ONE PERSON'S TRASH, ANOTHER PERSON'S RENEWABLE ENERGY? CREATING A CLEANER, MORE JUST RENEWABLE PORTFOLIO STANDARD IN PENNSYLVANIA BY REVOKING MUNICIPAL SOLID WASTE'S ALTERNATIVE ENERGY DESIGNATION*

I. INTRODUCTION

Consider for a moment the life of a piece of trash. It may be a water bottle or a paper towel or a banana peel, but regardless of its identity, it goes somewhere after it has been thrown into a trashcan. The question is, where? Depending on its material composition, it may be recycled or composted, but more often than not, it will be whisked away by a garbage truck and deposited into one of the United States' 1,269 landfills.[1] It is also possible, however, that it finds its way to a waste incineration facility where it undergoes a combustion process that converts waste into electricity used to power homes and businesses across the country.[2]

This waste management method appears to solve one of the biggest problems with landfills, which produce enormous amounts of methane gas, a greenhouse gas that has the distinction of trapping more heat in the atmosphere than nearly any other gas.[3] Instead of spending the rest of its days belching methane gas into the atmosphere while deteriorating in a landfill, a piece of trash could be put to good use as electricity with the

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1. U.S. ENV'T PROT. AGENCY, ADVANCING SUSTAINABLE MATERIALS MANAGEMENT: 2018 TABLES AND FIGURES 53 (2020) [hereinafter ADVANCING SUSTAINABLE MATERIALS 2018], http://www.epa.gov/sites/production/files/2021-01/documents/2018_tables_and_figures_dec_2020_fnl_508.pdf [http://perma.cc/29RM-D2E9]; *see* ANA ISABEL BAPTISTA & ADRIENNE PEROVICH, NEW SCH. TISHMAN ENV'T. & DESIGN CTR., U.S. MUNICIPAL SOLID WASTE INCINERATORS: AN INDUSTRY IN DECLINE 10 (2019) (showing a pie chart of waste disposal methods illustrating that fifty-two percent of U.S. municipal solid waste is landfilled).

2. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, U.S. ENV'T PROT. AGENCY, http://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw [http://perma.cc/SE7C-9P43] (last visited on Apr. 1, 2022); s*ee* ADVANCING SUSTAINABLE MATERIALS 2018, *supra* note 1, at 80.

3. *See* Gabriel Yvon-Durocher, Andrew P. Allen, David Bastviken, Ralf Conrad, Cristian Gudasz, Annick St-Pierre, Nguyen Thanh-Duc & Paul A. del Giorgio, *Methane Fluxes Show Consistent Temperature Dependence Across Microbial to Ecosystem Scales*, 507 NATURE 488, 488 (2014) ("Methane (CH_4) is an important greenhouse gas because it has 25 times the global warming potential of carbon dioxide (CO_2) by mass over a century. Recent calculations suggest that atmospheric CH_4 emissions have been responsible for approximately 20% of Earth's warming since pre-industrial times."); *Basic Information About Landfill Gas*, U.S. ENV'T PROT. AGENCY, http://www.epa.gov/lmop/basic-information-about-landfill-gas#methane [http://perma.cc/VM46-HZ3H] (last visited Apr. 1, 2022) ("Methane is a potent greenhouse gas 28 to 36 times more effective than CO_2 at trapping heat in the atmosphere over a 100-year period . . . .").

help of incineration. Trash is no longer waste under this model; it is a renewable energy source.[4]

On paper, the waste-energy model seems like a perfect addition to a new renewable energy regime. But there is just one problem: waste incineration produces harmful emissions of its own.[5] Waste incineration facilities produce large quantities of pollutants—such as dioxins, lead, and mercury—as well as greenhouse gases.[6] Compounding the problem is the fact that these facilities contribute to environmental injustice; the large majority of waste incineration facilities are located in communities that have long been discriminated against—communities of color, low-income communities, or both.[7]

The fact that waste incineration results in the emission of dangerous contaminants that disproportionately affect historically marginalized communities has not stopped multiple states from categorizing incineration as a renewable or alternative energy source under their renewable energy legislation.[8] The Commonwealth of Pennsylvania is one example.[9] Under Pennsylvania's renewable energy standard,[10] electric distribution companies and electric generation suppliers must generate a certain percentage of their electricity from various alternative energy sources, including municipal solid waste (MSW) incineration.[11]

However, Pennsylvanians have one thing many residents of other states do not: the constitutional right to a clean environment.[12] This fact presents a bit of a quandary for the Pennsylvania government. If the residents of Pennsylvania have a constitutional right

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4. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2.

5. BAPTISTA & PEROVICH, *supra* note 1, at 5 ("MSW incinerators are relatively large emitters of air pollutants with some studies showing that they emit several pollutants at a rate exceeding that of fossil fuel power plants. . . . Stack emissions from incinerators include a variety of pollutants harmful to health such as particulate matter, dioxins, lead, and mercury.").

6. *Id.*

7. *Id.* at 4–6 ("One of the distinct characteristics of garbage incinerators in the United States is that they are often sited in communities of color and low-income communities, also referred to as environmental justice (EJ) communities. 58 incinerators, or 79 percent of all MSW incinerators in the U.S. are located in environmental justice communities. . . . [T]hese plants represent an environmental injustice because they burden communities of color and low-income communities where they are located.").

8. MARIE DONAHUE, WASTE INCINERATION: A DIRTY SECRET IN HOW STATES DEFINE RENEWABLE ENERGY, INST. FOR LOCAL SELF-RELIANCE (2018), http://ilsr.org/wp-content/uploads/2018/12/ILSRIncinerationFInalDraft-6.pdf [http://perma.cc/W7C4-CP6E].

9. *See* Alternative Energy Portfolio Standards Act, 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8 (West 2022); *AboutAEPS*, PA. ALT. ENERGY CREDIT PROGRAM, http://www.pennaeps.com/aboutaeps [http://perma.cc/NZK5-2Q39] (last visited Apr. 1, 2022).

10. *See Renewable Portfolio Standards*, NAT'L RENEWABLE ENERGY LAB'Y, http://www.nrel.gov/state-local-tribal/basics-portfolio-standards.html [http://perma.cc/9EJW-HAP3] (last visited Apr. 1, 2022); *Energy Resources for State and Local Governments: Energy and Environment Guide to Action - Chapter 5*, U.S. ENV'T PROT. AGENCY, http://www.epa.gov/statelocalenergy/energy-and-environment-guide-action-chapter-5-renewable-portfolio-standards [http://perma.cc/R3LM-SSXQ] (last visited Apr. 1, 2022).

11. 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9. Throughout this Comment, I will refer to municipal solid waste incineration with a variety of terms, including MSW incineration, waste incineration, incineration, waste-to-energy, and WTE. These terms are synonymous.

12. *See* PA. CONST. art. I, § 27.

to a clean environment upon which the government cannot unreasonably infringe,[13] how can the Commonwealth mandate the use of an energy source that not only produces harmful emissions but produces them in a way that contributes to environmental injustice? This Comment argues that, in fact, the Commonwealth cannot.

This Comment begins with an overview of one of the most popular types of renewable energy legislation in the United States, known as the renewable portfolio standard (RPS).[14] It will also discuss the designation of waste incineration as an alternative energy source under Pennsylvania's RPS.[15] The Comment then describes the ways in which waste incineration has contributed to the degradation of the environment, the deterioration of public health, and the furtherance of environmental injustice in Pennsylvania.[16] The Comment also provides an overview of the Pennsylvania Environmental Rights Amendment (Pennsylvania ERA)[17] and what is required of the Commonwealth in order to comply with that Amendment.[18] This Comment then argues that by including waste incineration in the current RPS, the Pennsylvania government has contributed to environmental injustice and violated the Pennsylvania ERA as a result.[19] Finally, the Comment asserts that a new RPS that excludes waste incineration is needed in Pennsylvania in order for the government not only to comply with the Pennsylvania ERA but also to further environmental justice across the Commonwealth.[20]

II. OVERVIEW

The Commonwealth of Pennsylvania is one of only six states that has an environmental rights amendment.[21] Out of those six states, three have renewable portfolio standards that designate MSW incineration as a renewable or alternative energy source—and Pennsylvania counts as one of those three.[22] Pennsylvania's ERA imposes certain duties on the Pennsylvania government to protect the Commonwealth's public natural resources,[23] and the designation of MSW incineration as an alternative energy source under its renewable energy policy conflicts with those duties.[24]

The following Parts of this Section describe the relationship between Pennsylvania's renewable energy policy, MSW incineration, and the Pennsylvania

13. *Id.*; *see* Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 931 (Pa. 2017) ("[A]ny laws that unreasonably impair the right [to a clean environment] are unconstitutional.").

14. *See infra* Part II.A.

15. *See infra* Part II.A.

16. *See infra* Part II.B.

17. PA. CONST. art. I, § 27.

18. *See infra* Part II.C.

19. *See infra* Part III.A.

20. *See infra* Part III.B.

21. Art English & John J. Carroll, *State Constitutions and Environmental Bills of Rights*, *in* 47 THE BOOK OF THE STATES 18–22 (2015), http://issuu.com/csg.publications/docs/bos2015 [http://perma.cc/2G5Z-SZDL].

22. *See* DONAHUE, *supra* note 8, at 4.

23. *See* PA. CONST. art. I, § 27; Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 932–33 (Pa. 2017).

24. *See infra* Part III.A.

ERA.[25] Part II.A discusses the preferred method of increasing renewable energy use among the states—the renewable portfolio standard. It describes Pennsylvania's RPS in particular and the energy sources that qualify under the statute as acceptable alternative energy sources.[26] Part II.B discusses one such alternative energy source: MSW incineration. This Part describes the history of MSW incineration in the United States, its use in Pennsylvania, its effect on the environment, and its relationship with environmental injustice. Finally, Part II.C discusses the history of the Pennsylvania ERA and the Pennsylvania Supreme Court's recent interpretation of it.

A. The Renewable Portfolio Standard

The RPS is a type of regulation that requires or incentivizes electricity providers to use renewable energy sources rather than fossil fuels to generate a certain percentage of their electricity.[27] RPS programs are the preferred strategy for incentivizing or mandating renewable energy use at the state level.[28] As of 2022, thirty states as well as the District of Columbia, Puerto Rico, and two other U.S. territories have RPS programs in place.[29] In addition to those states and territories, seven states and one U.S. territory have established goals for renewable energy production.[30] As of 2018, twenty-three states consider MSW incineration a renewable energy source and include it in their RPS, including Pennsylvania.[31]

In 2004, the Pennsylvania General Assembly established an RPS for the commonwealth by enacting the Alternative Energy Portfolio Standards Act (AEPS Act).[32] The AEPS Act established a mandate for electricity distribution companies and electricity generation suppliers in Pennsylvania to generate a small portion of their energy from qualified alternative energy sources.[33] Electricity distribution companies and electricity generation suppliers comply with the AEPS Act by purchasing Alternative Energy Credits (AECs) from alternative energy producers.[34] One AEC equals one megawatt hour of energy generation.[35] The qualified energy sources are split into two categories: Tier I sources and Tier II sources.[36] To comply with the AEPS Act, companies must generate eight percent of their electricity from Tier I sources and ten

25. *See infra* Parts II.A–C.

26. *See infra* Part II.A.

27. *Renewable Portfolio Standards*, *supra* note 10; *Energy Resources for State and Local Governments*, *supra* note 10.

28. Hale McAnulty, Note, *A Dirty Waste-How Renewable Energy Policies Have Financed the Unsustainable Waste-to-Energy Industry*, 60 B.C. L. REV. 387, 396–397 (2019).

