roundups are no longer needed, but also increased the lifespan of the Assateague ponies.¹⁴⁹ Following the implementation of the PZP program, the mean lifespan increased from 6.47 years in untreated mares to 19.94 years in mares treated for three years or more with PZP.¹⁵⁰

Furthermore, the implementation of a PZP program has the potential to save taxpayers millions of dollars each year. In Wyoming, a PZP plan facilitated a herd reaching zero-population growth in just three years.¹⁵¹ As a result, taxpayers in the area saved approximately seven million dollars.¹⁵² Similarly, a herd management area in Idaho recently implemented a PZP program resulting in savings of \$350,000 for taxpayers.¹⁵³

B. Negative Consequences of PZP

Though PZP has proved to be a viable option in effectively and humanely controlling population levels, there is a potential for fertility control to cause genetic side effects.¹⁵⁴ Immunocontraceptives are not 100% effective.¹⁵⁵ Some experts have suggested that by unintentionally using the vaccine on animals that do not respond to immunocontraception, these horses could still reproduce and create a population that is genetically resistant to immunocontraception.¹⁵⁶

¹⁴⁸ Wilder, *supra* note 141.

¹⁴⁹ Masters, *supra* note 133.

¹⁵⁰ NAT'L RSCH. COUNS. OF THE NAT'L ACADS., USING SCIENCE TO IMPROVE THE BLM WILD HORSE AND BURRO PROGRAM: A WAY FORWARD 124 (2013)

¹⁵¹ Wilder, *supra* note 141.

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ NAT'L RSCH. COUNS. OF THE NAT'L ACADS., *supra* note 150, at 124.

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

However, a more concerning side effect of immunocontraception, or any contraception for that matter, is the potential for a lack of genetic diversity among wild horse herds. Maintaining genetic diversity is necessary for herds to survive environmental changes.¹⁵⁷ However, a lack of research exists regarding genetic data of wild horse populations.¹⁵⁸ Specifically, data has not recorded the occurrence of diseases or clinical signs of potential genetic diseases affecting wild horse herds.¹⁵⁹ Without recording occurrences of genetic disease, it is virtually impossible to determine the effects of contraception on herd genetic diversity. A possible solution for this problem is the implementation of routine blood and hair collections during roundups.¹⁶⁰

C. The “Do-Nothing” Approach

Failing to address the roots of overpopulation will result in disastrous effects. However, there is scientific evidence that wild horse populations will self-limit when populations rise to unsustainable numbers.¹⁶¹ Self-limitation would decrease population via shortages of food and water, causing animals to die from starvation, disease, or poor body condition.¹⁶²

This form of self-limitation has been observed in areas of Nevada. In the summer of 2015, horses began starving due to overpopulation west of Las Vegas, Nevada.¹⁶³ Forage conditions in the area were so scant that horses began eating Joshua trees.¹⁶⁴ In this area, the appropriate management level was set between forty-seven to sixty-six wild horses and twenty to thirty-five burros. During 2015, the number of horses and burros exceeded 500 animals.¹⁶⁵ The poor body condition of these horses prompted public outcry from the residents of Nevada, a scenario which is likely to occur if the BLM chooses to adopt a broad “do nothing” approach in regard to population control.¹⁶⁶ Following public uproar, the horses were gathered and put up for

¹⁵⁷ *Id.* at 125.

¹⁵⁸ *Id.* at 169.

¹⁵⁹ *Id.* at 171.

¹⁶⁰ *Id.* at 172.

¹⁶¹ *See id.* at 87.

¹⁶² *Id.* at 88.

¹⁶³ Ben Masters, *Feral Horses – The Effects of Doing Nothing*, NEV. AGRIC. EXPERIMENT STATION, <http://naes.unr.edu/news/story.aspx?StoryID=845> [https://perma.cc/82UZ-GE6A].

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

adoption.¹⁶⁷ Though some may classify the horses as being rescued from starving conditions, it is likely that these animals will ultimately spend their lives in a holding pen; begging the question as to whether the horses were rescued or sentenced to a life of permanent confinement.

CONCLUSION

In conclusion, the Wild and Free-Roaming Horses and Burros Act of 1971 has developed from a revered piece of legislation, intended to protect our nation's wild horses and burros, to the cornerstone of a grossly mismanaged government program. The BLM's implementation of the Act is riddled with strife, mismanagement, improper determinations, and a lack of resources. Ultimately, it is the environment and the horses that live on rangelands that suffer from the BLM's misguided actions. However, a complete overhaul of the BLM is not necessary to effect lasting change. In successfully deploying a vaccine program, the BLM could drastically reduce the number of wild horses existing on the rangeland in a humane and sustainable manner.

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¹⁶⁷ *Id.*

A KNOWING VIOLATION: EXPLORING THE HISTORY OF THE CRIMINAL ENFORCEMENT OF ENVIRONMENTAL LAW IN THE MIDWESTERN UNITED STATES

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Violations of state and federal environmental laws in the United States resulting in significant harm or particularly culpable conduct often require using criminal enforcement tools to ensure compliance and deter future offenses. However, there is generally little understanding of how criminal violations of environmental laws have been enforced in the Midwestern United States. This article analyzes historical charging and sentencing patterns, as well as illustrates the major themes that emerge in environmental crime prosecutions in twelve midwestern states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Through a content analysis of all 2,588 criminal prosecutions resulting from U.S. EPA criminal investigations conducted between 1983-2019, all 590 prosecutions occurring in these Midwestern states were selected for this analysis. Criminal prosecutions in these states broke down as follows: water pollution crimes (38%), air pollution crimes (19%), hazardous waste crimes (16%), and state-level crimes (14%). The monetary penalties assessed to all defendants at sentencing totaled \$3.3 billion, 1,618 years of probation, and roughly 688 years of incarceration. To conclude, this article offers suggestions for strengthening criminal enforcement in the region, including through additional resources for enforcement, additional public awareness, and community policing of industrial facilities.

INTRODUCTION

In his third week on the job at an Environmental Enterprises hazardous waste management facility in Spring Valley, Ohio, twenty-year-old Zachary Henzerling was killed after a flash fire erupted at the facility.¹ The explosion burned Henzerling so severely his father could barely recognize his son's

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¹ Jordan Barab, *A Company That Was Bound to Kill Someone*, INDUS. SAFETY & HEALTH NEWS (Jun. 17, 2017), <https://www.ishn.com/articles/106669-a-company-that-was-bound-to-kill-someone> [<https://perma.cc/G8R8-FSCK>].

charred body.² The subsequent investigation from the U.S. Occupational Safety and Health Administration (OSHA) revealed Zachary and a coworker were instructed to remove a metal frame from an oxygen generator's filters that were contaminated with sodium chlorate.³ When they failed to pry it open, they were given permission to use an electric reciprocating saw that sparked the fire that burned Henzerling to death.⁴ The company was charged with reckless homicide, a felony, that was reduced by plea agreement to negligent homicide, a misdemeanor; the charges against Henzerling's supervisor were dropped.⁵

I. CRIMINAL ENFORCEMENT OF ENVIRONMENTAL LAW

The prosecution of Environmental Enterprises shows the importance of using criminal enforcement tools to investigate and prosecute environmental violations resulting in significant harm and particularly culpable conduct.⁶ Despite the necessity of criminal enforcement for ensuring environmental laws function properly, little is known about criminal enforcement in the United States, particularly in the Midwest.⁷ We address this gap by examining all criminal prosecutions resulting from the U.S. Environmental Protection Agencies' (EPA) criminal investigations in the following states from 1983 to 2019: Indiana, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Through a content analysis of these prosecution summaries, we were able to explore the various charging and sentencing patterns in each state over the course of nearly four decades. Additionally, the data allows us to better

² *Id.*

³ Accident Investigation Report: Environmental Enterprises, Inc., U.S. OCCUPATIONAL SAFETY & HEALTH ADMIN., (closed Apr. 11, 2016), https://www.osha.gov/pls/imis/establishment.inspection_detail?id=808301.015 [<https://perma.cc/P7HT-BNN2>].

⁴ *Id.*

⁵ The company pleaded guilty to negligent homicide on May 31, 2017 and was fined just \$5,000. *Summary of Criminal Prosecutions: Environmental Enterprises, Inc.*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm (search name "Enterprises" state "Ohio" and fiscal year "2017") [<https://perma.cc/5N9L-7679>]; see also Paul Rodzinka, *Ohio Company Pleads No Contest to Charge in Employee's Death*, WDTN (Jun. 1, 2017), <https://www.wdtn.com/news/ohio-company-pleads-no-contest-to-charge-in-employees-death/> [<https://perma.cc/EK22-9KYW>].

