

THE COST OF BURNING TRASH

HUMAN AND ECOLOGICAL IMPACTS OF INCINERATION IN FLORIDA

Florida (FL) has the most Municipal Solid Waste (MSW) incinerators in the United States, with eleven incinerators. The cost of burning trash in municipal incinerators are significant to human and ecological health, and expensive for community members and municipalities.

VISUALIZING THE COST

EJ Community ●
Non-EJ Community ○

- 1 Bay County Waste-to-Energy Facility (Panama City)
- 2 Lake County Resource Recovery Facility (Okahumpka)
- 3 Pasco County Solid Waste Resource Recovery Facility (Shady Hills)
- 4 Hillsborough County Resource Recovery Facility (Tampa)
- 5 McKay Bay Refuse-to-Energy Facility (Tampa)
- 6 Pinellas County Resource Recovery Facility (Petersburg)
- 7 Lee County Resource Recovery Facility (Fort Myers)
- 8 Miami-Dade County Resource Recovery Facility (Doral)
- 9 Wheelabrator South Broward Inc. (Fort Lauderdale)
- 10 Palm Beach Renewable Energy Facility #1 (West Palm Beach)
- 11 Palm Beach Renewable Energy Facility #2 (West Palm Beach)



The map shows Florida MSW incinerators and their location in environmental justice (EJ) communities (communities of color and low-income communities disproportionately impacted by environmental burdens and pollution).¹ Incinerators are often located in communities which face cumulative impacts from multiple sources of pollution. **In FL, 10 of the 11 MSW incinerators are located in an EJ community, within a three-mile radius.**

THE COST TO THE PLANET

Waste incineration **releases significant greenhouse gases** into the atmosphere contributing to climate change. In 2018, MSW incinerators in the U.S. emitted **11 million tons of carbon dioxide** and are nearly as carbon-intensive as burning coal.² Despite these contributions to air and climate pollution, incinerators have tried to re-brand as “waste-to-energy” facilities, and in some states, lobbying has earned renewable energy status and taxpayer-funded subsidies, which helps keep them afloat. This preferential treatment uses money and resources that could be going towards true clean energy like solar and wind.³

In Florida, burning municipal solid waste is considered a renewable energy source according to their Renewable Portfolio Standard (RPS).⁴ The FL RPS gives incinerators access to renewable energy subsidies funded through taxpayer dollars that contribute to the profitability of this dirty industry. **These FL policies must change.**

Incineration companies often enter into **long-term (up to 30 year) contracts** with local municipalities that enforce delivery of a set amount of trash (called a put-or-pay contract) with the **threat of a financial penalty** for the town if the requirement is not met. Incineration contracts may:

- lock communities into waste incineration and decades of air pollution and carbon emissions
- disincentivize the transition to recycling, composting, and zero waste programs
- threaten the fiscal stability of communities by incineration industry debt and lawsuits

In spite of **serious environmental and health risks** associated with burning trash, renewable energy subsidies allow states and localities to promote incineration as an “environmentally-sound” way to manage waste.

THE COST TO HUMAN HEALTH

MSW incinerators are **large emitters of toxic air pollutants** that are detrimental to human health. Burning consumer waste emits many toxins such as heavy metals, dioxins, lead, mercury, nitrogen oxides (NOx), and Particulate Matter (PM). People living close to these facilities are exposed through inhalation or through contaminated food and water. These toxins are linked to a variety of problems including **asthma, heart disease, miscarriage, stillbirth, kidney disease, high blood pressure, and lung disease**. Notably, long-term exposure to PM has been shown to increase the risk of death from **Covid-19**.⁵



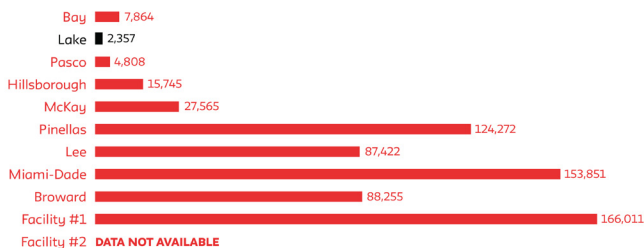
THE COST TO FLORIDIANS' HEALTH

491,603 people live within a three-mile radius of Florida's eleven incinerators, and are exposed to constant streams of toxic air pollution. Particulate Matter 2.5, lead and mercury are three of the most dangerous pollutants emitted from incinerators.