29. *State Renewable Portfolio Standards and Goals*, NAT'L. CONF. OF STATE LEGISLATURES, http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx [http://perma.cc/4ZHE-3Z4T] (last visited Apr. 1, 2022); *Renewable Portfolio Standards*, *supra* note 10.

30. *State Renewable Portfolio Standards and Goals*, *supra* note 29.

31. *See* DONAHUE, *supra* note 8, at 3.

32. 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8 (West 2022).

33. §§ 1648.1–1648.8.

34. *Id.*; *AboutAEPS*, *supra* note 9.

35. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

36. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

percent of their electricity from Tier II sources by 2021.[37] The AEPS Act expired in 2021.[38]

Tier I includes sources such as solar, wind, and geothermal energy, while Tier II sources include MSW, waste coal, and wood-pulping.[39] Pennsylvania's RPS differs from other states' in that it created a mandate rather than a pure incentivization scheme.[40] Indiana, for example, has no mandate for renewable energy generation but rather incentivizes companies to produce energy from renewable sources through financial rewards.[41] The mandate imposed by Pennsylvania's RPS, however, still rewards companies for generating energy from renewable and alternative energy sources through the issuance of AECs because companies that earn AECs can sell them to other companies, creating a revenue stream separate from the revenue stream derived from the sale of energy and allowing the recipient companies to stay in compliance with the law.[42] Because MSW incineration is one of the qualified alternative energy sources under Pennsylvania's RPS, the companies that produce it benefit from the additional revenue stream and electricity distribution companies and electricity generation suppliers can remain in compliance with the law.[43]

B. Waste Incineration in the United States

MSW incineration is often touted as a clean energy source essential for replacing methane-emitting landfills.[44] Landfilling is the most common waste management method in the United States with over half of all waste ending up in landfills,[45] while incineration only accounts for thirteen percent of the United States' waste disposal.[46] Even though incinerators are viewed as a cleaner alternative to landfills, incinerators are also responsible for high levels of toxic emissions.[47] While incinerators are often in direct

37. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

38. §§ 1648.1–1648.8.

39. *Id.*; *AboutAEPS*, *supra* note 9.

40. McAnulty, *supra* note 28, at 402–03.

41. *Id.*

42. 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

43. *See* §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

44. *See* TED MICHAELS & KARUNYA KRISHNAN, ENERGY RECOVERY COUNCIL, 2018 DIRECTORY OF WASTE-TO-ENERGY FACILITIES 7 (2018); Shawn Lawrence Otto, *Waste-to-Energy Technology Is Cleaner and Safer than Generally Believed*, MINNPOST (June 6, 2013), http://www.minnpost.com/community-voices/2013/06/waste-energy-technology-cleaner-and-safer-generally-believed [http://perma.cc/7QVK-53XL]; Matt Kasper, *Energy from Waste Can Help Curb Greenhouse Gas Emissions*, CTR. FOR AM. PROGRESS (Apr. 17, 2013), http://www.americanprogress.org/issues/green/reports/2013/04/17/60712/energy-from-waste-can-help-curb-greenhouse-gas-emissions [http://perma.cc/H34T-W4AH].

45. *See* ADVANCING SUSTAINABLE MATERIALS 2018, *supra* note 1; BAPTISTA & PEROVICH, *supra* note 1 (showing a pie chart of waste disposal methods illustrating that fifty-two percent of U.S. municipal solid waste is landfilled).

46. *See* BAPTISTA & PEROVICH, *supra* note 1.

47. *See id.* at 5.

competition with landfills,[48] their expansion and use as an electricity generation method have origins in the mid-twentieth century.[49]

This Part will proceed first with a discussion of the history of waste incineration in the United States.[50] Part II.B.2 will then discuss the current use of incineration in Pennsylvania. Part II.B.3 will explain which types of pollutants and emissions waste incinerators generate. Part II.B.4 will describe the relationship between waste incineration and environmental injustice in the United States. Finally, Part II.B.5 will discuss common arguments in favor of waste incineration as an alternative energy source and their counterarguments.

1. The History of American Waste Incineration

The first waste incinerator was built on Governor's Island in New York in 1885 but MSW incineration did not become a prominent waste management method until the middle of the twentieth century.[51] The rise of this waste disposal method corresponded to the rise of urban centers and the rise in waste produced by American households in the decades following World War II.[52] MSW incineration accelerated in the 1980s after the federal government began discouraging reliance on imported fossil fuels through the revocation of certain tax incentives for oil producers.[53] In the 1990s, MSW incineration accounted for fifteen percent of all waste disposal in the United States.[54] Since that peak in the early 1990s, the share of MSW incineration has plateaued with an average of thirty million tons of waste incinerated each year since 2010.[55] As of March 2022, seventy-five MSW incinerators were operating in the United States.[56]

The concept of waste incineration as an energy source has its roots in the energy crisis of the 1970s.[57] Waste incineration operators saw the oil crisis as an opportunity to boost the visibility and widen the use of waste-to-energy production, and they were assisted in their effort by the Public Utility Regulatory Policies Act of 1978,[58] which allowed them to sell incineration-generated electricity to public utility providers.[59] Energy companies that used renewable sources to generate electricity were rewarded by the U.S. government with tax incentives and subsidies, which made renewable energy a less risky proposition.[60]

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48. *See* Kasper, *supra* note 44.

49. *See* Daniel C. Walsh, *The Evolution of Refuse: Incineration*, 36 ENV'T SCI. & TECH. 317, 317 (2002); DONAHUE, *supra* note 8, at 7–9.

50. *See infra* Part II.B.1.

51. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2.

52. DONAHUE, *supra* note 8, at 7; *see* Walsh, *supra* note 49, at 317.

53. *See* BAPTISTA & PEROVICH, *supra* note 1, at 12; *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2; McAnulty, *supra* note 28, at 396–97.

54. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2.

55. *See* DONAHUE, *supra* note 8, at 9.

56. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2.

57. DONAHUE, *supra* note 8, at 7.

58. Pub. L. No. 95-617, 92 Stat. 3117 (1978) (codified as amended at 16 U.S.C. § 2601).

59. DONAHUE, *supra* note 8, at 7.

60. McAnulty, *supra* note 28, at 396–97.

At the turn of the twenty-first century, the U.S. government began focusing on energy generated from renewable sources.[61] Under the Energy Policy Act of 1992,[62] electric distribution companies were incentivized to generate electricity through a rewards system.[63] The Environmental Protection Agency (EPA) considers MSW incineration a renewable energy source and "a key part of the non-hazardous waste management hierarchy."[64] According to this hierarchy, MSW incineration falls under the waste management strategy category of "Energy Recovery"—which is preferred less than waste management methods that fall under the "Source Reduction & Reuse" and "Recycling/Composting" categories—but preferred over methods that fall under the "Treatment & Disposal" category.[65]

2. Waste Incineration in Pennsylvania

Pennsylvania is home to six waste incineration facilities.[66] These facilities process thirty-six percent of Pennsylvania's municipal waste and generate 1,623 megawatt-hours of electricity.[67] One megawatt-hour is about the equivalent of the electricity used by 330 houses in one hour.[68] Of those six facilities, five of them are located in environmental justice communities.[69] Environmental justice communities are defined as communities where a majority or large portion of the population consists of people of color, people with low incomes, people who have shouldered a disproportionate and disparate level of environmental impacts, and people who have traditionally been left out of the environmental decisionmaking process.[70]

Pennsylvania's six waste incineration facilities are located in Conshohocken, Chester, Bainbridge, Harrisburg, Morrisville, and York.[71] One national study defined environmental justice communities as communities where more than twenty-five percent of people live below the federal poverty rate or more than twenty-five percent of people

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61. *Id.* at 397.

62. Pub. L. No. 102-486, § 711, 106 Stat. 2776 (codified in scattered sections of 15 U.S.C, 16 U.S.C, 42 U.S.C).

63. McAnulty, *supra* note 28, at 397.

64. *Energy Recovery from the Combustion of Municipal Solid Waste (MSW)*, *supra* note 2.

65. *See Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy*, U.S. ENV'T PROT. AGENCY, http://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy [http://perma.cc/7C6Q-QG96] (last visited Apr. 1, 2022).

66. Memorandum from Senator Thomas H. Killion on Senate Bill 488 of the 2019–2020 Pennsylvania State Legislature (Jan. 11, 2019) (on file with the Pennsylvania State Senate).

67. *Id.*

68. *What Is a Megawatt and a Megawatt-Hour?* CLEANENERGYAUTHORITY.COM, (May 4, 2010, 3:33 PM) http://www.cleanenergyauthority.com/solar-energy-resources/what-is-a-megawatt-and-a-megawatt-hour [http://perma.cc/J6XL-TSBF].

69. BAPTISTA & PEROVICH, *supra* note 1, at 66–67.

70. *Id.* at 4 n.3 ("Environmental justice communities are commonly identified as those where residents are predominantly minorities or low-income; where residents have been excluded from the environmental policy setting or decision-making process; where they are subject to a disproportionate impact from one or more environmental hazards; and where residents experience disparate implementation of environmental regulations, requirements, practices and activities in their communities.").

71. *Id.* at 66–67.

in the community identify as belonging to a racial or ethnic minority group.[72] Under that definition, the only Pennsylvania incinerator location that does not qualify as an environmental justice community is Lancaster County.[73]

3. The Pollutants and Emissions that Waste Incineration Produces

While MSW incineration has been designated as an alternative energy source in Pennsylvania and elsewhere, it is not a clean energy source.[74] MSW incinerators release pollutants such as sulfur dioxide, lead, mercury, hazardous ash, and greenhouse gases (like carbon dioxide) into the atmosphere.[75] Waste incineration facilities produce not only these pollutants but also more emissions of carbon dioxide, sulfur dioxide, and nitrogen oxides than natural gas facilities.[76] The majority of materials burned in waste incinerators consist of paper, yard trimmings, and food.[77] However, since 1960, the percentage of plastic material disposed of through incineration has increased from 0.4% to 13.0%.[78] As of 2015, only 9% of plastics were recycled in the United States while 15% of plastics were incinerated.[79]

Plastics are petroleum-based substances,[80] which emit harmful pollutants such as dioxins, acid gases, and heavy metals.[81] Aside from those pollutants, half of the carbon dioxide emitted from waste incinerators in the United States in 2016 resulted from burning plastic.[82] Amendments to the Clean Air Act[83] in the 1990s helped to reduce the pollution levels of incinerators by forcing facility operators to adopt new technology to stem the release of hazardous particulates.[84] However, most incineration facilities are aging, which results in a decreased efficacy and increased release of pollutants.[85]

The old age of many incinerators is not the only problem with the efficacy the Clean Air Act controls—many incinerators have been found in violation of the Clean Air Act over the years.[86] Between 2016 and 2019, for example, twenty-one of the seventy-three

72. *Id.* at 15.

73. *Id.* at 66–67.

74. Ana Baptista, *Is Burning Trash a Good Way To Dispose of It? Waste Incineration in Charts*, PBS NEWSHOUR (June 23, 2019, 2:36 PM), http://www.pbs.org/newshour/science/is-burning-trash-a-good-way-to-dispose-of-it-waste-incineration-in-charts [http://perma.cc/7SEB-BZWS]; DONAHUE, *supra* note 8, at 6.

75. Baptista, *supra* note 74; DONAHUE, *supra* note 8, at 16.

76. Alexander H. Tullo, *Should Plastics Be a Source of Energy?* CHEM. & ENG'G NEWS (Sept. 24, 2018), http://cen.acs.org/environment/sustainability/Should-plastics-source-energy/96/i38 [http://perma.cc/QZ7A-Q8LV].