⁶ Memorandum from Earl E. Devaney, Director, U.S. Env't Prot. Agency, Off. Crim. Enf't, at 3 (Jan. 12, 1994) [<https://perma.cc/GVV4-VRZX>].

⁷ Few studies examine the sentencing and punishment of environmental offenders. See, e.g., Joshua Ozmy & Melissa L. Jarrell, Comment, *EPA's Criminal Prosecution and Punishment of Environmental Crimes*, 50 ENV'T L. REP. 10452, 10452-10458 (2020); Michael J. Lynch, *The Sentencing/Punishment of Federal Environmental/Green Offenders, 2000-2013*, 38 DEVIANT BEHAV. 991, 991-995 (2017).

understand the broader themes in the types of environmental crimes that have occurred in these areas and how criminal enforcement tools were applied to investigate and punish the offenders.

A. Federal Enforcement Institutions

Tools to investigate and prosecute federal environmental crimes in the United States have been taking shape since the late 19th century. The first misdemeanor penalties for federal environmental crimes were codified via the Rivers and Harbors Act of 1899 and Lacey Act of 1900.⁸ These acts made it illegal to obstruct, alter, or discharge waste into navigable waters of the United States, and to conduct or participate in the interstate trade of wildlife without a permit. Soon after in 1909, the Public Lands Division of the Department of Justice (DOJ) was founded, later becoming DOJ's Environment and Natural Resources Division (ENRD).⁹

While the 1970s saw major expansions of federal environmental statutes, felony provisions were not included in federal environmental laws until the Hazardous and Solid Waste amendments to the Resources Conservation and Recovery Act (RCRA) in 1984.¹⁰ Today, most major federal environmental statutes contain felony penalties, including the Clean Air Act (CAA); Clean Water Act (CWA); Toxic Substances Control Act (TSCA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the Federal Insecticide, Fungicide and Rodenticide Acts (FIFRA).¹¹ The

⁸ Rivers and Harbors Act of 1899, 33 U.S.C. § 403; Lacey Act, 16 U.S.C. § 3371 (1900).

⁹ *History, Environment and Natural Resources Division*, U.S. DEP'T JUST., <https://www.justice.gov/enrd/history> [<https://perma.cc/5VRN-UE8J>]; *see also Historical Development of Environmental Criminal Law*, U.S. DEP'T JUST., <https://www.justice.gov/enrd/about-division/historical-development-environmental-criminal-law> [<https://perma.cc/2H9X-BK3D>].

¹⁰ Resource Conservation and Recovery Act, 42 U.S.C. § 6901 (1976). Prior to these changes, it was difficult to hold corporate officers accountable for knowing violations of federal environmental law under RCRA. *See* David T. Barton, *Corporate Officer Liability Under RCRA: Stringent but Not Strict*, 1991 BYU L. REV. 1547, 1548-1550.

¹¹ Clean Water Act, 33 U.S.C. § 1251 (1972); Clean Air Act, 42 U.S.C. § 7401 (1970); Toxic Substances Control Act, 53 U.S.C. § 2601 (1976); Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136 (1972); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 (1980). The movement towards greater penalties for environmental harm in the 1980s was part of a broader global movement. *See* Michael R. Pendleton, *Beyond the Threshold: The Criminalization of Logging*, 10 SOC'Y & NAT. RES. 181, 191-193. *See generally Criminal Provisions of the Resource Conservation and Recovery Act (RCRA)*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/enforcement/criminal-provisions-resource-conservation-and-recovery-act-rcra> [<https://perma.cc/5N8E-TH8B>]; *Criminal Provisions of the Clean Air Act*,

DOJ's Environmental Crime Section (ECS) was founded within ENRD in 1982 and became its own unit in 1987, along with the Environmental Enforcement Section (EES), which handles civil-judicial cases.¹² DOJ-ECS currently employs forty-three specialized attorneys and a dozen support staff to prosecute environmental crimes.¹³

B. Criminal Investigations

Investigative tools to police criminal violations of environmental law were institutionalized at the EPA in 1981 with the founding of the Office of Enforcement, later changed to the Office of Enforcement and Compliance Assurance (OECA).¹⁴ EPA criminal investigators, also referred to as "1811's," or "special agents," were hired the following year and deputized as Special Deputy U.S. Marshals until they were granted full law enforcement powers by Congress in 1988.¹⁵

Today, EPA's Criminal Investigation Division (EPA-CID) employs approximately 145 criminal investigators.¹⁶ These investigators work with other federal and state agencies to build criminal cases based on information referred to them by civil inspectors, formal documents, other agencies, or former employees of companies.¹⁷ Historically, investigators have had a fairly high degree of freedom when pursuing cases and, when they feel there is sufficient evidence, will typically approach attorneys in DOJ-ECS or the

U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/enforcement/criminal-provisions-clean-air-act> [<https://perma.cc/L2Y4-VRAS>].

¹² *Environmental Enforcement Section (EES): An Overview of Our Practice*, U.S. DEP'T JUST., <https://www.justice.gov/enrd/overview-our-practice> [<https://perma.cc/MHE6-ADCC>]; *Historical Development of Environmental Criminal Law*, *supra* note 9.

¹³ *See Environmental Crimes Section*, U.S. DEP'T JUST., <https://justice.gov/enrd/environmental-crimes-section> [<https://perma.cc/K4FK-SBVC>].

¹⁴ *About the Office of Enforcement and Compliance Assurance (OECA)*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/aboutepa/about-office-enforcement-and-compliance-assurance-oeca> [<https://perma.cc/2GN4-2B7E>].

¹⁵ U.S. ENV'T PROT. AGENCY, MANAGEMENT REVIEW OF THE OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING 7 (2003) [<https://perma.cc/GX6M-HHVT>].

¹⁶ Depending on whether one counts criminal investigators specifically and/or support staff, this number varies between 145 and 200 based on the source. *See* PUBLIC EMP. FOR ENV'T RESPONSIBILITY, EPA CID AGENT COUNT (Nov. 21, 2019) [<https://perma.cc/E67Y-X8CX>]. *See also America's Environmental Crime Fighters*, U.S. ENV'T PROT. AGENCY CRIM. ENF'T PROGRAM [<https://perma.cc/T3T5-XHWL>].

¹⁷ Joel A. Mintz, "Treading Water": A Preliminary Assessment of EPA Enforcement During the Bush II Administration, 34 ENV'T L. REP. 10912 (2004).

U.S. Attorney's Office to either file information in the appropriate district court or convene a grand jury.¹⁸

Unlike in civil enforcement, criminal cases rest on a stricter standard of guilt, requiring certainty beyond a reasonable doubt that a defendant committed the crime for which they are being charged.¹⁹ Due to their limited resources, pursuing criminal prosecution is a costly endeavor for EPA-CID and DOJ-ECS, meaning most environmental violations are settled through civil methods.²⁰ Research suggests EPA-CID investigations have only resulted in around 2,600 prosecutions since 1983.²¹ The goal of criminal enforcement is not to gain compliance, but to instead deter future offenders and enforce sufficient punishments for the negligent and knowing violations of environmental law.²² Furthermore, the organizational culture of federal environmental law enforcement agencies is decidedly deterrence-based,²³ meaning the punishment for violating a statute must outweigh the benefits.²⁴ Essentially, deterrence requires a sufficient police presence from EPA-CID to discover these crimes and a team at DOJ-ECS to prosecute the offenders. Whether these agencies adequately deter environmental crimes in the

¹⁸ Joel A. Mintz, *Some Thoughts on the Interdisciplinary Aspects of Environmental Enforcement*, 36 ENV'T L. REP. 10495 (2006).

¹⁹ When Congress upgraded misdemeanor penalties to felonies under the CWA in 1987 and CAA in 1990, it gave prosecutors a wide berth to pursue what used to be misdemeanor or civil issues as well as potential criminal ones. This brings into question the need to show *mens rea* and whether it was fair and just to allow prosecutors to use the law in such a manner. For key arguments in the debate see Richard J. Lazarus, *Assimilating Environmental Protection into Legal Rules and the Problem with Environmental Crime*, 27 LOY. L.A. L. REV. 867, 867-870 (1994); KATHLEEN F. BRICKEY, ENVIRONMENTAL CRIME: LAW, POLICY, PROSECUTION 9 (New York: Aspen Publishers 2008).

²⁰ Evan J. Ringquist & Craig E. Emmert, *Judicial Policymaking in Published and Unpublished Decisions: The Case of Environmental Civil Litigation*, 52 POL. RSCH. Q. 12, 12-13 (1999).