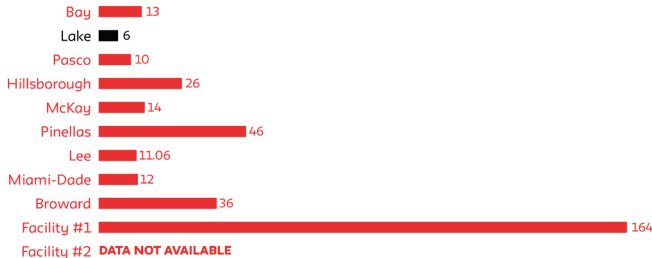
- Pinellas County Resource Recovery Facility is the largest incinerator in the state, and one of the largest incinerators in the country, burning 3,150 tons of waste per day.⁶ Located in an EJ community, over 64,000 people live within a three mile radius of the facility, 29% of whom are people of color, and 33% are low income residents.
- Pinellas County Resource Recovery facility was the largest emitter of mercury in 2017, emitting 151.26 pounds that year.
- In 2017, Palm Beach Renewable Energy Facility #1 was the largest emitter of PM2.5 and lead. Exposure to lead is particularly worrisome for children and can seriously affect mental and physical development.

AIR POLLUTANT EMISSIONS FOR FL INCINERATORS (2017)

ANNUAL PM 2.5 (LBS)



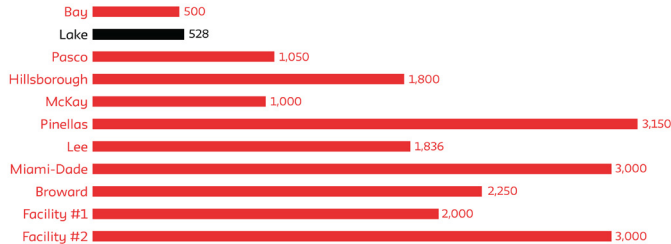
ANNUAL LEAD (LBS)



ANNUAL MERCURY (LBS)



DAILY TONS OF WASTE CAPACITY (LBS)



EJ-Community Non EJ-Community

THE COST TO FLORIDIANS' WALLET

In addition to paying more for healthcare due to a higher “pollution burden”, residents in FL may also **pay more to have waste burned instead of landfilled**. The U.S. Energy Information Administration reports that burning trash in MSW incinerators is the most expensive way to make energy.⁷

- Pasco County, FL plans to expand the incinerator it owns, the Pasco County Solid Waste Resource Recovery Facility, as well as extend its contract with Covanta, (a publicly-held company that operates this incinerator), from 2025 to 2034. This expansion will cost \$525 million.⁸
- Pasco County residents currently pay a “waste-to-energy” assessment in their annual tax bill which increased to \$72 last year from \$65 with plans for another \$7 increase each year for the next six years.⁹

JOIN THE FIGHT

HELP ELIMINATE INCINERATION TO PROTECT FLORIDIANS HEALTH, ENVIRONMENT, AND HARD-EARNED MONEY. ADVOCATE FOR ZERO WASTE SOLUTIONS THAT MINIMIZE MUNICIPAL WASTE STREAMS AND CONSERVE RESOURCES THROUGH RESPONSIBLE PRODUCTION, CONSUMPTION, REUSE AND RECOVERY WITHOUT BURNING:

- End disposal in incinerators and landfills
- Utilize minimum recycled content standards in manufacturing processes
- Invest in infrastructure to recover maximum resources for reuse, recycling and composting
- Ensure community involvement in any state zero waste plan

To learn more, check out GAIA's [Zero Waste Master Plan](#)

Join a Community Group to close MSW incinerators, please contact:
Global Alliance for Incinerator Alternatives (GAIA)



ENDNOTES

¹ For the purposes of this study, an environmental justice community is defined using thresholds for race, Hispanic origin, and household income derived from the US Census Bureau. To determine the threshold for an EJ community, a review of the state-wide average for these socio-demographic characteristics was completed and an EJ community was defined as any census tract where the thresholds for the socio-demographic data was near the state average. In FL, 49.1% of the population are people of color, including Hispanic origin and 33% of households have income below 200% of the federal poverty level. Based on these averages, any census tract in FL (a) where 40% or more of the residents within a three-mile radius of the plant are people of color [all people who are NOT white/non Hispanic] or (b) 25% or more of the households are at or below 200% of the Federal Poverty Level would be considered an EJ community. The demographic indicators for this project came from EJSCREEN. The source of all demographic data in EJSCREEN comes from American Community Survey five-year summary, compiled yearly. For this project, data from the ACS 2013-2017 5-year estimates was gathered and wrangled for analysis which replicates the demographic variables used in EJSCREEN.

² EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018," (EPA, 2020): 2-3 <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

³ Steven C. Russo et al., Comments of the New York State Department of Environmental Conservation Regarding the Verified Petition of Covanta Energy Corporation, (Albany, New York: New York State Department of Environmental Conservation, 2011.

⁴ DSIRE, Renewable Energy Standard Program Overview: Florida, (DSIRE, May 27, 2020) <https://programs.dsireusa.org/system/program/detail/934> (accessed October 19, 2020)

⁵ Zhaozhong Zhu, Kohei Hasegawa, Baoshan Ma, Michimasa Fujiogi, Carlos A. Camargo, Liming Liang, "Association of asthma and its genetic predisposition with the risk of severe COVID-19" (Journal of Allergy and Clinical Immunology, 2020) <https://www.sciencedirect.com/science/article/pii/S009167492030806X>

⁶ Tishman Environment and Design Center, "U.S. Municipal Solid Waste Incinerators: An Industry in Decline," Tishman Center, May, 2019: 69-70 https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/5d5c4bea0d59ad00012d220e/1566329840732/CR_GaiaReportFinal_05.21.pdf

⁷ U.S. Energy Information Administration, Updated Capital Cost Estimates for Utility Scale Electricity Generation Plants, (Washington, D.C.: U.S. Energy Information Administration, 2016), 9.

⁸ Covanta, "Pasco" <https://www.covanta.com/where-we-are/our-facilities/pasco>

⁹ Barbara Behrendt, "Pasco takes first step to expand its trash-to-energy incinerator" (Tampa Bay Times, April 21, 2020) (<https://www.tampabay.com/news/pasco/2020/04/21/pasco-takes-first-step-to-expand-its-trash-to-energy-incinerator/>)

This fact sheet was prepared by The Tishman Environment and Design Center in consultation with GAIA and in collaboration with Moja Robison in November 2020.



GAIA is a worldwide alliance of more than 800 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.
www.no-burn.org



Tishman Environment and Design Center

The Tishman Environment and Design Center integrates bold design, policy and social justice approaches to tackle the climate crisis and advance environmental justice.
www.tishmancenter.org

THE COST OF BURNING TRASH

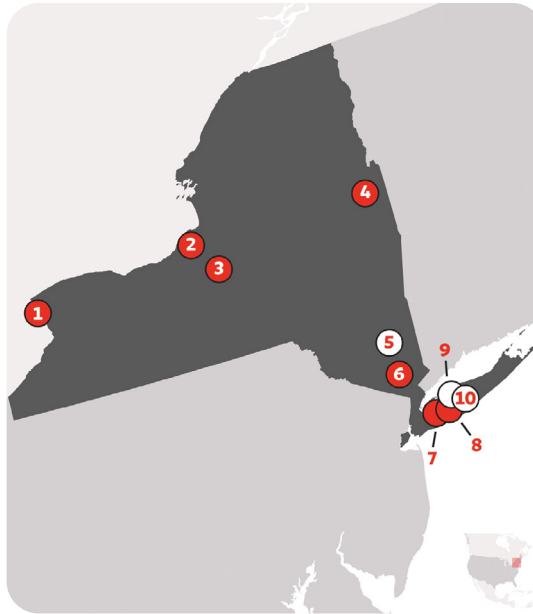
HUMAN AND ECOLOGICAL IMPACTS OF INCINERATION IN NEW YORK

New York (NY) has the second highest number of Municipal Solid Waste (MSW) incinerators in the United States, with ten incinerators. The cost of burning trash in municipal incinerators are significant to human and ecological health, and expensive for community members and municipalities.