77. Baptista, *supra* note 74.

78. *Id.*

79. Tullo, *supra* note 76.

80. Baptista, *supra* note 74.

81. *Id.*; Elizabeth Royte, *Is Burning Plastic Waste a Good Idea?* NAT'L GEOGRAPHIC (Mar. 12, 2019), http://www.nationalgeographic.com/environment/2019/03/should-we-burn-plastic-waste/#close [http://perma.cc/8LFF-C492].

82. Royte, *supra* note 81.

83. 42 U.S.C. §§ 7401–7671q.

84. Tullo, *supra* note 76.

85. Baptista, *supra* note 74.

86. BAPTISTA & PEROVICH, *supra* note 1, at 42.

incinerators in operation in 2019 had received 126 "Federally Reportable Violations" under the Clean Air Act.[87] One incinerator operator that neglected to implement the most stringent pollutant controls (due to worries about the harm that controls would do to its profits) was the Covanta plant in Chester, Pennsylvania.[88] In fact, four of the top twelve Clean Air Act violators between 2016 and 2019 were incinerators located in Pennsylvania.[89]

4. How Waste Incineration Has Contributed to Environmental Injustice

The harm caused by waste incineration also does not affect everyone equally.[90] Eighty percent of the seventy-two incinerators in operation across the United States as of June 2019 were located in environmental justice communities.[91] Of the top twelve lead emitting incinerators in the country, ten are located in environmental justice communities.[92] Environmental justice communities have been disproportionately harmed by pollution and hazardous waste throughout U.S. history.[93] A long history of housing discrimination against people of color—and Black Americans in particular—have fueled this phenomenon.[94] Zoning ordinances and land use laws in predominantly Black communities have resulted in "dumping grounds" of hazardous waste and highly pollutant industrial sites, while predominantly white communities have used the same legal and policy tools to assert a "Not in My Backyard" position.[95]

This phenomenon is exacerbated by the tension between communities where waste incineration facilities are sited and the companies proposing the construction and operation of these facilities.[96] Influencing the siting of industrial facilities that emit large amounts of pollution requires an enormous amount of work on the part of the community members who would be subject to the pollution created by the proposed facilities.[97] Beyond that, by the time the residents of the community where a facility is planned to be built are made aware of that proposal, the selection of a siting location has gone through several rounds of review by politicians and other government officials, making it

87. *Id.*

88. Will Sullivan, *Too Much Pollution for One Place*, PBS: NOVA (Aug. 23, 2017), http://www.pbs.org/wgbh/nova/article/too-much-pollution [http://perma.cc/YB4X-YR62] ("The Covanta incinerator [in Chester, PA] has weaker pollution controls than most other incinerators the company owns. . . . The Chester facility lacks both mercury and NO x control systems, according to the Covanta website. The company has admitted that additional pollution controls would be a drag on profits. . . . An environmental engineer working for the company said that 'putting in a urea system would [reduce NO x emissions],' but it 'costs a lot of money and also introduces additional operational issues.'" (second alteration in original)).

89. BAPTISTA & PEROVICH, *supra* note 1, at 43.

90. *Id*. at 5–6; Baptista, *supra* note 74.

91. Baptista, *supra* note 74.

92. BAPTISTA & PEROVICH, *supra* note 1, at 5–6.

93. Robert D. Bullard, *The Legacy of American Apartheid and Environmental Racism*, 9 ST. JOHN'S J. LEGAL COMMENT. 445, 451–55 (1994).

94. *Id.* at 447–50.

95. *Id.* at 450.

96. James S. Freeman & Rachel D. Godsil, *The Question of Risk: Incorporating Community Perceptions into Environmental Risk Assessments*, 21 FORDHAM URB. L.J. 547, 564 (1994).

97. *See id.* at 551–52.

politically difficult to cease the process once it is already underway.[98] The work of community members is made more difficult by the fact that they are often up against companies that downplay the risks posed by the proposed facility.[99] Not only are risks deemphasized by the companies seeking to build and operate these facilities but some have also targeted certain neighborhoods because of their racial makeup, suggesting that these are areas where residents have less access to education and political power.[100]

This racial component in siting polluting facilities, such as the siting of waste incinerators, aligns with research that has demonstrated the relationship between race and pollution.[101] Several studies show that a correlation exists between higher pollution levels and a higher proportion of Black and Hispanic residents in a given neighborhood.[102] One such study from the early 1990s shows that 65% of Black Americans and 80% of Hispanic Americans lived in counties that had below standard air quality, compared to 57% of white Americans.[103] As of 2019, 40% of all MSW incinerators were located in communities where over 25% of the residents both lived below the federal poverty line and were people of color.[104] Regardless of income, around 60% of incinerators were located in communities where over 25% of the surrounding residents were people of color.[105] In fact, research has shown that the correlation between environmental discrimination and race is stronger than the correlation between environmental discrimination and class.[106] Blood lead levels, for example, have been shown to be highest in Black American children regardless of income level and are significantly higher among low-income Black children than low-income white children.[107] Another study conducted in the late 1980s and early 1990s highlights this disparity, showing that 28.4% of low-income Black children had lead poisoning in their bloodstream while only 9.8% of low-income white children had the same.[108]

Lead, of course, is one of the pollutants produced by MSW incineration.[109] Two of the twelve incinerators producing the most lead emissions in the country are located in environmental justice communities in Pennsylvania.[110] The Delaware Valley Resource Recovery Facility in Chester, Pennsylvania, is one such incinerator.[111] In 2014, the Chester facility was the leading waste incineration facility for particulate matter emissions, releasing over 200,000 pounds of it over the course of that year.[112]

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98. *Id.* at 561.
99. *Id.* at 563.
100. *Id.* at 552–53.
101. *See* Bullard, *supra* note 93, at 452.
102. *See id.*
103. *Id.*
104. BAPTISTA & PEROVICH, *supra* note 1, at 15.
105. *Id.*
106. Bullard, *supra* note 93, at 452–53.
107. *Id.* at 453.
108. *Id.*
109. BAPTISTA & PEROVICH, *supra* note 1, at 5.
110. *Id.* at 5–6.
111. *Id.*
112. Catalina Jaramillo, *Incinerators in Camden, Chester Among Nation's Most Polluting, Report Finds*, WHYY (May 23, 2019),

Chester has been at the center of environmental racism claims for decades.[113] A former industrial powerhouse, Chester is now an economically depressed city in an otherwise affluent county.[114] The prevalence of waste facilities is another distinguishing characteristic of Chester.[115] The neighborhood around Front Street in Chester is located between a waste incinerator, a coal-burning power plant, and a wastewater treatment facility.[116] Seventy-five percent of the residents in that neighborhood are Black and one-third of them live below the poverty line.[117] In contrast, nearly seventy percent of surrounding Delaware County is white, and only ten percent live below the poverty line.[118] In response to this disparity, a group called Chester Residents Concerned for Quality Living (CRCQL) initiated a lawsuit in the 1990s against the Pennsylvania Department of Environmental Protection (DEP) for the process it used in deciding whether to grant permits to companies seeking to open waste incineration facilities.[119]

CRCQL sued the DEP for discrimination under Section 602 of Title VI of the Civil Rights Act of 1964.[120] CRCQL argued that because the DEP received federal funding from the EPA, it was obligated to comply with Title VI of the Civil Rights Act, which prohibits discrimination based on race, color, or national origin in any program that receives federal funding.[121] According to CRCQL, the DEP violated that obligation by implementing a permitting process that resulted in the build-up of polluting facilities in Chester (a predominantly Black city), while surrounding Delaware County (which is predominantly white) remained free of such facilities.[122]

The district court dismissed all three counts in the complaint, ruling that the plaintiffs could not prove discriminatory intent as required under Section 601 of Title VI and could not establish a private right of action to enforce the EPA's regulations.[123] The U.S. Court of Appeals for the Third Circuit took up the issue of establishing a private right of action and reversed the district court's ruling, holding that the plaintiffs could establish a private right of action to pursue claims of discrimination under Section 602 of Title VI of the Civil Rights Act of 1964.[124] However, the U.S. Supreme Court later vacated the judgment and remanded the case with instructions to dismiss.[125] Even though

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http://whyy.org/articles/incinerators-in-camden-chester-are-among-the-nations-most-polluting-report-finds [http://perma.cc/SSX6-NZNV].

113. *See* Sullivan, *supra* note 88.

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.*

118. *Quick Facts: Delaware County, Pennsylvania*, U.S. CENSUS BUREAU, http://www.census.gov/quickfacts/delawarecountypennsylvania [http://perma.cc/664K-UWZH] (last visited Apr. 1, 2022); Sullivan, *supra* note 88.

119. Chester Residents Concerned for Quality Living v. Seif, 944 F. Supp. 413, 415 (E.D. Pa. 1996), *rev'd*, 132 F.3d 925 (3d Cir. 1997), *vacated*, 524 U.S. 974 (1998).

120. Chester Residents Concerned for Quality Living v. Seif, 132 F.3d 925, 927 (3d Cir. 1997), *vacated*, 524 U.S. 974 (1998).

121. *Id.* at 928.

122. *Seif*, 944 F. Supp. at 415.

123. *Id.* at 417–18.

124. *Seif*, 132 F.3d 937.

125. Seif v. Chester Residents Concerned for Quality Living, 524 U.S. 974, 974 (1998).

the Supreme Court ultimately vacated the Third Circuit's judgment in favor of CRCQL, the group and other Chester residents subsequently secured victories against companies seeking to operate facilities that would further increase the pollution level of the city.[126]

Despite these victories, the adverse health effects on Chester residents remain.[127] It is difficult for epidemiologists to determine the causal chain between a particular polluting facility and disease;[128] however, unsafe blood lead levels have been reported among Chester children along with a heightened risk for cancer, heart disease, and respiratory illness among all Chester residents and a heightened rate of childhood asthma.[129] An EPA report determined that these health outcomes were at least partially due to substandard air quality and prevalent emissions in Chester.[130] Elsewhere, waste incinerators have been shown in various studies to increase an individual's risk of developing a variety of health problems.[131]

Several studies conducted in the early 2000s in Europe and Japan show that close proximity to waste incinerators increased pregnant women's chances for preterm delivery and miscarriage and correlated to higher rates of fatigue, wheezing, headaches, and stomachaches among children.[132] The pollutants issued by waste incinerators cause such harm because they have the ability to contaminate every type of consumable resource.[133] The pollutants are released through stack gases and ashes that then contaminate the air, drinking water, and soil used to grow food.[134] Each of the pollutants that waste incinerators emit can cause negative consequences for one's health, ranging from headaches and throat irritation to DNA damage and cancer.[135]

5. The State of the Waste Debate

Waste incineration—also known as waste-to-energy or WTE—has its champions.[136] Proponents of incineration point out that waste incineration is a better waste management option than landfilling, that waste incineration is compatible with recycling, and that modern incinerators are much better at controlling hazardous emissions than older facilities.[137] Proponents argue that environmental groups' disapproval of WTE methods is misguided because it could act as a powerful climate change mitigation tool.[138]

126. Sullivan, *supra* note 88.

127. *Id.*

128. *See* BAPTISTA & PEROVICH, *supra* note 1, at 35–37.

129. Sullivan, *supra* note 88.

130. *Id.*

131. GAIA, POLLUTION AND HEALTH IMPACTS OF WASTE-TO-ENERGY INCINERATION 3, 5 (2019), http://www.no-burn.org/wp-content/uploads/Pollution-Health_final-Nov-14-2019.pdf [http://perma.cc/QGV7-UMSG].

132. BAPTISTA & PEROVICH, *supra* note 1, at 37; *Id.* at 5.

133. *See* GAIA, *supra* note 131, at 5.

134. *See id.*; BAPTISTA & PEROVICH, *supra* note 1, at 35.

135. GAIA, *supra* note 131, at 2–3.

136. *See* Kasper, *supra* note 44; Otto, *supra* note 44.