²¹ Joshua Ozymy, Bryan Menard & Melissa L. Jarrell, *Persistence or Partisanship: Exploring the Relationship Between Presidential Administrations and Criminal Enforcement by the U.S. Environmental Protection Agency, 1983-2019*, Forthcoming in PUB. ADMIN. REV.

²² MANAGEMENT REVIEW OF THE OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING, *supra* note 15.

²³ *Id.* at ii ("To the extent any single pattern dominates, it is the law enforcement orientation of the Immediate Office, CID, and (to a lesser extent) LCRMD (Legal Counsel and Resources Management Division)").

²⁴ Gary Becker, *Crime & Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 183 (1968); Richard A. Posner, *An Economic Theory of the Criminal Law*, 85 COLUM. L. REV. 1193, 1193-1200 (1985).

Midwest is unknown.²⁵ The following analysis aims to provide a better understanding of these investigations and prosecutions in order to comprehend the types of crimes occurring in the Midwest region, how different federal charging statutes are used, and the corresponding penalties assessed.

II. MIDWESTERN ENVIRONMENTAL PROSECUTIONS

The data analyzed for this article was drawn from EPA's *Summary of Criminal Prosecutions* database.²⁶ This database contains case summaries for all EPA-CID criminal investigations and related prosecutions occurring from fiscal year (FY) 1983 through FY 2021. A total of 2,588 cases were gathered for our dataset from FY 1983 through FY 2019. We then selected all prosecutions for the Midwest based on the U.S. Census Bureau's definition of the region as: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.²⁷ Within these twelve states, our analysis yielded 580 total prosecutions during this almost four-decade period.

A. Dataset Construction and Analysis

When constructing our dataset for the analysis, we coded the following variables: brief; narrative summary of each case; docket number; state identifier; EPA fiscal year identifier; major federal environmental statutes used to charge defendants in the case; total number of defendants listed in the case; presence of at least one company/corporation as a defendant in the case; and non-environmental charges, such as false statements, obstruction, fraud, and conspiracy. We measured penalties by aggregating them across all individual and company/corporate defendants in each prosecution. Monetary penalties included all penalties in nominal dollars, such as special fees, restitution, required environmental projects, fines, or any other listed

²⁵ Analysis of criminal sanctioning of environmental offenders in the region is virtually non-existent. For key studies that examine sanctioning see Kathleen F. Brickey, *Charging Practices in Hazardous Waste Crime Prosecutions*, 62 OHIO STATE L. J. 1077 (2001); David M. Uhlmann, *Prosecutorial Discretion & Environmental Crime*, 38 HARV. ENV'T L. REV. 159 (2014); Mathew J. Griefe et al., *Corporate Environmental Crime & Environmental Justice*, 28 CRIM. JUST. POL'Y REV. 327 (2017); Matthew J. Griefe & Michael O. Maume, *Do Companies Pay the Price for Environmental Crimes? Consequences of Criminal Penalties on Corporate Offenders*, 73 CRIME, L. & SOC. CHANGE 337.

²⁶ *Summary of Criminal Prosecutions*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/enforcement/summary-criminal-prosecutions> [<https://perma.cc/JCF6-5VGV>].

²⁷ *Census Regions and Divisions of the United States*, U.S. CENSUS BUREAU [<https://perma.cc/X674-7CRR>].

assessments. Probation and incarceration were measured in total months. Community service was measured in total hours. Because we needed a common denominator for all the data, we gathered directly from the prosecution summaries and did not seek to correct or verify data by scouring the web or other legal sources. EPA's potential errors when entering the data in the database would be generally unknown to us, as is the role of the defense, prosecutors, or other actors in a case.

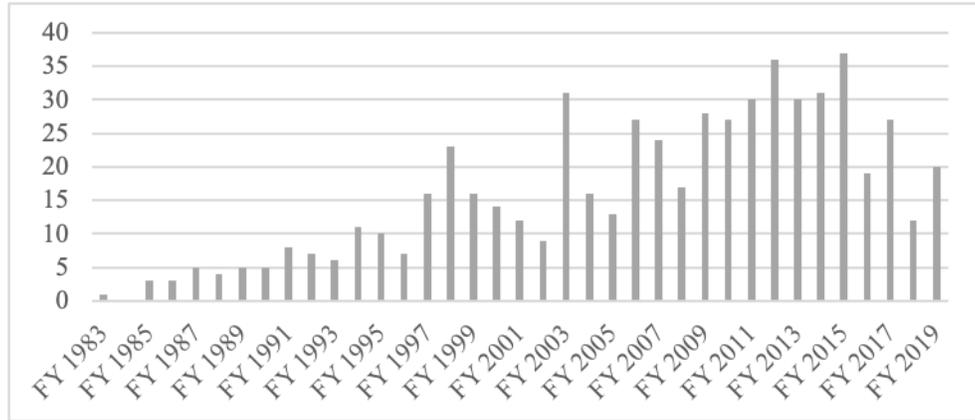
These limitations do not affect this analysis, nor do they impinge on this article's intent to show the broader charging, sentencing, and crime patterns over time. Two independent coders used content analysis to code the data through FY 2019. Once patterns in the data began to emerge and inter-coder reliability reached 90%, we moved forward with the analysis. Along with the two independent coders, the lead author reviewed each case for discrepancies and then met with the coders to find consensus on differing values. Most different values the coders derived from the data came from complex sentencing information involving multiple defendants. The total inter-coder ability was about 95% for the entire analysis.²⁸

B. Prosecution Charging Patterns

Figures 1 and 2 below explore the prosecutions identified across all Midwestern states from 1983-2019, first by FY and then by state. One prosecution was adjudicated in FY 1983, five in FY 1987, and twenty-one by the end of the decade. These numbers increased markedly in the 1990s. By FY 1998, twenty-three prosecutions had been adjudicated, and 109 cases were adjudicated by the end of the decade. Numbers rose again in the 2000s to 191 adjudications from FY 2000-09, and 269 from FY 2010-19. By 2019, a total of 590 cases had been adjudicated with an annual average of about 16 per FY.

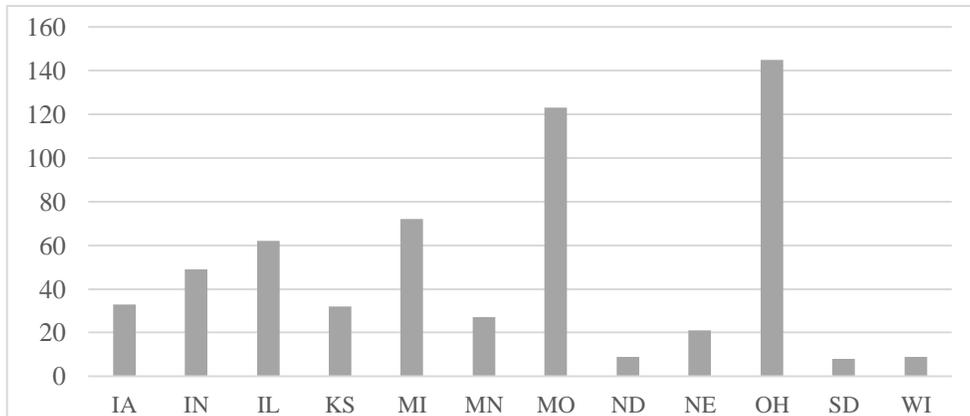
²⁸ OLE R. HOLSTI, *CONTENT ANALYSIS FOR THE SOCIAL SCIENCES AND HUMANITIES* 140 (Addison Wesley, 1969); EARL R. BABBIE, *THE PRACTICE OF SOCIAL RESEARCH* (Wadsworth Publishing, 2012).

Figure 1. Environmental Crime Prosecutions in the Midwestern States by EPA Fiscal Year (FY).



Source: EPA Summary of Criminal Prosecutions Database

Figure 2. Environmental Crime Prosecutions in the Midwest by U.S. State.



Source: EPA Summary of Criminal Prosecutions Database

In Figure 2 above, we examine the total annual environmental crime prosecutions in the Midwest by state from 1983-2019. During this period, most cases were adjudicated in Ohio (145), compared to the other eleven states. A total of 123 cases were adjudicated in Missouri, 72 in Michigan, and 62 in Illinois. In the mid-range for total cases adjudicated over the 37 years in our data were Kansas (33), Iowa (33), Indiana (49), Minnesota (27), and Nebraska (21). North Dakota (8), South Dakota (8), and Wisconsin (9).