VISUALIZING THE COST

EJ Community ●
Non-EJ Community ○

- 1 Niagara Falls Resource Recovery Facility (Niagara Falls)
- 2 Oswego County Energy Recovery Facility (Fulton)
- 3 Onondaga Resource Recovery Facility (Syracuse)
- 4 Wheelabrator Hudson Falls (Hudson Falls)
- 5 Dutchess County Resource Recovery Facility (Poughkeepsie)
- 6 Wheelabrator Westchester (Peekskill)
- 7 Covanta Hempstead (East Garden City)
- 8 Babylon Resource Recovery Center (Wyandanch)
- 9 Huntington Resource Recovery Facility (East Northport)
- 10 MacArthur Waste-to-Energy Facility (Ronkonkoma)



The map shows New York MSW incinerators and their location in environmental justice (EJ) communities (low-income or communities of color disproportionately impacted by environmental burdens and pollution).¹ Incinerators are often located in communities which face cumulative impacts from multiple sources of pollution. **Seven of the ten MSW incinerators in New York are located in an EJ community, within a three-mile radius.**

THE COST TO THE PLANET

Waste incineration **releases significant greenhouse gases** into the atmosphere contributing to climate change. In 2018, MSW incinerators in the U.S. emitted **11 million tons of carbon dioxide** and are nearly as carbon-intensive as burning coal.² Despite these contributions to air and climate pollution, incinerators have tried to re-brand as “waste-to-energy” plants.

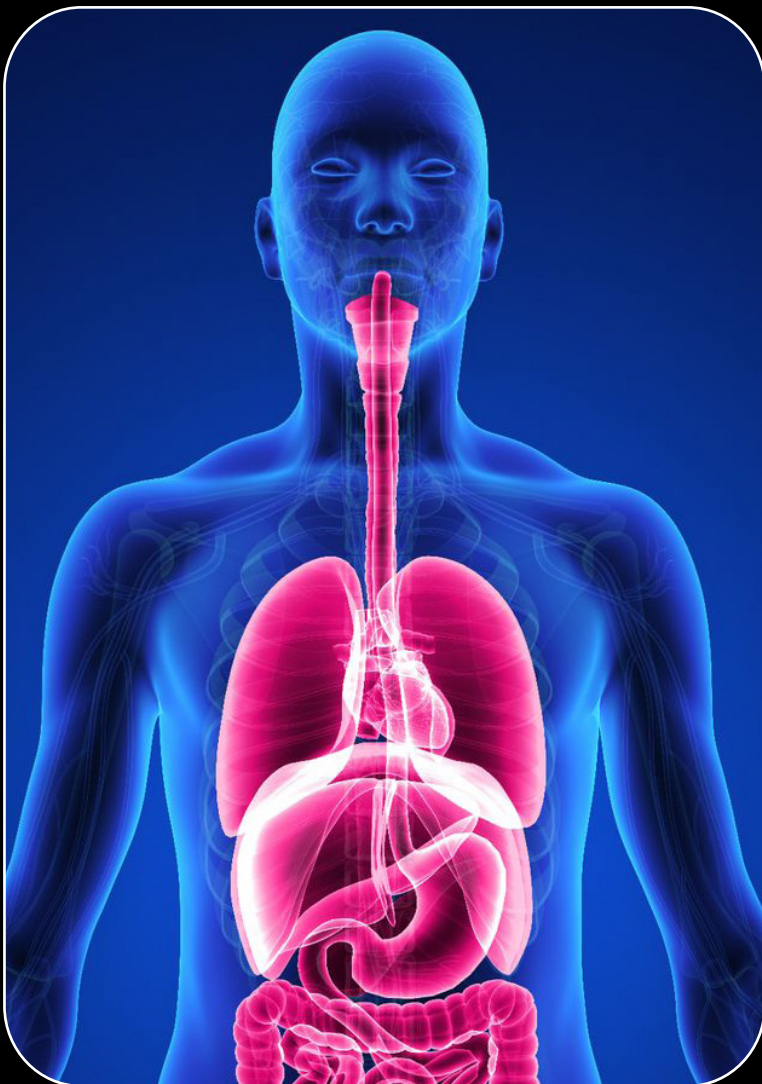
Incineration companies often enter into **long-term (up to 30 years) contracts** with local municipalities that enforce delivery of a set amount of trash (called a put-or-pay contract) with the **threat of a financial penalty** for the town if the requirement is not met. Incineration contracts may:

- lock communities into waste incineration and decades of air pollution and carbon emissions
- disincentivize the transition to recycling, composting, and zero waste programs
- threaten the fiscal stability of communities by incineration industry debt and lawsuits

In spite of **serious environmental and health risks** associated with burning trash, some states and localities promote incineration as an “environmentally-sound” way to manage waste. This idea needs to change.