137. *See* Kasper, *supra* note 44; Otto, *supra* note 44.

138. *See* Otto, *supra* note 44.

These proponents note that Americans produce copious levels of garbage—in 2013, the United States produced 390 million tons of trash, and each American individually produced about seven pounds of trash every day.[139] Most garbage ends up in landfills, which create high levels of methane emissions.[140] Methane gas is a particularly dangerous emission because it traps more heat in the atmosphere than other greenhouse gases.[141] One solution to this problem would be waste incineration. Instead of allowing large amounts of trash to decompose in landfills and generate methane gas, that same trash could be used to generate electricity that could replace coal- or natural gas–powered energy.[142] And while technology exists that can convert landfill gas into energy, proponents of waste incineration argue that landfill-gas collection systems are less efficient at generating energy and still produce a significant level of emissions.[143]

Proponents of waste incineration tout its ability to generate significant levels of electricity, with one ton of waste typically generating about 550 kilowatt-hours of electricity.[144] Additionally, because of the dearth of incinerators in the United States, the untapped potential of WTE-generated electricity is massive.[145] One study estimates that if all nonrecyclable and noncompostable waste were incinerated at a WTE facility, that process could generate 14,000 megawatts of energy.[146] For reference, that is about the same amount of energy generated by 140,000 automobile engines.[147] This level of energy production also factors in the pollution control measures that incinerators must have in order to comply with the Clean Air Act.[148] Proponents note that these pollution control measures have decreased the level of emissions generated by incinerators substantially, if not entirely, in some cases.[149]

Opponents of incineration and the WTE model counter with the fact that even if pollution controls have decreased the level of pollutants, waste incinerators still produce large levels of emissions.[150] For example, a 2017 study found that waste incinerators

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139. Kasper, *supra* note 44.

140. *Id.*

141. Yvon-Durocher et al., *supra* note 3, at 488 ("Methane (CH_4) is an important greenhouse gas because it has 25 times the global warming potential of carbon dioxide (CO_2) by mass over a century. Recent calculations suggest that atmospheric CH_4 emissions have been responsible for approximately 20% of Earth's warming since pre-industrial times." (footnote omitted)); *Basic Information About Landfill Gas*, *supra* note 3 ("Methane is a potent greenhouse gas 28 to 36 times more effective than CO_2 at trapping heat in the atmosphere over a 100-year period . . . ."); *see* Kasper, *supra* note 44.

142. Kasper, *supra* note 44.

143. *Id.*

144. *Id.*

145. *See* P. Ozge Kaplan, Joseph Decarolis & Susan Thorneloe, *Is It Better To Burn or Bury Waste for Clean Electricity Generation?*, 43 ENV'T SCI. & TECH. 1711, 1714 (2009), http://pubs.acs.org/doi/pdf/10.1021/es802395e [http://perma.cc/LM2P-Q843].

146. *Id.*

147. *What Is a Megawatt and a Megawatt-Hour?*, *supra* note 68.

148. *See* Ozge Kaplan et al., *supra* note 145, at 1711; Kasper, *supra* note 44.

149. Ozge Kaplan et al., *supra* note 145, at 1711; Otto, *supra* note 44 ("While trash burners once did put dangerous toxins into the air, in the last 10 years WTE pollution-control technology has become so advanced that the most common and dangerous toxins have been almost completely eliminated.").

150. BAPTISTA & PEROVICH, *supra* note 1, at 5 ("MSW incinerators are relatively large emitters of air pollutants with some studies showing that they emit several pollutants at a rate exceeding that of fossil fuel

emitted nitrogen oxide, lead, mercury, and greenhouse gases at a higher rate than coal-fired power plants.[151] On top of the air pollution produced by incinerators, opponents of incineration point out that toxic ash produced by the WTE process is often discarded in landfills.[152] "An example of the relative scale of pollution emitted by incinerators can be seen in the Montgomery County Resource Recovery Facility in Maryland. The plant releases approximately 740 tons of air pollutants annually and sends 180,000 tons of toxic ash to Virginia landfills."[153] In addition, many incinerators are aging, and with age comes the risk of malfunction that could lead to greater toxic emissions.[154] Additionally, despite the required pollution controls, the type and quality of controls vary from facility to facility, and at least one large incinerator company—Covanta—has tried to avoid using the most stringent pollution control equipment because it would harm their profits.[155]

Opponents of waste incineration also point to the ways in which MSW incineration undermines the expansion of recycling and composting programs.[156] Because incineration companies make most of their revenue through a payment method known as a tipping fee—the fee charged to a municipality per ton of waste it delivers to the facility—the more waste they incinerate, the more money they make.[157] This dynamic is compounded by the fact that many municipalities enter into agreements with incineration companies that include "put or pay" clauses that require municipalities to send a minimum amount of waste to an incineration facility or risk paying a penalty.[158] These agreements ensure that incineration companies will always have garbage to incinerate, often including garbage that could have been recycled or composted.[159] One study from 2011 found that the proportion of incinerated waste made up of recyclable or compostable material measured sixty-five percent.[160]

C. The Pennsylvania Environmental Rights Amendment

The environmental costs associated with waste incineration clash with one of the constitutional rights afforded to Pennsylvanians.[161] Since 1971, Pennsylvanians have had a commonwealth constitutional right to clean air, pure water, and the preservation of the

power plants. . . . Stack emissions from incinerators include a variety of pollutants harmful to health such as particulate matter, dioxins, lead, and mercury.").

151. *Id.* at 37.

152. *Id.*

153. *Id.*

154. *Id.* at 34.

155. Sullivan, *supra* note 88 ("The Covanta incinerator [in Chester, PA] has weaker pollution controls than most other incinerators the company owns. . . . The Chester facility lacks both mercury and NO x control systems, according to the Covanta website. The company has admitted that additional pollution controls would be a drag on profits. . . . An environmental engineer working for the company said that 'putting in a urea system would [reduce NO x emissions],' but it 'costs a lot of money and also introduces additional operational issues.'" (second alteration in original)).

156. BAPTISTA & PEROVICH, *supra* note 1, at 25.

157. *Id.*

158. *Id.*

159. *Id.* at 26.

160. *Id.*

161. *See* PA. CONST. art. I, § 27.

environment that surrounds them.[162] Article I, Section 27 of the Pennsylvania Constitution states in full:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.[163]

Section 27 is commonly known as the Pennsylvania ERA.[164] For nearly fifty years, courts in Pennsylvania interpreted the amendment narrowly.[165] Pennsylvania courts read the Pennsylvania ERA in terms of how the Commonwealth could create environmental regulations and not in terms of which duties the government had to protect the environment.[166] The courts' reading of the amendment amounted to broad deference to the General Assembly.[167] The case that established this narrow reading was *Payne v. Kassab*.[168] That case created a three-part balancing test to determine whether a land use project violated the Pennsylvania ERA.[169] The test laid out three questions:

> (1) Was there compliance with all applicable statutes and regulations relevant to the protection of the Commonwealth's public natural resources? (2) Does the record demonstrate a reasonable effort to reduce the environmental incursion to a minimum? (3) Does the environmental harm which will result from the challenged decision or action so clearly outweigh the benefits to be derived therefrom that to proceed further would be an abuse of discretion?[170]

The first prong of the *Payne* test suggested that as long as new legislation complied with existing statutes and regulations, it complied with the Pennsylvania Constitution, equating compliance with statutes with compliance with the constitution.[171] In 2013, however, this paradigm changed when the Pennsylvania Supreme Court put forth a new interpretation of the Pennsylvania ERA in *Robinson Township v. Commonwealth*.[172] In *Robinson*, multiple Pennsylvania municipalities and Pennsylvania residents sued the

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162. *Id.*

163. *Id.*

164. *See Pennsylvania Constitution Article I, § 27 Resources*, WIDENER UNIV. COMMONWEALTH L. SCH.: ENV'T L. & SUSTAINABILITY CTR., http://widenerenvironment.wordpress.com /environmental-law/art-1-sec-27-resources [http://perma.cc/54GQ-NNCD] (last visited Apr. 1, 2022).

165. *See* Marie Loiseau, *Revived Authority in Article I, Section 27 of the Pennsylvania Constitution: The Commonwealth's New Affirmative Duty To Protect the Atmosphere*, 91 TEMP. L. REV. 183, 188–91 (2018).

166. *See* John C. Dernbach, *The Potential Meanings of a Constitutional Public Trust*, 45 ENV'T L. 463, 473 (2015).

167. *See id.*

168. 312 A.2d 86, 94 (Pa. Commw. Ct. 1973), *aff'd*, 323 A.2d 407 (Pa. Commw. Ct. 1974), *aff'd*, 361 A.2d 263 (Pa. 1976).

169. *Payne*, 312 A.2d at 94.

170. *Id.*

171. *See* Dernbach, *supra* note 166, at 498 ("The first prong of the *Payne* test, which is based on 'compliance with all applicable statutes and regulations,' does not provide a rule that can be used to determine the constitutionality of statutes or regulations. In fact, it reads the constitution out of the test, leaving only statutes and regulations." (quoting *Payne*, 312 A.2d at 94)).

172. 83 A.3d 901 (Pa. 2013).

Commonwealth of Pennsylvania and various government officials to challenge the constitutionality of Act 13 of 2012[173]—a statute that amended the Pennsylvania Oil and Gas Act.[174] This statute was enacted in response to the growing fracking industry in northeastern Pennsylvania.[175] It favored natural gas companies by mandating uniformity in the zoning laws across the Commonwealth as it related to natural gas development, and prohibited the implementation of local environmental laws to impede natural gas extraction.[176]

The Pennsylvania Supreme Court held in a plurality decision that multiple provisions of the statute violated the Pennsylvania Constitution, and in particular, the Pennsylvania ERA.[177] It also ruled that the Commonwealth has a duty under the Pennsylvania ERA to act as a trustee to protect and conserve the natural resources of Pennsylvania for the people of Pennsylvania and, crucially, for "generations yet to come."[178] Act 13 represented a violation of this duty under the Pennsylvania Constitution according to the *Robinson* court.[179] The plurality opinion in *Robinson* was nearly one hundred pages long,[180] and it rejected the *Payne* test while implementing a new interpretation of the Pennsylvania ERA that was broader and more sweeping than ever before.[181] This decision was also the first time the Pennsylvania Supreme Court enforced the Commonwealth's duties of environmental protection under the Pennsylvania ERA and the first time any court in Pennsylvania struck down legislation passed by the General Assembly under the Pennsylvania ERA.[182]

While *Robinson* was a landmark decision for Pennsylvania environmental law, the new interpretation of the amendment was agreed upon by only a plurality of the justices,[183] meaning other courts did not necessarily have to follow the decision or adopt the interpretation of the amendment that emerged from it.[184] The possibility that lower courts would not follow the *Robinson* interpretation, however, was foreclosed in 2017 when the Pennsylvania Supreme Court, in a majority decision, reaffirmed its broad interpretation of the Pennsylvania ERA in *Pennsylvania Environmental Defense Foundation v. Commonwealth* (*PEDF*).[185] *PEDF* focused on legislation governing the use and budgeting of proceeds from natural gas leases on public lands within the state.[186]

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173. 58 PA. CONS. STAT. §§ 2301–3504 (2012).

174. *Id.* §§ 601.101–601.607; *Robinson Twp*., 83 A.3d at 913.

175. *Robinson Twp*., 83 A.3d at 914–15.

176. *Id.* at 915.

177. *Id.* at 985.

178. *Id.* at 974.

179. *Id.* at 985.

180. *See generally id.* at 913–1000.

181. *Id.* at 967.