The next set of data, seen below in Table 1, explores charging patterns for major federal environmental statutes across the Midwest from 1983-2019. While defendants can be charged under multiple statutes in each case, this data gives an idea of the prevalent charging patterns we see within and across

the states. In this data, we found the CWA to be the most prevalent charging statute. In 198 cases, at least one defendant was charged under the Act with a federal environmental crime. In ninety-six cases, at least one defendant was charged under the CAA, making it the second most prevalent charging statute used. RCRA was used seventy-eight times to charge at least one defendant in a case. TSCA (twenty-four cases) and FIFRA (twenty-seven cases) were used less-frequently. In eighty-two cases, we found at least one defendant charged under state-level environmental statutes. This number shows that quite a few (i.e. about 14%) cases were deferred for state prosecution and demonstrates a high level of formal collaboration between state and federal investigators and/or prosecutors.

Table 1. Charging Patterns in Environmental Crime Prosecutions in the Midwestern States, 1983-2019.

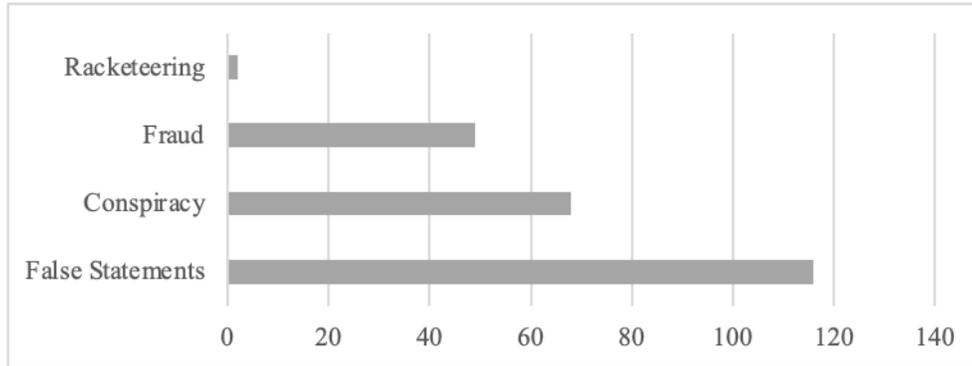
<u>State</u>	<u>CWA</u>	<u>CAA</u>	<u>RCRA</u>	<u>TSCA</u>	<u>FIFRA</u>	<u>State-Level</u>
IA	12	3	6	0	0	9
IN	23	8	6	0	4	4
IL	15	9	7	1	4	13
KS	10	2	9	1	1	1
MI	5	21	18	3	2	7
MN	15	3	5	0	1	0
MO	48	18	18	10	8	7
ND	4	1	1	0	0	0
NE	6	2	1	2	3	2
OH	54	25	6	6	4	37
SD	5	0	0	0	0	1
WI	1	4	1	1	0	1

Source: EPA Summary of Criminal Prosecutions Database

The next figure, Figure 3, shows criminal charging patterns for non-environmental, criminal offenses. In many cases, at least one individual or company was charged with a non-environmental crime either exclusively or in conjunction with a state and/or federal violation. We cataloged 207 cases,

or about 35% of all prosecutions in our dataset, as containing at least one non-environmental criminal charge such as false statements, obstruction, fraud, or racketeering.

Figure 3. Common Criminal Charges in Environmental Crime Prosecutions in the Midwestern States, 1983-2019.



Source: EPA Summary of Criminal Prosecutions Database

The most prevalent non-environmental offenses were giving false statements or falsifying records, conspiracy, fraud, and racketeering. In 116 cases, or 20% of all cases, at least one defendant was charged with false statements. Conspiracy was the second most prevalent non-environmental charge in our data and comprised 12% of cases, or sixty-eight prosecutions. Fraud was the third most prevalent non-environmental criminal charge in our data. In forty-nine cases, or 8% of our data, at least one defendant was charged with fraud. In two cases, defendants were charged with racketeering after participating in organized criminal activities.

C. Criminal Penalty Assessment

In Figure 4, *infra*, we explore the aggregate total penalties assessed to all individuals and company defendants. Aggregating all monetary penalties (fines, restitution, special fees, community payments, supplemental environmental projects, and other fees), we estimate that individual defendants were assessed a combined \$216,378,429 over the thirty-seven-year period analyzed. Further, companies were collectively assessed over \$3.1 billion in monetary penalties. Total probation assessed to all individual defendants was 14,606 months while 4,805 months of probation were assessed to companies. Individuals were assessed a total of 8,255 months of incarceration at sentencing as well as 20,634 hours of community service.²⁹

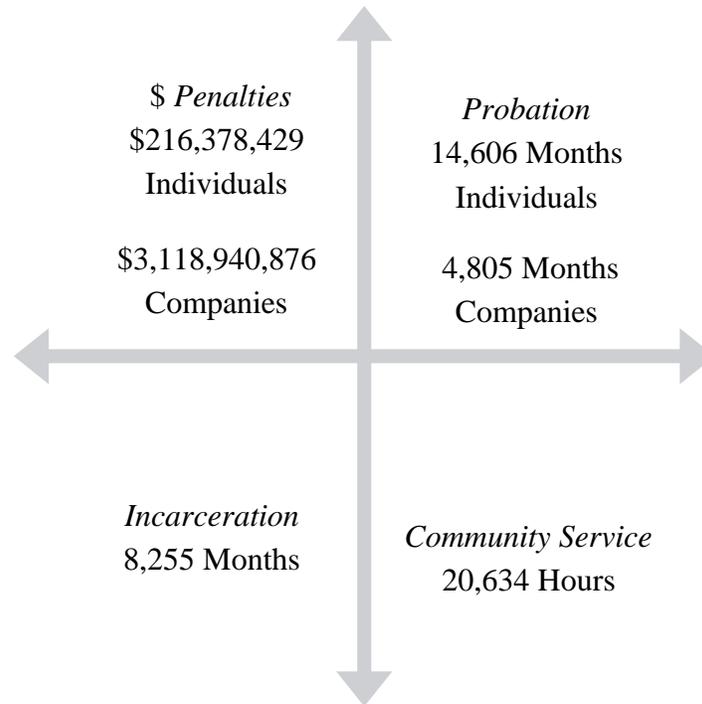
²⁹ Five cases represent 5,308 hours of community service, or about 25% of all community service hours assessed to defendants in our dataset. Executive Advertising was

Across all defendants, the data shows some \$3.3 billion in monetary penalties and 2,306 total years of probation and incarceration assessed at sentencing.³⁰ Some of the larger outlier cases will be discussed in later sections to place these figures into context.

prosecuted under RCRA for illegally storing hazardous waste in an abandoned warehouse. *Summary of Criminal Prosecutions: Executive Advertising*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/73VC-Z7Y2>] (search name "Executive Advertising," state "Michigan," and fiscal year "1986"). The Finishing Corporation of America was prosecuted under the CWA for illegally discharging into a POTW. *Summary of Criminal Prosecutions: Finishing Corporation*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/5DKK-8T4H>] (search name "Finishing Corporation," state "Ohio," and fiscal year "1991"). William N. Bogas, commissioner at the Cleveland Hopkins Airport, was charged with false statements and both RCRA and CERCLA violations pertaining to the storage, disposal, and treatment of hazardous waste at the facility. *Summary of Criminal Prosecutions: William N. Bogas*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/38BP-TGX8>] (search name "Bogas," state "Ohio," and fiscal year "1991"). James Michael Dolmetsch was charged with conspiracy and smuggling of CFC-12 into the United States from Canada. *Summary of Criminal Prosecutions: James Michael Dolmetsch*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/Y8QV-GPQD>] (search name "Dolmetsch," state "Michigan," and fiscal year "2003"). Carl Wolf was prosecuted for making false statements regarding the discharge of industrial wastewater. *Summary of Criminal Prosecutions: Carl Wolf*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/6Y2W-YJ9V>] (search name "Wolf," state "Ohio," and fiscal year "2013").

³⁰ A few prosecutions greatly impact aggregate incarceration totals. Marc Anthony Dorner and eight co-defendants were prosecuted for manufacturing methamphetamines and illegal disposal of hazardous waste without a permit. *Summary of Criminal Prosecutions: Marc Anthony Dorner*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/9H4R-7Y83>] (search name "Dorner," state "Missouri," and fiscal year "2001"). Arnoldo Carrillo Bazan was prosecuted for tampering with consumer products when he intentionally poisoned patrons at an Overland Park, Kansas restaurant. *Summary of Criminal Prosecutions: Arnoldo Carrillo Bazan*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/B652-EA2H>] (search name "Bazan," state "Kansas," and fiscal year "2011"). Darrell Dwayne Smith was prosecuted for wire fraud and aggravated identity theft in conjunction with a fraudulent bio-energy company he created. *Summary of Criminal Prosecutions: Darrell Dwayne Smith*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/M7ZH-26AQ>] (search name "Smith," state "Iowa," and fiscal year "2019"). Kwame Kilpatrick, the former mayor of Detroit, Michigan, was prosecuted for racketeering, extortion, fraud, and tax crimes. *Summary of Criminal Prosecutions: Kwame Kilpatrick*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/B652-EA2H>] (search name "Kilpatrick," state "Michigan," and fiscal year "2014"). These cases collectively account for 2,142 months of incarceration, or about 28% of all incarceration assessed to defendants as sentencing in our dataset. Probation totals were more widely dispersed.