THE COST TO HUMAN HEALTH

MSW incinerators are **large emitters of toxic air pollutants** that are detrimental to human health. Burning consumer waste emits many toxins such as heavy metals, dioxins, lead, mercury, nitrogen oxides (NOx), and Particulate Matter (PM). People living close to these facilities are exposed through inhalation or through contaminated food and water. These toxins are linked to a variety of problems including **asthma, heart disease, miscarriage, stillbirth, kidney disease, high blood pressure, and lung disease**. Notably, long-term exposure to PM has been shown to increase the risk of death from **Covid-19**.³



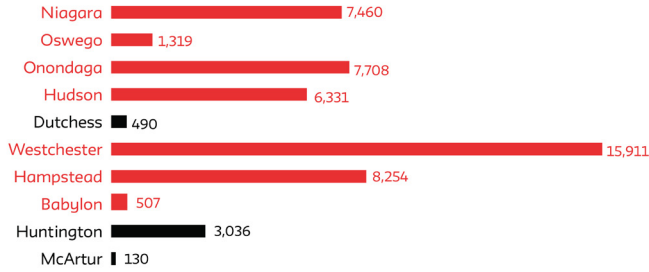
THE COST TO NEW YORKERS' HEALTH

653,708 people live within a three-mile radius of New York's ten incinerators, and are exposed to constant streams of toxic air pollution. Covanta Hempstead, in Westbury, NY, is the largest MSW incinerator in the state burning 2,505 tons of waste per day. In 2017, Wheelabrator Westchester was the largest emitter of PM2.5 emitting 15,911.15 lbs.

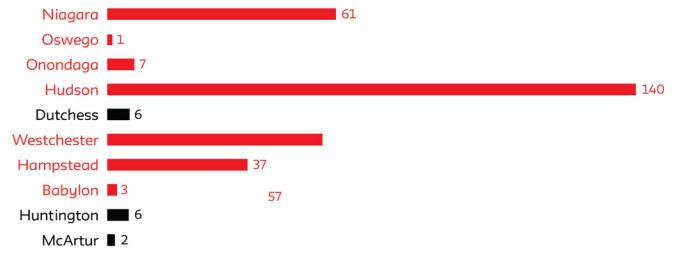
- In the Finger Lakes region of NY, a proposed incinerator was recently blocked by local residents. Governor Cuomo signed legislation barring the construction of new trash incinerators in the Finger Lakes region.⁴
- The region is less diverse than the rest of the state with most of the counties ranging between 87%-96% white non-hispanic, compared with 57% state wide.⁵
- This legislation could push construction of new trash incinerators to other more diverse regions of the state, contributing to environmental racism.

AIR POLLUTANT EMISSIONS FOR NY INCINERATORS (2017)

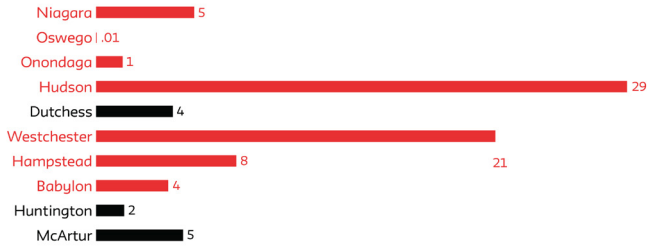
ANNUAL PM 2.5 (LBS)



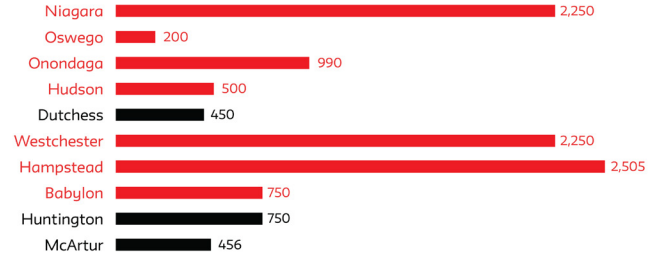
ANNUAL LEAD (LBS)



ANNUAL MERCURY (LBS)



DAILY TONS OF WASTE CAPACITY (LBS)