182. Dernbach, *supra* note 166, at 464–65; *see also* Susan Phillips, *Pa. Supreme Court Upholds Broad Interpretation of Environmental Rights Amendment*, STATEIMPACT PA. (June 20, 2017, 7:33 PM) http://stateimpact.npr.org/pennsylvania/2017/06/20/pa-supreme-court-upholds-broad-interpretation-of-environmental-rights-amendment [http://perma.cc/W9EQ-PEWD].

183. *Robinson Twp*., 83 A.3d at 913; *see also* Phillips, *supra* note 182.

184. Dernbach, *supra* note 166, at 465–66.

185. 161 A.3d 911 (Pa. 2017), *remanded to* 214 A.3d 748 (Pa. Commw. Ct. 2019), *rev'd*, 255 A.3d 289 (Pa. 2021); *see also* Phillips, *supra* note 182.

186. *PEDF*, 161 A.3d at 919–25.

The court ruled that to comply with the Pennsylvania ERA, the money from those leases could only be used to aid in the conservation of Pennsylvania's natural resources.[187] According to the court, any use of that money outside of that purpose violated the Pennsylvania Constitution.[188]

Beyond ruling that certain provisions of the leasing statute were unconstitutional under the Pennsylvania ERA,[189] the court in *PEDF* also interpreted the Pennsylvania ERA as an amendment that created two separate rights for Pennsylvanians.[190] The first right, appearing in the first sentence of the amendment, is the right to clean air and water as well as certain historic and esthetic environmental values.[191] The second right, contained in the second sentence of the amendment, is the right to common ownership over the public natural resources shared among all Pennsylvanians as well as future generations of Pennsylvanians.[192] According to the court, those public resources include state parks and forests as well as the oil and gas beneath them.[193] The court also noted that the public resources protected by the Pennsylvania ERA were not limited to the resources specifically mentioned in the language of the amendment.[194]

> In a statement offered to the General Assembly in connection with the proposed Environmental Rights Amendment, Professor Robert Broughton explained that the provision was initially drafted as "Pennsylvania's natural resources, including the air, waters, fish, wildlife, and the public lands and property of the Commonwealth . . . ." but was revised to remove the enumerated list and thereby discourage courts from limiting the scope of natural resources covered.[195]

The court also read the third clause of the amendment as creating a public trust over which the Commonwealth acted as trustee of the public natural resources of Pennsylvania for the benefit of the residents of Pennsylvania.[196]

In reaching its holding, the court also rejected the *Payne* test.[197] The *PEDF* court stated that the *Payne* test was "unrelated to the text of Section 27 and the trust principles animating it" and that it "strip[ped] the constitutional provision of its meaning."[198] In rejecting the *Payne* test, the court established that under the Pennsylvania ERA, the Commonwealth must not enact laws that "unreasonably impair" the environmental rights of Pennsylvanians; current residents, as well as future generations of Pennsylvanians, are the beneficiaries of the public trust and have rights to the use and enjoyment of the

187. *Id.* at 934–36.

188. *Id.* at 936.

189. *Id.* at 937–38.

190. *Id.* at 931.

191. *Id.*

192. *Id.*

193. *Id.*

194. *Id.*; *see* PA. CONST. art. I, § 27.

195. *PEDF*, 161 A.3d at 931 (omission in original) (quoting PA. L.J., 154th Gen. Assemb., No. 118, Reg. Sess., 2274 (1970) (Broughton Analysis)).

196. *Id.*

197. *Id.* at 930.

198. *Id.*

commonwealth's natural resources; the Commonwealth has a fiduciary duty to take affirmative legislative action to protect that trust.[199]

The duty to act affirmatively to protect the environment is one of two duties imposed upon the Commonwealth through the trust created by the Pennsylvania ERA.[200] The other duty is the duty to prevent and remedy any "degradation, diminution, or depletion of [Pennsylvania's] public natural resources."[201] The *PEDF* court also noted that ordinary trust law duties and obligations applied to the public trust created by the Pennsylvania ERA.[202] Those duties include acting toward the public natural resources—the corpus of the trust—with prudence, loyalty, and impartiality.[203] Thus, the Commonwealth's duty to act with prudence required it to exercise the same "care and skill as a man of ordinary prudence would exercise in dealing with his own property."[204] Its duty to act with loyalty required it to "manage the corpus of the trust so as to accomplish the trust's purposes for the benefit of the trust's beneficiaries."[205] Likewise, the duty to act with impartiality required the Commonwealth to "manage the trust so as to give all of the beneficiaries due regard for their respective interests in light of the purposes of the trust."[206]

While the court did spell out many of the duties and obligations imposed upon the Commonwealth under the Pennsylvania ERA, it did not explicitly define what it meant for a law to "unreasonably impair" the rights to clean air, water, and environmental preservation.[207] Other adjudicative bodies in Pennsylvania have attempted to define and devise methods for determining whether a government action "unreasonably impair[s]" the environmental rights of Pennsylvanians.[208] However, no consensus has emerged, and the Pennsylvania Supreme Court has not defined the term.[209]

The Pennsylvania Environmental Hearing Board (the "Board") attempted to ascertain a definition of the phrase in a 2017 administrative adjudication named *Center for Coalfield Justice*.[210] The Board determined that government action that will unreasonably impair Pennsylvanians' environmental rights are those actions that result in environmental degradation with essentially permanent impacts.[211] According to the Board, actions that result in impacts to the environment only on a "limited or temporary

199. *Id.* at 930–33; *see also* Loiseau, *supra* note 165, at 194–99.

200. *PEDF*, 161 A.3d at 931–32.

201. *Id.* at 932 ("The *Robinson Township* plurality aptly described the Commonwealth's duties as the trustee of the environmental trust created by the people of Pennsylvania . . . 'The plain meaning of the terms conserve and maintain implicates a duty to prevent and remedy the degradation, diminution, or depletion of our public natural resources.'" (quoting Robinson Twp. v. Commonwealth, 83 A.3d 901, 956–57 (Pa. 2013))).

202. *See id*. at 931–33.

203. *Id*.

204. *Id.* (quoting *In re* Mendenhall, 398 A.2d 951, 953 (Pa. 1979)).

205. *Id.*

206. *Id.*

207. Loiseau, *supra* note 165, at 199–201.

208. *See* Ctr. for Coalfield Just. v. Commonwealth, EHB Docket Nos. 2014-072-B, 2014-083-B, 2015-051-B, 2017 WL 3842580, at *32–34 (Pa. Env't Hr'g Bd. Aug. 15, 2017).

209. *See* Loiseau, *supra* note 165, at 199.

210. EHB Docket Nos. 2014-072-B, 2014-083-B, 2015-051-B, 2017 WL 3842580 (Pa. Env't Hr'g Bd. Aug. 15, 2017); Loiseau, *supra* note 165, at 199.

211. *See Ctr. for Coalfield Just.*, 2017 WL 3842580, at *34; Loiseau, *supra* note 165, at 200.

basis" do not "rise to the level of causing unreasonable degradation or deterioration" under the Pennsylvania ERA.[212]

III. DISCUSSION

When it comes to waste incineration and environmental justice, the Commonwealth of Pennsylvania has failed to uphold its constitutionally mandated duty to protect the public trust under the *PEDF* interpretation of the Pennsylvania ERA.[213] MSW incineration causes air pollution and water pollution through the dispersal of contaminated ash and contaminated stack gases,[214] and close proximity to waste incinerators correlates to a higher risk for dangerous health complications.[215] These complications are not shared equally among all Pennsylvanians—environmental justice communities have been forced to bear the brunt of the burden.[216] While the Pennsylvania legislature may have had good intentions when it enacted the AEPS Act in 2004, the designation of MSW incineration as an alternative energy source under the statute undermines them.[217]

The Pennsylvania RPS violates the Pennsylvania ERA because its inclusion of MSW incineration disproportionately affects environmental justice communities.[218] This Section proceeds in two parts. Part III.A analyzes how the Commonwealth violates each clause of the Pennsylvania ERA under the Pennsylvania Supreme Court's recent interpretation of the amendment through its enactment and enforcement of the AEPS Act. Part III.B argues that replacing the AEPS Act with a new, "cleaner" RPS could bring Pennsylvania's renewable energy policy into compliance with the Pennsylvania Constitution and advance environmental justice in Pennsylvania.

A. The Pennsylvania RPS Violates the Pennsylvania Constitution

Since the Pennsylvania Supreme Court has interpreted the Pennsylvania ERA in a way that requires the Commonwealth to act affirmatively to protect Pennsylvanians' environmental rights, the AEPS Act no longer complies with the Pennsylvania Constitution.[219] The AEPS Act not only allows but also mandates that electric-distribution and electric-generation companies generate at least some of their electricity through "dirty" alternative energy sources, including MSW incineration.[220]

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212. *Ctr. for Coalfield Just.*, 2017 WL 3842580, at *34.

213. *See infra* Part III.A.

214. BAPTISTA & PEROVICH, *supra* note 1, at 35.

215. GAIA, *supra* note 131.

216. Baptista, *supra* note 74.

217. DONAHUE, *supra* note 8.

218. *See infra* Part III.A.

219. *See* PA. CONST. art. I, § 27; Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 933 (Pa. 2017) ("[T]he Commonwealth must act affirmatively via legislative action to protect the environment."), *remanded to* 214 A.3d 748 (Pa. Commw. Ct. 2019), *rev'd*, 255 A.3d 289 (Pa. 2021).

220. *See* FOOD & WATER WATCH, PENNSYLVANIA RENEWABLE PORTFOLIO STANDARD REPORT CARD: F (2018) [hereinafter PA. REPORT CARD], http://foodandwaterwatch.org/wp-content/uploads/2021/03/fs_pa-rps_statescore-web.pdf [http://perma.cc/XCH9-HWB5]; Alternative Energy Portfolio Standards Act, 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8 (West 2004).

This mandate is in place despite the adverse effects that MSW incineration has on individuals living in close proximity to incinerators.[221] The inclusion of dirty alternative energy sources like MSW incineration in Pennsylvania's RPS is in direct violation of the Pennsylvania ERA, which protects the right to clean air and clean water for all Pennsylvanians.[222] Any RPS legislation that includes MSW incineration as a renewable or alternative energy source does not comport with the Pennsylvania ERA under the interpretation issued by the Pennsylvania Supreme Court in *PEDF*.[223]

Under the *PEDF* court's interpretation, the Pennsylvania ERA prohibits the passage of legislation that "unreasonably impair[s]" Pennsylvanians' environmental rights, which the AEPS Act does.[224] The *PEDF* interpretation states not only that current Pennsylvanians have environmental rights but also that future generations' rights must be protected as well.[225] The AEPS Act impinges on the rights of current and future generations of Pennsylvanians by mandating the use of dirty energy sources, such as MSW incineration, as this source of energy has been shown to contaminate air and water sources and threaten peoples' health.[226] The passage and enforcement of the Act also violate the principles of trust law that the Pennsylvania ERA imposes upon the Commonwealth in protecting the natural resources of Pennsylvania.[227]

While the AEPS Act was a step in the right direction for mandating greater use of renewable energy sources in Pennsylvania,[228] the inclusion of MSW incineration as a compliant energy source weakens the overall effectiveness of the Act in protecting the environment due to the harm incineration causes to Pennsylvania's natural resources and to the public.[229] Thus, by enacting the AEPS Act, the Pennsylvania General Assembly did not fulfill its fiduciary duty to protect the trust of Pennsylvania's public natural resources as required by the Pennsylvania ERA.[230]

1. Unreasonably Impairing Pennsylvanians' Environmental Rights Through Waste Incineration

While no binding authority exists within Pennsylvania to help explain what type of action "unreasonably impair[s]" the environmental rights of Pennsylvania citizens, the decisions following *PEDF*—specifically *Center for Coalfield Justice*—provide possible instruction on how the phrase should be understood.[231] Specifically, government actions that will permanently impact the environment are likely to violate the first component of the Pennsylvania ERA and "unreasonably impair" the environmental rights of

221. *See supra* Part II.B.