Figure 4. Total Penalties Assessed in Environmental Crime Prosecutions in the Midwestern States, 1983-2019.



Source: EPA Summary of Criminal Prosecutions Database

To provide context for the \$3.1 billion in monetary penalties assessed to companies, Table 2 below shows the companies with the largest monetary penalty at sentencing and the year in which they received that penalty. The largest environmental fine assessed in a criminal prosecution was against Volkswagen AG in 2017. This case included a criminal conspiracy to cheat U.S. emissions testing equipment into certifying clean diesel cars. This extensive fraud involved installing software into vehicles to first recognize when they were receiving emissions testing and then alter systems in the car to present a much higher mileage per gallon than the car could obtain in real-world driving conditions.³¹ The financial success of these high mileage diesel cars was dependent on this scheme through which the company subsequently defrauded hundreds of thousands of U.S. consumers.³²

³¹ *Volkswagen AG Agrees to Plead Guilty and Pay \$4.3 Billion in Criminal and Civil Penalties; Six Volkswagen Executives and Employees are Indicted in Connection with Conspiracy to Cheat U.S. Emissions Tests*, U.S. DEP'T JUST. (Jan. 11, 2017), <https://www.justice.gov/opa/pr/volkswagen-ag-agrees-plead-guilty-and-pay-43-billion-criminal-and-civil-penalties-six> [https://perma.cc/764H-6PUS].

³² Executives were also charged and ended up on the EPA's Most Wanted List. EPA

Volkswagen pled guilty on March 10, 2017, to conspiracy to defraud the United States, wire fraud, violations of the CAA, obstruction of justice, and importation of merchandise by means of false statements. Sentenced to pay a \$2.8 billion criminal penalty on April 21, 2017,³³ Volkswagen had previously reached a civil settlement with EPA, other federal agencies, and the State of California for some \$14.7 billion in damages.³⁴ Removing this fine alone from the data lowers our total fines assessed to companies to a little under \$294 million. In addition, German company IAV GmbH aided Volkswagen in their conspiracy and was sentenced to pay a \$35 million criminal penalty for their role in the scheme on May 22, 2019.³⁵

Table 2. Large Monetary Penalties Assessed to Companies in Environmental Crime Prosecutions in the Midwestern States.

<i>Year</i>	<i>Company</i>	<i>State</i>
2011	Honeywell Metropolis Works	IL
2012	Scotts Miracle-Gro Company	OH
2013	Wal-Mart Missouri	MO
2017	Volkswagen AG	MI
2019	IAV GmbH	MI

Source: EPA Summary of Criminal Prosecutions Database.

Fugitives, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/enforcement/epa-fugitives> [<https://perma.cc/2J3V-7Z57>].

³³ *Summary of Criminal Prosecutions: Volkswagen*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/3QHB-V364>] (search name "Volkswagen," state "Michigan," and fiscal year "2017"). Volkswagen's fine represents the largest criminal fine assessed to any environmental offender in U.S. history, absent the fine against BP in the Deepwater Horizon disaster where the company was ordered to pay \$4 billion in criminal fines. *See Summary of Criminal Prosecutions: BP Exploration*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm?action=3&prosecution_summary_id=2468 [<https://perma.cc/Q63M-2YKC>].

³⁴ Paul A. Eisenstein, *Volkswagen Slapped with Largest Ever Fine for Automakers*, NBC NEWS (Apr. 21, 2017), <https://www.nbcnews.com/business/autos/judge-approves-largest-fine-u-s-history-volkswagen-n749406> [<https://perma.cc/K5HX-NUAU>].

³⁵ *Summary of Criminal Prosecutions: IAV GmbH*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/NQ8N-VULV>] (search name "IAV," state "Michigan," and fiscal year "2019"). A series of executives were also charged in the Volkswagen case. Six German nationals and one Italian national are currently on the EPA's Most Wanted List in connection with the case. *See EPA Fugitives*, *supra* note 32.

Wal-Mart Missouri paid the second highest fine in our data (more than \$110 million) for failing to have a hazardous waste training program in place and for failing to train its employees in proper disposal practices.³⁶ As a result, hazardous wastes were routinely disposed of in trash municipal sewers, or sent to a variety of six different product return centers throughout the United States.³⁷ The third highest fine in our data was assessed to Scotts Miracle-Gro Company, prosecuted for selling more than 70 million units of bird food that had been illegally treated with a pesticide toxic to birds.³⁸ Scotts was charged under FIFRA and ordered to pay \$4 million in criminal fines and \$500,000 to organizations that protect bird habitats.³⁹ The company also settled with EPA in a civil agreement to pay \$6 million in penalties and \$2 million to fund environmental projects.⁴⁰

The final and fourth highest fine was assigned to Honeywell Metropolis Works, a company that owns the only uranium hexafluoride conversion facility in the United States. Located in Massac County, Illinois, EPA Special Agents executed a search warrant in April 2009 and found approximately 7,500 illegally stored barrels of hazardous and radioactive wastes at the facility. The company was charged under RCRA for illegally storing hazardous waste without a permit and sentenced on March 11, 2011 to pay a \$11.8 million fine. Additionally, the company was ordered to implement a household hazardous waste collection program costing approximately \$200,000.⁴¹

³⁶ *Wal-Mart Pleads Guilty to Federal Environmental Crimes, Admits Civil Violations and Will Pay More Than \$81 Million*, U.S. DEP'T JUST. (May 28, 2013), <https://www.justice.gov/opa/pr/wal-mart-pleads-guilty-federal-environmental-crimes-admits-civil-violations-and-will-pay-more> [<https://perma.cc/H3BU-UM2F>].

³⁷ *Summary of Criminal Prosecutions: Wal-Mart Missouri*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/WWQ2-2WDE>] (search name "Wal-Mart," state "Missouri," and fiscal year "2013").

³⁸ *Scotts Miracle-Gro Will Pay Largest Criminal Penalty Under FIFRA*, AGRI-PULSE (Sept. 10, 2012), <https://www.agri-pulse.com/articles/2229-scotts-miracle-gro-will-pay-largest-criminal-penalty-under-fifra> [<https://perma.cc/J2G3-B5WK>].

³⁹ *Summary of Criminal Prosecutions: Scotts Miracle Gro Company*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/L8L2-9P5D>] (search name "Scotts," state "Ohio," and year "2012").

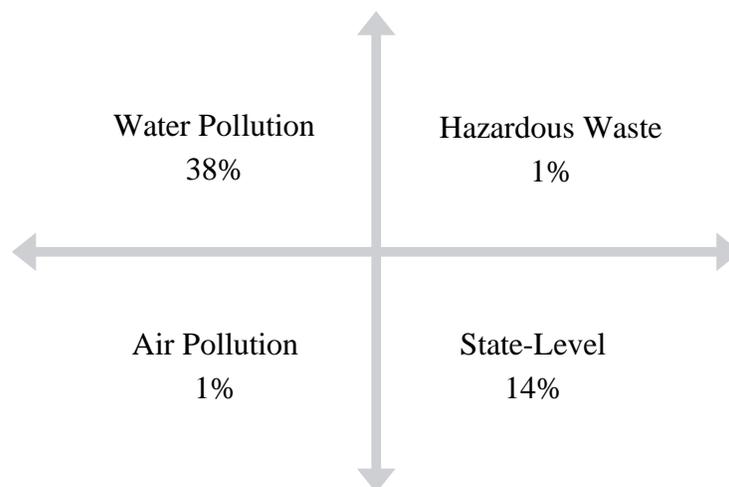
⁴⁰ *Id.*

⁴¹ *Summary of Criminal Prosecutions: Honeywell Metropolis Works*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/3AL7-PLU4>] (search name "Honeywell Metropolis Works," state "Illinois," and fiscal year "2011").

III. THEMES AND TYPOLOGY IN PROSECUTIONS

In this final segment of our analysis, we re-examine all 590 criminal prosecutions in our dataset to develop a typology of the primary themes found in the prosecutions. While prosecutions can be undertaken for multiple crimes and defendants can be charged under various statutes, we attempt to place these in a straightforward typology based on what we perceive to be the primary crime of the case. Through this approach, we primarily order cases around a natural typology of air, water, and hazardous waste crimes. We present these results in Figure 5 and follow with several illustrative case examples.⁴²

Figure 5. Typology of Environmental Crime Prosecutions in the Midwestern United States.