EJ-Community Non-EJ-Community

THE COST TO NEW YORKERS' WALLET

In addition to paying more for healthcare due to a higher “pollution burden”, residents in NY may also **pay more to have waste burned instead of landfilled**. The U.S. Energy Information Administration reports that burning trash in MSW incinerators is the most expensive way to make energy.⁶

- Residents in NY often pay more to have waste burned instead of landfilled. Average tip fees in NY for incineration is \$76.82/ton compared to an average of \$66.17/ton for landfilling waste.⁷
- Covanta received a tax exempt \$165 million loan from Niagara Falls for upgrades in 2012 and in 2015 two new fixed rate tax-exempt corporate bonds totaling \$130 million.⁸
- Both incineration and landfilling are more expensive than zero waste solutions such as reducing waste, recycling, and composting.

JOIN THE FIGHT

HELP ELIMINATE INCINERATION TO PROTECT NEW YORKERS HEALTH, ENVIRONMENT, AND HARD-EARNED MONEY. ADVOCATE FOR ZERO WASTE SOLUTIONS THAT MINIMIZE MUNICIPAL WASTE STREAMS AND CONSERVE RESOURCES THROUGH RESPONSIBLE PRODUCTION, CONSUMPTION, REUSE AND RECOVERY WITHOUT BURNING:

- End disposal in incinerators and landfills
- Utilize minimum recycled content standards in manufacturing processes
- Invest in infrastructure to recover maximum resources for reuse, recycling and composting
- Ensure community involvement in any state zero waste plan

To learn more, check out GAIA's Zero Waste Master Plan

**Join a Community Group to close MSW incinerators, please contact:
Global Alliance for Incinerator Alternatives (GAIA)**



ENDNOTES

¹ For the purposes of this study, an environmental justice community is defined using thresholds for race, Hispanic origin, and household income derived from the US Census Bureau. To determine the threshold for an EJ community, a review of the state-wide average for these socio-demographic characteristics was completed and an EJ community was defined as any census tract where the thresholds for the socio-demographic data was near the state average. In NY, 49.7% of the population are people of color, including Hispanic origin and 30% of households have income below 200% of the federal poverty level. Based on these averages, any census tract in NY (a) where 33.8% or more of the residents within a three-mile radius of the plant are people of color [all people who are NOT white/non Hispanic] or (b) 25% or more of the households are at or below 200% of the Federal Poverty Level would be considered an EJ community. The demographic indicators for this project came from EJSCREEN. The source of all demographic data in EJSCREEN comes from American Community Survey five-year summary, compiled yearly. For this project, data from the ACS 2013-2017 5-year estimates was gathered and wrangled for analysis which replicates the demographic variables used in EJSCREEN.

² EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018," (EPA, 2020): 2-3 <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

³ Zhaozhong Zhu, Kohei Hasegawa, Baoshan Ma, Michimasa Fujiogi, Carlos A. Camargo, Liming Liang, "Association of asthma and its genetic predisposition with the risk of severe COVID-19" (Journal of Allergy and Clinical Immunology, 2020) <https://www.sciencedirect.com/science/article/pii/S009167492030806X>

⁴ Thomas Giery Pudney, "Finger Lakes incinerators banned after Cuomo approves bill," (Ithaca Journal, May 24, 2019) <https://www.ithacajournal.com/story/news/politics/2019/05/24/governor-cuomo-signs-bill-banning-trash-incinerators-finger-lakes/1225032001/>

⁵ Thomas P. DiNapoli, "Special Report: Finger Lakes Region Economic Profile," (Office of the New York State Comptroller, August, 2017) <https://www.osc.state.ny.us/files/local-government/publications/pdf/fingerlakesregion.pdf> (accessed 08.21.20)

⁶ U.S. Energy Information Administration, Updated Capital Cost Estimates for Utility Scale Electricity Generation Plants, (Washington, D.C.: U.S. Energy Information Administration, 2016), 9.

⁷ Tip fees vary by region and municipality (Tishman Environment and Design Center, "U.S. Municipal Solid Waste Incinerators: An Industry in Decline," Tishman Center, May, 2019: 69-70 https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/5d5c4bea0d59ad00012d220e/1566329840732/CR_GaiaReportFinal_05.21.pdf)

⁸ Covanta, "2017 Annual Report," 82 https://www.annualreports.com/HostedData/AnnualReportArchive/c/NYSE_CVA_2017.pdf

This fact sheet was prepared by The Tishman Environment and Design Center in consultation with GAIA and in collaboration with Moja Robison in November 2020.