222. PA. CONST. art. I, § 27.

223. *See PEDF*, 161 A.3d at 930–33.

224. *Id.*; *see* PA. REPORT CARD, *supra* note 220.

225. *PEDF*, 161 A.3d at 930–33.

226. *See* PA. REPORT CARD, *supra* note 220.

227. *See infra* Part III.A.2.

228. *See* McAnulty, *supra* note 28, at 402–03, 410–11 (praising Pennsylvania's RPS for its mandate component and suggesting it could be a model for a federal RPS program).

229. *See* PA. REPORT CARD, *supra* note 220.

230. *See* PA. CONST. art. I, § 27; *PEDF*, 161 A.3d at 930–33.

231. Loiseau, *supra* note 165, at 199–201.

Pennsylvanians.[232] Beyond that, determining whether a government action is unconstitutional due to its unreasonable impairment of Pennsylvanians' environmental rights under the Pennsylvania ERA will depend on specific findings of fact.[233]

The unconstitutionality of the AEPS Act depends in part on the permanence of the environmental and public health effects of incineration.[234] Pollutants emitted by waste incinerators do not result in "limited or temporary" environmental impacts.[235] A 2019 report on waste incineration in the United States found that dioxins (one of the pollutants released by incinerators) are "extremely persistent compounds that take a long time to break down and can bioaccumulate."[236] Dioxins are certainly not the only emissions released by incinerators that pose dangers to the environment.[237] Incinerators emit sulfur dioxide, lead, mercury, ash, carbon dioxide, heavy metals, nitrogen oxides, perfluorooctanoic acid, and chlorine (among other things) into the atmosphere.[238] These pollutants do not simply disappear once emitted; they contaminate the air we breathe, the water we drink, and the soil we use to grow food.[239] Aside from the staying power of pollutants produced by incinerators, the permanence of incinerators' harm to the environment is perpetuated by the staying power of incinerators themselves.[240] Since incinerators continue to operate, they continue to emit hazardous pollutants and greenhouse gases.[241]

Unsurprisingly, the fact that waste incinerators produce these types of emissions means that incinerators also contribute to climate change.[242] While, theoretically, climate change could be reversed, those efforts would be extremely difficult and potentially too dangerous to implement—and even if all emissions stopped instantaneously, warming would still continue for several subsequent decades.[243] Suffice it to say, emissions that contribute to climate change cannot be qualified as "limited and temporary"

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232. Ctr. for Coalfield Just. v. Commonwealth, EHB Docket Nos. 2014-072-B, 2014-083-B, 2015-051-B, 2017 WL 3842580, at *32, 34 (Pa. Env't Hr'g Bd. Aug. 15, 2017).

233. Frederick v. Allegheny Twp. Zoning Hearing Bd., 196 A.3d 677, 698 n.40 (Pa. Commw. Ct. 2018).

234. Alternative Energy Portfolio Standards Act, 73 Pa. Stat. and Const. Stat. §§ 1648.1–1648.8 (West 2004); *AboutAEPS*, *supra* note 9; *see* PA. REPORT CARD, *supra* note 220.

235. BAPTISTA & PEROVICH, *supra* note 1, at 38.

236. *Id.*

237. *See* Baptista, *supra* note 74; *see also* DONAHUE, *supra* note 8.

238. BAPTISTA & PEROVICH, *supra* note 1, at 38; *see* Baptista, *supra* note 74; *see also* DONAHUE, *supra* note 8.

239. *See* BAPTISTA & PEROVICH, *supra* note 1, at 38; GAIA, *supra* note 131, at 2.

240. *See* Ana Isabel Baptista & Kumar Kartik Amarnath, *Garbage, Power, and Environmental Justice: The Clean Power Plan Rule*, 41 WM. & MARY ENV'T L. & POL'Y REV. 403, 404–06 (2017) ("Although local opposition to new incinerator proposals in the last twenty years has been largely successful, this industry continues to evolve new mechanisms to capture financial incentives and secure waste contracts that maintain their dominance in local and regional waste management systems.").

241. BAPTISTA & PEROVICH, *supra* note 1, at 46.

242. *Id.* at 29 ("Burning trash is not a renewable or 'clean' source of energy. Incineration releases greenhouse gases into the atmosphere, contributing to climate change.").

243. *See* David Herring & Rebecca Lindsey, *Can We Slow or Even Reverse Global Warming?*, CLIMATE.GOV (Oct. 29, 2020), http://www.climate.gov/news-features/climate-qa/can-we-slow-or-even-reverse-global-warming [http://perma.cc/C49N-FZN3].

environmental impacts.[244] In practical terms, incinerators emit pollutants that contribute to permanent environmental impacts through the contamination of water, air, and soil, and greenhouse gases that contribute to climate change.

Proponents of waste incineration argue that environmental groups are wrong to oppose incineration.[245] They argue that the toxic emissions produced by incinerators are grossly overstated since the pollution controls required by the Clean Air Act capture nearly all toxic pollutants.[246] One set of statistics shows that some pollutant emissions were reduced by over 90% between 1990 and 2005.[247] However, those same statistics show that 3,200 tons per year of hydrochloric acid were still emitted from incinerators in 2005 despite a 94% reduction in hydrochloric acid emissions.[248] Similarly, sulfur dioxide decreased by 88% between 1990 and 2005, and incinerators were still producing 4,600 tons of it per year after that decrease.[249] Meanwhile, the emission of nitrogen oxides only decreased by 24% in the same time period, meaning that incinerators still spewed 49,500 tons of nitrogen oxide into the atmosphere per year.[250] Finally, even studies that show that waste incineration is cleaner and produces more energy than landfill gas-to-energy systems show that waste-to-energy systems that use incineration produce large amounts of carbon dioxide.[251] In addition to the toxic emissions and greenhouse gases incinerators generate, the ash generated by incinerators does not just disappear—it often gets landfilled.[252] In fact, almost 25% of garbage that is incinerated at an incineration facility ends up as ash that requires landfilling.[253]

The argument that incinerators have improved substantially in recent years also assumes that every incineration company is using the most up-to-date pollution control technology.[254] But that is not necessarily the case. Twenty-one of the seventy-three incineration facilities in operation in 2019 received 126 "Federally Reportable Violations" under the Clean Air Act over the course of four years,[255] and four of the top twelve violators were incinerators located in Pennsylvania.[256] The Covanta incineration plant in Chester, Pennsylvania, lacked commonly used mercury and nitrogen oxide controls; when asked by the EPA about it, a Covanta employee cited the company's bottom line.[257] Thus, to say toxic emissions have been "almost completely eliminated"

244. Ctr. for Coalfield Just. v. Commonwealth, EHB Docket Nos. 2014-072-B, 2014-083-B, 2015-051-B, 2017 WL 3842580, at *34 (Pa. Env't Hr'g Bd. Aug. 15, 2017).

245. *See* Otto, *supra* note 44.

246. *See id.*

247. *Id.*

248. *Id.*

249. *Id.*; MICHAELS & KRISHNAN, *supra* note 44, at 9.

250. MICHAELS & KRISHNAN, *supra* note 44, at 9; Otto, *supra* note 44.

251. Kaplan et al., *supra* note 145, at 1714 ("Landfills are a major source of CH_4 emissions, whereas WTE, coal, natural gas, and oil are major sources of CO_2-fossil emissions . . . .").

252. BAPTISTA & PEROVICH, *supra* note 1, at 37.

253. *Id.* at 8.

254. *See* Sullivan, *supra* note 88.

255. BAPTISTA & PEROVICH, *supra* note 1, at 42.

256. *Id.* at 43.

257. Sullivan, *supra* note 88 ("The Covanta incinerator [in Chester, PA] has weaker pollution controls than most other incinerators the company owns. . . . The Chester facility lacks both mercury and NO x control systems, according to the Covanta website. The company has admitted that additional pollution controls would

due to the Clean Air Act's mandated pollution control technology is misleading at best and false at worst.[258]

Proponents of waste incineration also often advocate for waste incineration because of its superiority over landfilling.[259] They point to the fact that landfills create especially toxic methane gas, and the landfill gas-to-energy method produces less energy with more emissions than the waste incineration-to-energy model.[260] While this may be true, this argument rests on a false premise that governments must incentivize or mandate the use of waste incineration to solve the problem of landfills.[261] This binary choice undermines efforts to get governments to incentivize or mandate more recycling and composting,[262] which would do more to solve the problem of landfilling and are waste disposal methods preferred over landfilling *and* waste incineration under the EPA's waste management hierarchy.[263]

Aside from undermining the advantages offered by recycling and composting,[264] incineration often *conflicts* with recycling and composting efforts because waste incinerator companies make most of their money through tipping fees.[265] Since waste incinerators are in direct competition with landfills, incineration companies often enter into agreements with municipalities that include "put or pay" clauses.[266] These agreements create perverse incentives for municipalities to continue generating high levels of waste instead of expanding recycling or composting programs.[267] And while proponents of waste incineration claim that incineration is compatible with recycling and

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be a drag on profits. . . . An environmental engineer working for the company said that 'putting in a urea system would [reduce NO x emissions],' but it 'costs a lot of money and also introduces additional operational issues.'" (second alteration in original)).

258. Otto, *supra* note 44 ("While trash burners once did put dangerous toxins into the air, in the last 10 years WTE pollution-control technology has become so advanced that the most common and dangerous toxins have been almost completely eliminated . . . .").

259. *See id.*; SOLID WASTE PROCESSING DIV. & ENERGY COMM. AM. SOC'Y MECH. ENG'RS, WASTE-TO-ENERGY: A RENEWABLE ENERGY SOURCE FROM MUNICIPAL SOLID WASTE 3–4 (2016), http://energyrecoverycouncil.org/wp-content/uploads/2016/03/ERC-ASME-WTE-White-Paper-08.pdf [http://perma.cc/YR22-6KGY]; Kaplan et al., *supra* note 145, at 1717.

260. *See* SOLID WASTE PROCESSING DIV. & ENERGY COMM. AM. SOC'Y MECH. ENG'RS, *supra* note 259, at 3–4; Kaplan et al., *supra* note 145, at 1717.

261. *See* SOLID WASTE PROCESSING DIV. & ENERGY COMM. AM. SOC'Y OF MECH. ENG'RS, *supra* note 259, at 3–4 (explaining the environmental benefits of waste incineration by exclusively comparing it to the environmental effects of landfills); Kaplan et al., *supra* note 145, at 1717 ("WTE appears to be a better option than LFGTE [Landfill Gas-to-Energy]. If the goal is greenhouse gas reduction, then WTE should be considered as an option under U.S. renewable energy policies.").

262. *See* BAPTISTA & PEROVICH, *supra* note 1, at 25.

263. *Id.* at 10; *Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy*, *supra* note 65.

264. *See* DONAHUE, *supra* note 8 ("Investing in recycling and composting programs to manage our waste builds wealth locally, creates jobs, enhances soils, and helps support more resilient and healthy communities.").

265. BAPTISTA & PEROVICH, *supra* note 1, at 25.

266. *Id.* at 26.