Source: EPA Summary of Criminal Prosecutions Database

Our analysis shows that the most prevalent type of prosecution involves water pollution crimes. Across all prosecutions in our dataset, 224 cases, or 38% of prosecutions, center on water pollution. In most of these cases, one or more defendants were charged under the CWA, primarily for crimes such as illegally discharging waste without a permit, violating pretreatment standards, and making false statements. Other defendants were charged under different federal statutes, such as the Act to Prevent Pollution from Ships (APPS), Rivers and Harbors Act (for illegally discharging oil into the ocean), or the Refuse Act (for illegally discharging hazardous wastewater).⁴³ Other

⁴² Thirteen percent of prosecutions are not classified as air, water, hazardous waste, or state-level crimes in the analysis and are discussed below.

⁴³ Act to Prevent Pollution from Ships, 33 U.S.C. § 1905-1915 (1980) (implementing provisions of the International Convention for the Prevention of Pollution from Ships

defendants violated the Safe Drinking Water Act (SDWA).⁴⁴ To provide context for water pollution prosecutions, we turn to a case-by-case analysis of Valmont Industries, Shell Pipeline Corporation, Hugh Baker, and Scott Harris.

A. Water Pollution Crimes

The first case example involves Valmont Industries, which operates a steel product manufacturing facility in Valley, Nebraska.⁴⁵ The company and two of its employees were indicted for making false statements on discharge monitoring reports (DMRs) and knowingly rendering a monitoring method inaccurate. The company was sentenced to pay a \$450,000 fine, \$70 in court costs, \$100 to the Crime Victims Fund, and to issue a public apology in the Omaha World Herald.⁴⁶

In the Shell Pipeline Corporation case, Shell was prosecuted for a rupture that occurred between Cushing, Oklahoma and Wood River, Illinois in its Ozark Pipeline. The rupture of this pipeline released approximately 863,268 gallons of crude oil into a tributary of the Gasconade River, located in Vienna, Missouri.⁴⁷ The company pled guilty to charges under the Refuse Act for discharging refuse into the navigable waters of the United States without a permit and was sentenced to pay a \$200,000 fine along with \$800,000 in restitution.⁴⁸

Individuals can also be held criminally liable for water pollution crimes. For example, Hugh Baker was prosecuted as an individual under the CWA for altering the navigable waters of the United States without a permit.⁴⁹ In this case, Baker and the High-Grade Sand and Gravel Company failed to

(MARPOL)); Refuse Act, 33 U.S.C. § 9 (part of the Rivers and Harbors Act).

⁴⁴ Safe Drinking Water Act, 42 U.S.C. § 300f (1974).

⁴⁵ Valmont Indus., Inc., No. 07-89-LO68 (U.S. Env't Prot. Agency February 25, 1990) [<https://perma.cc/J5U9-TM3B>].

⁴⁶ *Summary of Criminal Prosecutions: Valmont Industries*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/7QFY-RH9P>] (search name "Valmont Industries," state "Nebraska," and year "1986").

⁴⁷ *Summary of Criminal Prosecutions: Shell Pipeline Corporation*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/E82T-KWUN>] (search name "shell pipeline," state "Missouri," and fiscal "1992").

⁴⁸ *Id.*

⁴⁹ Filling in wetlands, constructing dams, building berms, or otherwise altering waterways requires a § 404 Permit from the U.S. Army Corps of Engineers. These permits are issued in conjunction with the EPA and come under the jurisdiction of the CWA. *See Permit Program Under CWA Section 404*, U.S. ENV'T PROT. AGENCY, www.epa.gov/cwa-404/permit-program-under-cwa-section-404 [<https://perma.cc/9WUX-PTR7>].

obtain a Section 404 permit under the CWA from the U.S. Army Corps of Engineers and continued to construct a dam without the permit anyways. Baker was sentenced to twenty-four months' probation for the violation.⁵⁰ A second example of an individual being held criminally liable for water pollution is that of Scott Harris, who was charged with providing false statements after he submitted a false drinking water analysis to the Iowa Department of Natural Resources.⁵¹ As the certified operator of Edgewood, Iowa's drinking water treatment plant, Harris was sentenced to twenty-four months' probation and to pay a \$1,000 fine.⁵²

B. Air Pollution Crimes

The second most prominent theme from the data was the prevalence of air pollution crimes, totaling 111 cases (19% of all prosecutions). Most of these prosecutions focused on asbestos-related crimes. Asbestos is regulated as a Hazardous Air Pollutant (HAP) under NESHAP guidelines.⁵³ Releasing asbestos into the ambient air is therefore regulated under the CAA, and unpermitted releases of asbestos are prosecuted as air pollution crimes.⁵⁴ The most common example of this type of crime found in the data is the illegal removal of asbestos containing materials (ACM), such as pipe insulation, floor tiles, and ceiling tiles. According to our data, it is estimated that sixty-five air pollution prosecutions, or 59% of total air pollution prosecutions, involve asbestos. Due to the ubiquitous nature of asbestos and its prevalence as a building and insulating material in the mid 20th century, ACM is still found in most commercial structures and homes.⁵⁵ Schools are regulated under the Asbestos Hazard Emergency Response Act (AHERA), which

⁵⁰ *Summary of Criminal Prosecutions: Hugh Baker*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/PL5Z-9ZNY>] (search name "Baker," state "Kansas," and fiscal year "2008").

⁵¹ *Summary of Criminal Prosecutions: Scott Harris*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/3WWL-BV4R>] (search name "Scott Harris," state "Iowa," and fiscal year "2010").

⁵² *Id.*

⁵³ Public knowledge of asbestos dangers, physical evidence available from illegal removal operations, and the broad reach of the criminal provisions of the CAA to punish asbestos crimes explains why so many cases are prosecuted here. See *Overview of the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/asbestos/overview-asbestos-national-emission-standards-hazardous-air-pollutants-neshap>. [<https://perma.cc/GZV7-Z48X>].

⁵⁴ Criminal Provisions of the Clean Air Act, *supra* note 11.

⁵⁵ Don Colburn, *The Ubiquitous Asbestos*, WASH. POST (Nov. 6, 1985), <https://www.washingtonpost.com/archive/lifestyle/wellness/1985/11/06/the-ubiquitous-asbestos/b5b28f40-9118-4e28-88f1-777e474840e7/> [<https://perma.cc/4CX4-U94C>].

requires the schools to inspect their facilities for asbestos, prepare management plans to prevent potential hazards, and determine ways to reduce potential hazards.⁵⁶ The high cost of proper certification, remediation, and disposal of ACM creates ample opportunities for potential crimes to take place.

To provide context for how companies and individuals are prosecuted for asbestos related crimes, we turn to an analysis on two distinct prosecutions. First, in the prosecution of Wade J. Bertelson and Curry Environmental Service, charges were brought for the failure to adequately wet ACM when engaging in asbestos remediation. The company, operating in Illinois and Iowa, illegally issued training certificates to individuals without requiring them to attend the proper training courses. The company then submitted these false training certificates to the Illinois Department of Public Health for licensing purposes.⁵⁷ Both Bertelson and Curry Environmental were charged with knowing violations of the CAA, with Bertelson being sentenced to fifteen months incarceration, thirty-six months' probation, an assessment of \$100, and a federal fine of \$1,800. Curry Environmental was sentenced to sixty months' probation, a \$1,200 special assessment, and a \$1 million federal fine.⁵⁸

A second example of an asbestos prosecution was the matter of Katrina Frede-Cohn and Phillip H. Cohn. At issue here was the demolition of buildings in East St. Louis without properly containing asbestos, leaving material on site that required emergency permits to properly clean up.⁵⁹ Involved in a broader scheme to obtain control of buildings and land in the area, the defendants were charged with violations of the CAA as well as mail fraud and racketeering.⁶⁰ Katrina Frede-Cohn was sentenced to one day incarceration, forty-eight months' probation, a \$100 special assessment, and a \$200 federal fine. Philip Cohn was sentenced to sixty months incarceration, sixty months' probation, and to pay \$347,200 in restitution.⁶¹

⁵⁶ *Asbestos and School Buildings*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/asbestos/asbestos-and-school-buildings> [<https://perma.cc/BQ28-XDXM>].

⁵⁷ *Summary of Criminal Prosecutions: Wade J. Bertelson*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/KGF7-MQSX>] (search name "Bertelson," state "Illinois," and fiscal year "2002").

⁵⁸ *Id.*

⁵⁹ *Summary of Criminal Prosecutions: Keatrina Frede-Cohn*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/WCU6-VWGC>] (search name "Cohn," state "Illinois," and fiscal year "2005").

⁶⁰ *Id.*

⁶¹ *Id.*

As previously mentioned, asbestos related crimes are not the only crimes prosecuted under the CAA. One of the most notable prosecutions is the explosion at the Ashland Oil Petroleum Refinery in St. Paul Park, Minnesota, where an improperly sealed manhole cover at the facility allowed hydrocarbon fumes to rise to the surface.⁶² Five company employees were injured because of this explosion and Ashland Oil was charged with violations of the CAA, including negligent endangerment and false certifications for reports submitted to the Minnesota Pollution Control Agency. Ashland Oil was sentenced to sixty months' probation and ordered to pay \$3,750,000 in restitution to the injured employees and first responders. The company was also ordered to pay a \$1.5 million criminal fine and \$3.9 million to the National Park Foundation.⁶³

The final example is that of the Columbus Steel Castings Company's steel foundry in Columbus, Ohio.⁶⁴ The company was prosecuted for allowing numerous control device malfunctions and for deviations from processes required under their Title V permit between 2004 and 2007. The company did not report these malfunctions or unpermitted emissions, nor did they properly vent emissions through emissions control devices, perform daily visual emissions checks, or properly perform stack testing.⁶⁵ The company was charged with knowing violations of the CAA and sentenced to twelve months' probation, a \$660,000 fine, and to pay \$165,000 as a community service payment to two Columbus charitable organizations.⁶⁶

⁶² *Ashland Pleads Guilty in 1997 Fire*, WASH. TIMES (May 14, 2002), <https://www.washingtontimes.com/news/2002/may/14/20020514-024724-5634r/> [<https://perma.cc/DS82-XNJJ>].

⁶³ *Summary of Criminal Prosecutions: Ashland Oil*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/CMD5-H2Y4>] (search name "Ashland," state "Minnesota," and fiscal year "2003").

⁶⁴ Megan Henry, *Teardown of Columbus Castings Continues*, COLUMBUS DISPATCH (Aug. 30, 2018), <https://www.dispatch.com/news/20180830/teardown-of-columbus-castings-continues> [<https://perma.cc/AJT3-Q5E3>].

⁶⁵ Major stationary sources of air emissions are required to hold Title V permits under the CAA, which is the primary mechanism for regulating air emissions at these facilities. *Who Has to Obtain a Title V Permit?*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit> [<https://perma.cc/H7TV-LUEK>].

⁶⁶ *Summary of Criminal Prosecutions: Columbus Steel Castings*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/VJ9N-42GZ>] (search name "Columbus," state "Ohio," and fiscal year "2012").

C. Hazardous Waste Crimes

The third most prevalent set of violations found in our dataset was hazardous waste crimes, occurring in ninety-seven cases, or 16% of all prosecutions. Hazardous waste crimes typically involve one or more cradle-to-grave violations of RCRA, including: illegal storage, transport, or disposal of hazardous waste without a permit; transporting hazardous waste without a permit; or failure to notify government officials of such actions. Hazardous waste crimes can also be prosecuted under CERCLA for failure to notify officials of the release of a hazardous substance. The following two case examples are illustrated below to provide context surrounding the prosecution of hazardous waste crimes.

The first example surrounds Chemical Commodities, a company whose truck containing hazardous waste caught fire in a Kansas City neighborhood and resulted in the evacuation of the area.⁶⁷ The company was charged under RCRA with knowingly treating and disposing of a hazardous substance (methyl bromide) without a permit, transporting hazardous waste without a manifest, and knowing endangerment of employees by unlawful disposal of hazardous waste.⁶⁸ The company was sentenced to pay a \$505,760 fine, sixty months of probation, and a \$200 special assessment.⁶⁹

In the second example, co-defendants David Fredericy and Joseph Kuzlik were prosecuted for contaminating a porch with the intent to intimidate interracial children—a hate crime targeted at African American residents in his neighborhood.⁷⁰ Fredericy and Kuzlik then lied to investigators of the Federal Bureau of Investigation (FBI), who were conducting a joint investigation with EPA-CID, and were charged with conspiracy, false statements, and interference with housing rights. Kuzlik was sentenced to twenty-seven months incarceration, thirty-six months' probation, a \$300 special assessment, and \$26,701 in restitution to his victims.⁷¹ Fredericy was

⁶⁷ *Summary of Criminal Prosecutions: Chemical Commodities*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/ZDE4-NJVS>] (search name “Chemical Commodities,” state “Kansas,” and fiscal year “1990”).

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Slavic Village: Racist Hate Crime*, 19 NEWS (Oct. 26, 2006), <https://www.cleveland19.com/story/5595088/slavic-village-racist-hate-crime/> [<https://perma.cc/UF8X-X6JF>].

⁷¹ *Summary of Criminal Prosecutions: David Fredericy*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/LSE5-ZLXX>] (search name “Fredericy,” state “Missouri,” and fiscal year “2007”).

sentenced to thirty-three months incarceration, thirty-six months' probation, an assessment fee of \$300, and \$26,701 in restitution to his victims.⁷²

D. State-Level and Other Environmental Crimes

The fourth and final primary environmental crime revolved around state-level environmental offenses, comprising about eighty-one total cases, or 14% of prosecutions. The heavy presence of state crimes indicates some involvement with EPA-CID agents and suggests a level of cooperation between state and federal agents. Prosecutions may contain federal charges against one or more defendants, but in eighty-one cases, we found the primary crimes to be state-level offenses. These crimes range anywhere from air and water pollution to hazardous waste crimes. In the prosecution of Keith Mackenzie, Mackenzie was found having dumped a large amount of home heating oil into a local storm sewer.⁷³ This dumping resulted in a large-scale clean-up and Mackenzie was charged with state-level environmental violations, sentenced to two months incarceration, twelve months' probation, a \$46 special assessment, and a \$9,000 fine for the cost of the cleanup borne by local officials.⁷⁴

It is important to make the distinction that approximately seventy-seven cases, or 13% of the total prosecutions, did not fit into one of the four categories found in Figure 5. These unclassified cases often fell into a few categories, such as the off-label use of pesticides to kill wildlife; off-label sale, use, or application of registered pesticides; or failure to give lead paint disclosures or lead paint-related crimes. The most prevalent unclassified crime involved FIFRA violations. These violations typically involved selling misbranded or unregistered pesticides, using pesticides in an off-label manner that accidentally or intentionally killed wildlife, or treating houses and other facilities with pesticides not approved for that specific use.

For example, Thomas Huge who, alongside his company, was prosecuted for selling misbranded pesticides and submitting false documentation to the Missouri Department of Agriculture.⁷⁵ Huge was prosecuted under FIFRA

⁷² *Id.*

⁷³ *Summary of Criminal Prosecutions: Keith Makenzie*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/WL82-5YM3>] (search name "Makenzie," state "Ohio," and fiscal year "2003").

⁷⁴ *Id.*

⁷⁵ *Summary of Criminal Prosecutions: Thomas Huge*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/HB4P-HYKC>] (search name "Huge," state "Missouri," and fiscal year "1998").

for the unlawful distribution and selling of this misbranded pesticide and was sentenced to twelve months' probation. Huge and his company were ordered to pay \$30,000 in criminal fines and \$35,000 in civil penalties.⁷⁶ In another case, Kenneth Schaffer was charged with killing hundreds of migratory birds when he spread pesticide-laced bird seed on his property in Missouri.⁷⁷ Schaffer was charged not only under FIFRA for off-label use of a registered pesticide, but also under the Migratory Bird Treaty Act for the illegal taking of protected wildlife.⁷⁸ Schaffer was sentenced to pay a \$50 special assessment and a \$4,000 fine.⁷⁹

A third case illustration, and one of the odder examples analyzed in the dataset, involves the prosecution of a seventy-year-old homeless man named Manuel Garcia.⁸⁰ The defendant admitted to making three threatening phone calls in October of 2013, claiming there was a threat to the public water supply in the cities of Wichita, Kan., Topeka, Kan., St. Louis, Mo., and Kansas City, Mo.⁸¹ Garcia also called the Alcohol, Tobacco, and Firearms Joint Support Operations Center in Washington, D.C., along with the Kansas City Police Department, to communicate the same threat.⁸² The Kansas City Police Department placed snipers on observation posts near water supplies and set twenty-four-hour patrols at all of the city's water treatment facilities.⁸³ For approximately two weeks, four different metropolitan areas engaged in systematic responses to Garcia's hoax phone calls.⁸⁴ Garcia was ultimately sentenced to twenty-four months incarceration.⁸⁵

⁷⁶ *Id.*

⁷⁷ *Summary of Criminal Prosecutions: Kenneth Schaffer*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/YKH4-WWF7>] (search name "Schaffer," state "Missouri," and fiscal year "2005").