267. *Id.* at 25.

composting efforts,[268] the opposite is true.[269] In a 2011 study, the Global Alliance for Incinerator Alternatives found that sixty-five percent of waste that undergoes incineration could have been composted or recycled instead.[270] Meanwhile, "put or pay" agreements and the tipping fee payment model ensure that incinerators will never want for waste.[271]

Given the reality that environmentally unfriendly waste is not going anywhere soon, proponents of MSW incineration argue that incineration is a better option for managing waste than landfilling.[272] However, mandating or incentivizing incineration through state RPS programs all but *ensures* that environmentally unfriendly waste will not be going anywhere. In Pennsylvania, the government has a constitutional duty to counter this trend.[273]

The AEPS Act also "unreasonably impair[s]" the environmental rights of Pennsylvanians because the emissions produced by waste incinerators impede the ability of current and future generations of Pennsylvanians to use and enjoy the environment due to their propensity to increase the risk of disease.[274] The pollutants emitted by incinerators have the potential to cause cancer; DNA damage; respiratory disease; lung tissue damage; eye, nose, and throat irritation; asthma; and heart disease.[275] Additionally, research from France shows that pregnant women experienced more preterm births the closer they lived to waste incinerators and that individuals living close to waste incinerators were at greater risk for developing non-Hodgkin lymphoma.[276] A study in Italy shows that pregnant women living closer to waste incinerators and experiencing higher levels of incinerator pollutants experienced higher numbers of miscarriages than other pregnant women.[277] Moreover, a study in Japan shows that children who attended schools located close to waste incinerators experienced higher levels of poor health, including increased headaches, stomach aches, wheezing, and fatigue.[278]

These studies, of course, show health impacts of individuals living in countries other than the United States; however, they are instructive in demonstrating how waste incinerators in the United States may be affecting the health of similarly situated Americans.[279] Additionally, there has been at least one American study on the health

268. Kasper, *supra* note 44 ("States can have both EfW [energy-from-waste] and recycling strategies that are compatible.").

269. *See* BAPTISTA & PEROVICH, *supra* note 1, at 26.

270. *Id.*; GAIA, WASTE INCINERATORS: BAD NEWS FOR RECYCLING AND WASTE REDUCTION 3 (2013), http://www.no-burn.org/wp-content/uploads/Bad-News-for-Recycling-Final.pdf [http://perma.cc/RC9S-ETMS].

271. *See* BAPTISTA & PEROVICH, *supra* note 1, at 25–26.

272. MICHAELS & KRISHNAN, *supra* note 44, at 8–9; Kasper, *supra* note 44; Otto, *supra* note 44.

273. *See* Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 930–34 (Pa. 2017); PA. CONST. art. I, § 27.

274. *See supra* note 199 and accompanying text.

275. GAIA, *supra* note 131, at 2; *Air Pollutants*, CTRS. FOR DISEASE CONTROL & PREVENTION, http://www.cdc.gov/air/pollutants.htm?s_cid=cs_748 [http://perma.cc/SEH7-T7PV] (last visited Apr. 1, 2022).

276. BAPTISTA & PEROVICH, *supra* note 1, at 37; GAIA, *supra* note 131, at 5.

277. BAPTISTA & PEROVICH, *supra* note 1, at 37.

278. *Id.*

279. *Id.*

effects of incinerator emissions.[280] A 1995 EPA study shows that among children tested for blood lead levels living in Chester, Pennsylvania (the site of an active waste incinerator), sixty percent had blood lead levels above the maximum healthy limit established by the Center for Disease Control.[281]

While the public health effects of waste incineration do not necessarily represent permanent *environmental* impacts, the health consequences of waste incinerator emissions can be significant, and, in some cases, permanent.[282] Cancer, one potential consequence of ingesting incinerator pollutants over a long period of time,[283] is the second leading cause of death in the United States.[284] Heart disease and respiratory illness—two other health effects of incinerator emissions—represent the number one cause of death and the number four cause of death in the United States, respectively.[285]

Proponents of Pennsylvania's RPS program under the AEPS Act would likely contend that finding a renewable energy program as unconstitutional because it "unreasonably impair[s]" Pennsylvanians' environmental rights is unreasonable itself.[286] These proponents would likely point out that the purpose of the program is to increase the use and growth of renewable and alternative energy sources, which it has done.[287] At a more basic level, Pennsylvania is ahead of many states by having an RPS program at all—twenty states do not have any RPS program in place.[288] Beyond that, Pennsylvania's approach is stronger than those of other states because it mandates that electric-distribution and electric-generation companies generate a certain percentage of their electricity from renewable and alternative energy sources, rather than just incentivizing it.[289] In fact, the Pennsylvania RPS program has been called the "strongest and cleanest in the nation."[290] The "strength" and "cleanliness" of any RPS program is limited by political will; one could argue that creating an RPS program requires compromise, and that compromise may include the use of dirty alternative energy sources.

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280. *See* Sullivan, *supra* note 88.

281. *Id.*

282. GAIA, *supra* note 131, at 5; *see Leading Causes of Death*, CTRS. FOR DISEASE CONTROL & PREVENTION, http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm [http://perma.cc/2PV6-BMRV] (last visited on Apr. 1, 2022).

283. GAIA, *supra* note 131, at 2–3.

284. CTRS. FOR DISEASE CONTROL & PREVENTION, *supra* note 282.

285. *Id.*

286. *See* Otto, *supra* note 44.

287. GALEN BARBOSE, LAWRENCE BERKELEY NAT'L LAB'Y, U.S. RENEWABLES PORTFOLIO STANDARDS 2017 ANNUAL STATUS REPORT 13–14 (2017), http://eta-publications.lbl.gov/sites/default/files/2017-annual-rps-summary-report.pdf [http://perma.cc/XA7S-MZLC].

288. *See State Renewable Portfolio Standards and Goals*, *supra* note 29; *Renewable Portfolio Standards*, AM. CLEAN POWER, http://cleanpower.org/policy/renewable-portfolio-standards [http://perma.cc/AE6B-RZ5T] (last visited Apr. 1, 2022).

289. McAnulty, *supra* note 28, at 402–03, 410–11.

290. *Renewable Portfolio Standards - Promoting Green Energy: The Free Market Approach vs. The Public Policy Approach*, ENERGY JUST. NETWORK, http://www.energyjustice.net/RenewablePortfolioStandards [http://perma.cc/GWN5-9BHM] (last visited Apr. 1, 2022).

While compromise is necessary in any piece of legislation, it is clear that Pennsylvania no longer has the strongest or cleanest RPS program in the nation;[291] given the change in interpretation of the Pennsylvania ERA since the AEPS Act was passed, Pennsylvania's RPS no longer complies with the Pennsylvania Constitution.[292] The *PEDF* court ruled that the Pennsylvania ERA prohibits the government from taking actions that "unreasonably impair" environmental rights,[293] and the *Center for Coalfield Justice* decision stated that actions that only create environmental impacts that are "limited and temporary" comply with the Pennsylvania ERA.[294] Contamination of air and water, contributions to climate change, and threats to public health do not qualify as "limited and temporary" impacts. And while this type of contamination may not always be permanent in the sense of irreversibility, it is permanent in that the contamination is long-lasting and significant for the health of the commonwealth's environment and for the people who live within it.

2. Waste Incineration, Environmental Injustice, and the Commonwealth's Duties as Trustee Under the Pennsylvania ERA

The second component of the *PEDF* court's interpretation of the Pennsylvania ERA established that the people of Pennsylvania, including future generations of Pennsylvanians, own the public natural resources of the Commonwealth.[295] The third component of the Pennsylvania ERA, according to the interpretation offered by the *PEDF* court, is that these resources are held in trust by the Commonwealth for the benefit of the people.[296] In other words, the Commonwealth is the trustee with all attendant fiduciary duties of an ordinary trustee, and the people are the beneficiaries, afforded all the benefits of an ordinary beneficiary.[297] A few questions left unanswered by the *PEDF* court arise from this construction.[298] The first is related to the second component of the amendment: Who comprises future generations of Pennsylvanians?[299] The second question relates to the third component of the Pennsylvania ERA: What is the extent of the Commonwealth's duty to protect the natural resources most affected by waste incinerator emissions, specifically air, soil, and water?[300]

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291. Mark Szybist, *PA's Renewable Energy Goals Are Not in the Super Bowl*, NRDC (Jan. 27, 2018), http://www.nrdc.org/experts/mark-szybist/eagles-are-renewable-energy-winners-pennsylvania-isnt [http://perma.cc/84TT-DYVS]; *see* BARBOSE, *supra* note 287, at 6.

292. *See* PA. CONST. art. I, § 27; Pa. Env't Def. Found. v. Commonwealth, 161 A.3d. 911, 930–34 (Pa. 2017).

293. *PEDF*, 161 A.3d at 931.

294. Ctr. for Coalfield Just. v. Commonwealth, EHB Docket Nos. 2014-072-B, 2014-083-B, 2015-051-B, 2017 WL 3842580, at *34 (Pa. Env't Hr'g Bd. Aug. 15, 2017).

295. *PEDF*, 161 A.3d at 931–38; *see also* PA. CONST. art. I, § 27.

296. *PEDF*, 161 A.3d at 931–38; *see also* PA. CONST. art. I, § 27.

297. *PEDF*, 161 A.3d at 931–33 (quoting Robinson Twp. v. Commonwealth, 83 A.3d 901, 956–57 (Pa. 2013)); *see also* PA. CONST. art. I, § 27.

298. *See* Loiseau, *supra* note 165, at 199–201.

299. *See id.* at 202–04.

300. *See id.* at 209–10.

Pursuant to the language of the Pennsylvania ERA, the Commonwealth has a clear duty to protect the air and water at least in some way.[301] The *PEDF* court also suggested the resources protected by the Pennsylvania ERA are broader than those specifically mentioned.[302] The *PEDF* court noted in its discussion of the second component of the Pennsylvania ERA:

> In a statement offered to the General Assembly in connection with the proposed Environmental Rights Amendment, Professor Robert Broughton explained that the provision was initially drafted as "Pennsylvania's natural resources, including the air, waters, fish, wildlife, and the public lands and property of the Commonwealth . . . ." but was revised to remove the enumerated list and thereby discourage courts from limiting the scope of natural resources covered.[303]

Thus, the scope of resources covered by the Pennsylvania ERA is open-ended.[304] Nevertheless, Pennsylvania courts have refused to extend the *PEDF*'s broader interpretation of the Pennsylvania ERA to a variety of public natural resources.[305] Applying the narrowest interpretation of the Pennsylvania ERA, "clean air" and "pure water" are two resources specifically protected by the amendment,[306] and they are also two of the resources most contaminated by waste incineration emissions.[307]

Because the Pennsylvania ERA protects these resources, they are included in the public trust for which the Commonwealth is the trustee, according to the *PEDF* interpretation.[308] The *PEDF* court also determined that ordinary trust law applies to the public trust of Pennsylvania's natural resources under the Pennsylvania ERA.[309] As a result, the Commonwealth as trustee has a duty to act "with prudence, loyalty, and impartiality" when making decisions related to the natural resources that comprise the trust.[310] The principle of acting with loyalty requires the Commonwealth to maintain Pennsylvania's natural resources so that the beneficiaries of the trust—the people of Pennsylvania—may use and enjoy them. The principle of acting with impartiality requires the Commonwealth to maintain public resources in a way that benefits every beneficiary equally.[311] The Commonwealth violates the trust element of the Pennsylvania ERA through the enforcement of the AEPS Act.[312] It mandates the use of alternative energy sources like waste incineration, which result in serious pollution that is correlated to serious health effects that disproportionately affect certain communities in Pennsylvania.[313]

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301. PA. CONST. art. I, § 27.; *see also PEDF*, 161 A.3d at 933.
302. *See PEDF*,161 A.3d at 931.
303. *Id.*
304. *See id.*
305. Loiseau, *supra* note 165, at 201 n.184.
306. PA. CONST. art. I, § 27.
307. *See* BAPTISTA & PEROVICH, *supra* note 1, at 33.
308. *See PEDF*, 161 A.3d at 931–32.
309. *Id*. at 931–33; Loiseau, *supra* note 165, at 196–98.
310. *PEDF*, 161 A.3d at 932 n.23; Loiseau, *supra* note 165, at 197.
311. Loiseau, *supra* note 165, at 209–10; *see also PEDF*, 161 A.3d at 932–33.
312. *See supra* Part III.A.1.
313. *See supra* Part III.A.1.