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Summary of Criminal Prosecutions: Manuel Garcia*, U.S. ENV'T PROT. AGENCY, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm [<https://perma.cc/MVH6-VU8M>] (search name "Manuel Garcia," state "Missouri," and fiscal year "2015").

⁸¹ Matt Campbell, *Man Gets Two Years in Federal Prison for Threats to Water Supplies in KC, Other Cities*, KAN. CITY STAR (Nov. 24, 2014), <https://www.kansascity.com/news/local/crime/article4127070.html> [<https://perma.cc/699G-ECWY>].

⁸² *Id.*

⁸³ Matt Campbell, *supra* note 81.

⁸⁴ U.S. Attorney's Office, *Kansas City Man Sentenced for Phone Call Hoax with False Threat to Contaminate Water Supply*, FED. BUREAU INVESTIGATION (Nov. 24, 2014), <https://www.fbi.gov/contact-us/field-offices/kansascity/news/press-releases/kansas-city-man-sentenced-for-phone-call-hoax-with-false-threat-to-contaminate-water-supply> [<https://perma.cc/J4VU-ZQQ4>].

⁸⁵ U.S. Attorney's Office, *KC Man Pleads Guilty to Hoax with False Threat to*

IV. FINDINGS: EPA-CID PROSECUTIONS IN THE MIDWEST

Our analysis of 590 criminal prosecutions resulting from EPA-CID investigations in the Midwestern States from 1983 to 2019 yielded a few distinct findings. The first is that over time, prosecutions have been infrequent. While the number of prosecutions has increased as the EPA-CID staff has grown and gained expertise, the chance of an offender being ultimately prosecuted for an environmental crime is decidedly low. A second finding is that prosecutions are disproportionately low in a handful of states. Specifically, Missouri and Ohio alone account for almost 45% of the prosecutions in our dataset while North Dakota, South Dakota, and Wisconsin only account for .04%. The third finding is that EPA-CID investigators and federal prosecutors targeted water pollution crimes more so than other environmental crimes. In roughly a third of all prosecutions, at least one defendant was charged with a water pollution crime under the CWA. This is most likely due to the Midwestern states' proximity to the Great Lakes and the amount of industry that utilizes them. Air pollution on the other hand was the second most prevalent environmental crime, totaling 19% of all prosecutions. Air pollution prosecutions were heavily slanted towards asbestos cases, making up 59% of all the air pollution crimes. Hazardous waste crimes came in third, comprising about 16% of all prosecutions. Our fourth finding was the disparities between the number of companies prosecuted and the number of individuals that were prosecuted. With water pollution crimes, 124 (55%) of the cases involved at least one company as a defendant. By contrast in air pollution prosecutions, only thirty-one cases (28%) involved at least one company as a defendant. Hazardous waste prosecutions involved a much larger frequency with forty-one prosecutions (42%) having at least one company named as a defendant. Across all total prosecutions, roughly 42% of them contained at least one company as a named defendant in the case.

CONCLUSION

This article concludes by offering a few reasonable suggestions for improving the criminal enforcement of federal environmental laws in the United States. The first is the need to enhance the profile of environmental criminal enforcement. The public rarely sees reports of environmental crimes in the mass media unless there is an explosion or serious injury. Moreover, individuals often fail to see the seriousness of environmental crimes or equate

Contaminate Water Supply, U.S. DEP'T JUST. (Jun. 2, 2014), <https://www.justice.gov/usao-wdmo/pr/kc-man-pleads-guilty-phone-call-hoax-flase-threat-contaminate-water-supply> [<https://perma.cc/5VPF-JN3H>]. *See also id.*

their overall effects on society compared to those of street crimes.⁸⁶ Until there is a shift in perception regarding environmental crime as “real” crime, it will be easier for policymakers to underfund these important agencies. A way for the public to better understand environmental crimes would be to bring more awareness to environmental crimes at industrial facilities located near environmental justice communities. The Biden Administration can help bring this awareness by emphasizing the immediate health impacts these facilities are having on those that live in the community. Another possibility is for the Biden Administration to make stronger public policy connections between the well-regulated fossil fuel industry and Biden’s goal to move the country towards carbon neutrality.⁸⁷

Second, there is a need for additional policing and prosecutorial resources to investigate and punish environmental crimes. EPA-CID currently has less than 150 special agents responsible for policing the entire country.⁸⁸ The federal statute requires a minimum of 200.⁸⁹ Without taking the steps to meet statutory requirements for investigators, EPA-CID cannot be sufficiently effective in policing environmental crimes. While EPA and DOJ can utilize support from within and from other agencies, increasing the number of specialized environmental crime prosecutors would go a long way towards enhancing criminal prosecution outcomes. While the Biden Administration has pledged resources to the DOJ, EPA, and other federal agencies to prioritize environmental justice issues in the United States,⁹⁰ there still must be budgeting for additional attorneys within ECS and special agents within EPA-CID to focus exclusively on environmental crimes near environmental

⁸⁶ Melissa L. Jarrell, *Environmental Crime and Injustice: Media Coverage of a Landmark Environmental Crime Case*, 6 S.W. J. CRIM. JUST. 25, 27-28 (2009).

⁸⁷ Gin Armstrong & Derek Seidman, *Fossil Fuel Industry Pollutes Black & Brown Communities While Propping up Racist Policing*, EYES TIES (Jul. 27, 2020), <https://news.littlesis.org/2020/07/27/fossil-fuel-industry-pollutes-black-brown-communities-while-propping-up-racist-policing/> [<https://perma.cc/3ATJ-W3VM>]; *The Biden Plan for A Clean Energy Revolution and Environmental Justice*, BIDEN/HARRIS PRESIDENTIAL CAMPAIGN, <https://joebiden.com/climate-plan/> [<https://perma.cc/6YNT-3EGG>].

⁸⁸ PUBLIC EMP. FOR ENV’T RESPONSIBILITY, EPA CID AGENT COUNT (Nov. 21, 2019) [<https://perma.cc/E67Y-X8CX>].

⁸⁹ Pollution Prosecution Act of 1990, 42 U.S.C. §§ 13101-13109.

⁹⁰ *Fact Sheet: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government*, WHITE HOUSE (Jan. 27, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/> [<https://perma.cc/HJ57-KBL5>].

justice communities. This necessary budgeting would likely allow for the Administration to achieve its goal in this area.⁹¹

Finally, our third suggestion is to enhance stakeholder participation in environmental justice communities by encouraging and enhancing resources for community policing of industrial facilities. While visual monitoring of industrial facilities is nearly impossible due to the various air and water monitors set up by federal and state environmental agencies, many times these monitors report extensive emissions over their permitted levels and are met with little regulatory response.⁹² Encouraging citizens to engage in community policing efforts could help these communities in a substantive manner by helping with the regulatory enforcement process and simultaneously by helping EPA-CID and their limited policing resources. An easy and existing method for achieving greater input is the EPA's "Report A Violation" website, which generated thirty-five cases and six referrals for successful prosecution in the first five years of its existence.⁹³ Encouraging communities to report violations, and following up on them routinely and quickly, would help foster trust in the government and additional community engagement.⁹⁴

⁹¹ Zack Budryk, *Biden Budget Proposes \$1.4 Billion for Environmental Justice*, HILL (Apr. 9, 2021), <https://thehill.com/policy/energy-environment/547383-biden-budget-proposal-includes-14-billion-toward-environmental> [<https://perma.cc/V9UF-ULKF>].

⁹² Brooks Hays, *Report Reveals Elevated Benzene Levels at 10 U.S. Oil Refineries*, UNITED PRESS INT'L (Feb. 6, 2020), https://www.upi.com/Science_News/2020/02/06/Report-reveals-elevated-benzene-levels-at-10-US-oil-refineries/8161581008014/ [<https://perma.cc/7PZC-JM3P>]. See also *Interactive Map of Air Quality Monitors*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality> [<https://perma.cc/QX55-NCTG>].

⁹³ *Enforcement and Compliance History Online (ECHO): Report a Violation*, U.S. ENV'T PROT. AGENCY, <https://echo.epa.gov/report-environmental-violations> [<https://perma.cc/YLC9-T9VD>].

⁹⁴ U.S. ENV'T PROT. AGENCY, CRIMINAL ENFORCEMENT PROGRAM 6 (Oct. 2011) [<https://perma.cc/2PCF-EXU4>].