The health effects that are correlated with waste incineration emissions interfere with Pennsylvanians' ability to use and enjoy the environment, thereby violating the loyalty principle of trust law.[314] Serious health problems such as cancer, heart disease, and respiratory illness can severely disrupt individuals' normal daily routines and often have the potential to put their lives at serious risk.[315] But even less severe health consequences—such as asthma, headaches, and wheezing[316]—can also inhibit individuals' ability to complete their normal daily tasks and enjoy the outdoors.[317]

The inability to enjoy the environment due to health effects is especially prevalent among children who have been shown to suffer severe health repercussions, such as heightened blood lead levels, as a result of living near waste incinerations.[318] Going to school near incinerators can cause considerable health problems for children that make completing daily tasks difficult, such as headaches and breathing troubles.[319] Children in Pennsylvania are current residents of the Commonwealth, but future generations of Pennsylvania children are put at risk because of waste incineration pollution.[320] The European studies surrounding increased preterm births and miscarriages[321] suggest the ability of current and future generations of Pennsylvanians to use and enjoy the environment around them is put at severe risk by the continued use of waste incineration as an alternative energy source. Because the AEPS Act mandates the use of this type of energy source, the Commonwealth violated the loyalty principle of trust law by enacting and enforcing it.

The lack of U.S. studies on the effect of incinerator pollution on health outcomes and the lack of clear causation between these two phenomena make it difficult to prove the extent of the damage done by incinerators.[322] One way researchers have evaluated the risk of incinerators to public health has been by assessing the risk posed by each toxin emitted by incinerators individually.[323] These assessments show that the risk to public health is small.[324] It is also true that well-operated incinerators that run on the most updated equipment will not produce as many emissions as poorly run facilities and will have less impact on the health of the surrounding community in turn.[325] However,

314. BAPTISTA & PEROVICH, *supra* note 1, at 34–38; *see also PEDF*, 161 A.3d at 932–33.

315. *See* GAIA, *supra* note 131; CTRS. FOR DISEASE CONTROL & PREVENTION, *supra* note 275.

316. BAPTISTA & PEROVICH, *supra* note 1, at 34, 37.

317. Funk v. Wolf, 144 A.3d 228, 246 (Pa. Commw. Ct. 2016), *aff'd*, 158 A.3d 642 (2017) (ruling that a ten-year-old had standing to bring a climate change case against the Commonwealth for violating the Pennsylvania ERA when she alleged that her asthma and allergies impeded her ability to enjoy and spend time in the outdoors and were likely to be exacerbated by global warming).

318. Sullivan, *supra* note 88.

319. *See* BAPTISTA & PEROVICH, *supra* note 1, at 37.

320. *See id.*; *see also* GAIA, *supra* note 131.

321. *See* BAPTISTA & PEROVICH, *supra* note 1, at 37; *see also* GAIA, *supra* note 131.

322. BAPTISTA & PEROVICH, *supra* note 1, at 35–37; NAT'L RSCH. COUNCIL, WASTE INCINERATION & PUBLIC HEALTH 112–13 (2000).

323. NAT'L RSCH. COUNCIL, *supra* note 322, at 113 ("The main information on potential health effects that might arise in populations potentially exposed to substances emitted by incineration facilities comes from risk assessments of individual chemicals emitted by incinerators, combined with monitoring of emissions from incinerators.").

324. *Id.*

325. *Id.* at 112.

assessing the risks of individual toxins on their own provides an incomplete picture of the nature of incinerator pollution. Many incinerators are aging and not outfitted with the most updated equipment due to prohibitive costs.[326] Additionally, most risk assessments were designed for regulatory purposes and not public health evaluations.[327] The assessment of toxins in isolation also does not account for the cumulative impact of incinerator emissions on environmental justice communities that already face pollution from various sources.[328]

These cumulative and disproportionate impacts on environmental justice communities implicate the impartiality principle of trust law.[329] The Commonwealth has violated this principle through the enactment and enforcement of the AEPS Act because mandating that electric distribution companies and electric generation companies use waste incineration for a portion of their electricity production affects the communities located near incinerators far more than communities located further away.[330] These communities are often comprised of people of color and people with lower income levels,[331] which are the very same communities that have been discriminated against throughout U.S. history.[332] Communities that are whiter and wealthier have not been saddled with the burden of living near waste incinerators to the same extent.[333] Beyond the discrimination that has been involved in choosing locations for waste incinerators, opposing those siting decisions is extremely difficult.[334] If the Commonwealth has a duty under the Pennsylvania ERA to act as trustee of Pennsylvania's public natural resources with impartiality—which it does under *PEDF*—then it has failed to uphold that duty due to the inclusion of waste incineration in the AEPS Act.

B. Imagining a Cleaner, More Just, and Constitutional RPS in Pennsylvania

By including MSW incineration in Pennsylvania's RPS program, the government has allowed electric distribution companies and electric generation companies to comply with the AEPS Act through the use of energy sources that cause pollution and environmental contamination.[335] While the Pennsylvania RPS does not incentivize the use of MSW incineration in the sense that incineration use is not rewarded by subsidies or tax breaks, electric distribution companies and electric generation companies benefit from using incineration because doing so brings them into compliance with the RPS

326. BAPTISTA & PEROVICH, *supra* note 1, at 31–34, 37–39.

327. NAT'L RSCH. COUNCIL, *supra* note 322, at 118 ("Because of the variability and uncertainty, most risk assessments have not been designed to quantify actual health risks; rather they have been designed solely for regulatory purposes to yield upper-bound estimates of health risks that may be compared to regulatory criteria.").

328. BAPTISTA & PEROVICH, *supra* note 1, at 14, 34.

329. *See* Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 931–33 (Pa. 2017).

330. *See supra* Part II.B; *see also* BAPTISTA & PEROVICH, *supra* note 1, at 4–5.

331. BAPTISTA & PEROVICH, *supra* note 1, at 4–5, 14.

332. *See* Bullard, *supra* note 93, at 447–50.

333. *See id.*

334. *See* Freeman & Godsil, *supra* note 96, at 564, 569–70.

335. *See* Alternative Energy Portfolio Standards Act, 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8 (West 2004); *AboutAEPS*, *supra* note 9.

program and allows them to avoid noncompliance penalties.[336] Incineration causes air pollution, which corresponds to a lower quality of health for communities that surround waste incineration facilities.[337] Updating old incineration facilities or building new ones also levies high financial costs on the communities that host incinerators.[338] If the government hopes to achieve environmental justice in Pennsylvania, the AEPS Act must be amended or replaced by an RPS program that excludes MSW incineration. The implementation of Pennsylvania's RPS program back in 2004 was a good start, but many of the energy sources included within it are not truly clean energy sources. A new RPS program needs to leave out MSW incineration to begin to achieve environmental justice.

It is true that at the time the AEPS Act was enacted, it would have complied with the Pennsylvania ERA because the courts' interpretation of the amendment before *Robinson* and *PEDF* was narrower.[339] However, since then, the Pennsylvania Supreme Court has explicitly rejected that more lenient interpretation of the Pennsylvania ERA,[340] and, because the AEPS Act expired in 2021,[341] a new RPS program established in its place would need to comply with the new, more stringent interpretation, or else face the risk of litigation. The benefits of implementing a new RPS program that excludes dirty alternative energy sources like MSW incineration are multitudinous.[342] This type of RPS could help curb climate change, decrease environmental injustice, and protect Pennsylvanians' environmental rights under the Pennsylvania ERA.[343] Each of these goals is essential to improving quality of life for all Pennsylvanians, and improving the lives of its citizens should be the goal of any governmental body, including the Commonwealth of Pennsylvania.

A stronger, more ambitious RPS program is not out of reach for Pennsylvania.[344] Twelve states and the District of Columbia do not include MSW incineration in their RPS programs, and two states ban the use of MSW incineration entirely.[345] Pennsylvania's RPS program could be instantly improved by following the lead of these states and, at the very least, eliminating MSW incineration from the list of acceptable energy sources.[346] However, Pennsylvania also falls far behind other states' RPS programs because of its lack of aggression and ambition.[347] The target year set out by the AEPS Act is 2021, and electric distribution and electric generation companies have

336. *See* 73 Pa. Stat. and Const. Stat §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

337. *See* BAPTISTA & PEROVICH, *supra* note 1, at 34–38.

338. Baptista, *supra* note 74; DONAHUE, *supra* note 8, at 13.

339. *See* Loiseau, *supra* note 165, at 188–91.

340. Pa. Env't Def. Found. v. Commonwealth (PEDF), 161 A.3d 911, 930 (Pa. 2017).

341. *See* Alternative Energy Portfolio Standards Act, 73 Pa. Stat. and Cons. Stat. §§ 1648.1–1648.8; *AboutAEPS*, *supra* note 9.

342. *See* BAPTISTA & PEROVICH, *supra* note 1, at 4–5.

343. *See id.*; *see also* PA. REPORT CARD, *supra* note 220.

344. *See* Szybist, *supra* note 291; BARBOSE, *supra* note 287, at 6.

345. DONAHUE, *supra* note 8, at 4. Along with the District of Columbia, the states that exclude MSW incineration from their RPS programs are the following: Illinois, Kansas, Montana, New Hampshire, New Mexico, New York, North Carolina, North Dakota, South Carolina, Texas, Vermont, and Washington. The states that ban the use MSW incineration outright are Delaware and Rhode Island. *Id.*

346. PA. REPORT CARD, *supra* note 220.

347. *See id.*; BARBOSE, *supra* note 287, at 6.

readily met the alternative energy targets mandated by the Act.[348] Of the state RPS programs that use percentages of electricity generation for their targets, Pennsylvania's RPS program trails every other program in the country.[349] The deficiencies of the Pennsylvania RPS program under the AEPS Act are made worse by the number of MSW incinerators operating within the commonwealth and the close correspondence between incinerators and environmental justice communities within Pennsylvania.[350] A better RPS for Pennsylvania is possible and essential if the Commonwealth wishes to do right by all of its residents.

IV. CONCLUSION

When trash leaves the American home, it is likely going to spend the rest of its days contributing to pollution and environmental contamination in one way or another. If that trash enters a waste incineration facility, it has the added distinction of contributing to environmental injustice. This is why MSW cannot be considered a clean energy source. An RPS should drive the use and expansion of clean, renewable energy sources. However, an RPS that designates MSW as an eligible alternative energy source instead drives the expansion of environmental degradation and environmental injustice.

The Pennsylvania ERA does not tolerate this latter type of RPS any longer. The Pennsylvania Supreme Court's interpretation of the Pennsylvania ERA has shifted significantly since this RPS was enacted, and any new RPS must account for this shift by eliminating MSW from the list of eligible alternative energy sources. Other states have demonstrated that a cleaner, more ambitious RPS is possible, and Pennsylvania's standard for environmental protection is higher than many other states on account of the Pennsylvania Constitution. Thus, it is imperative that the General Assembly not only pass new RPS legislation but also pass new RPS legislation that protects the environmental rights of all Pennsylvanians.

348. *See* BARBOSE, *supra* note 287, at 28.

349. *See id.* at 6.

350. BAPTISTA & PEROVICH, *supra* note 1, at 27; DONAHUE, *supra* note 8, at 4. As of 2018, Pennsylvania was home to the fifth most numerous incinerators in the country, with six in operation. Only Florida, New York, Minnesota, and Massachusetts have more, with eleven, ten, eight, and seven, respectively. *Id.* New York is the only state of that group that excludes MSW incineration from its RPS program; Florida does not have an RPS program at all. *Id.*