GAIA is a worldwide alliance of more than 800 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.
www.no-burn.org



Tishman Environment
and Design Center

The Tishman Environment and Design Center integrates bold design, policy and social justice approaches to tackle the climate crisis and advance environmental justice.
www.tishmancenter.org

THE COST OF BURNING TRASH

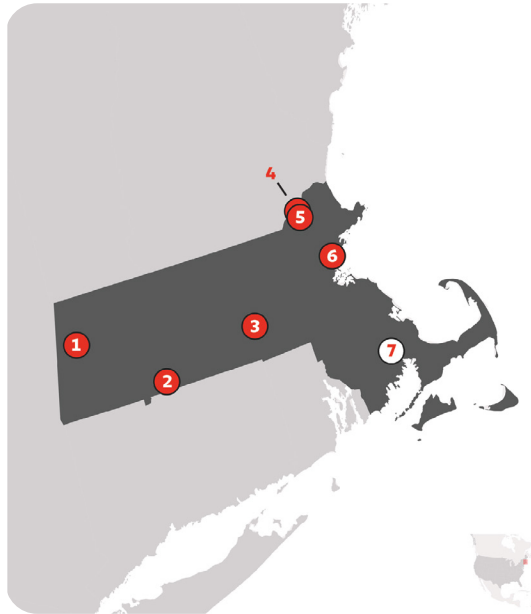
HUMAN AND ECOLOGICAL IMPACTS OF INCINERATION IN MASSACHUSETTS

Massachusetts (MA) has the third highest number of Municipal Solid Waste (MSW) incinerators in the United States, with seven incinerators. Massachusetts burns more household waste per capita than any other state in the U.S.¹ The cost of burning trash in municipal incinerators are significant to human and ecological health, and expensive for community members and municipalities.

VISUALIZING THE COST

EJ Community ●
Non-EJ Community ○

- 1 Pittsfield Resource Recovery Facility**
(Pittsfield)
- 2 Pioneer Valley Resource Recovery Facility**
(Agawam)
- 3 Wheelabrator Millbury**
(Millbury)
- 4 Haverhill Resource Recovery Facility**
(Haverhill)
- 5 Wheelabrator North Andover**
(North Andover)
- 6 Wheelabrator Saugus**
(Saugus)
- 7 SEMASS Resource Recovery Facility**
(Rochester)



The map shows Massachusetts MSW incinerators and their location in environmental justice (EJ) communities (low-income or communities of color disproportionately impacted by environmental burdens and pollution).² Incinerators are often located in communities which face cumulative impacts from multiple sources of pollution. **In MA, 6 of the 7 MSW incinerators are located within a 3-mile radius of an EJ community.**

THE COST TO THE PLANET

Waste incineration releases **significant greenhouse gases** into the atmosphere contributing to climate change. In 2018, MSW incinerators in the U.S. emitted 11 million tons of carbon dioxide and are **nearly as carbon-intensive as burning coal**.⁴ Despite these contributions to air and climate pollution, incinerators have tried to re-brand as “waste-to-energy” facilities, and in some states, **lobbying has earned renewable energy status and taxpayer-funded subsidies**, which helps keep them afloat. This preferential treatment uses money and resources that could be going towards true clean energy like solar and wind.⁵

In Massachusetts, burning municipal solid waste is considered a renewable energy source according to their Renewable Portfolio Standard (RPS).⁶ The MA RPS gives incinerators access to renewable energy subsidies funded through taxpayer dollars that contribute to the profitability of this dirty industry. **These MA policies must change.**

Incineration companies often enter into **long-term (up to 30 years) contracts** with local municipalities that enforce delivery of a set amount of trash (called a put-or-pay contract) with the **threat of a financial penalty** for the town if the requirement is not met. Incineration contracts may:

- lock communities into waste incineration and decades of air pollution and carbon emissions
- disincentivize the transition to recycling, composting, and zero waste programs
- threaten the fiscal stability of communities by incineration industry debt and lawsuits

In spite of **serious environmental and health risks** associated with burning trash, renewable energy subsidies allow states and localities to promote incineration as an “environmentally-sound” way to manage waste.

THE COST TO HUMAN HEALTH

MSW incinerators are **large emitters of toxic air pollutants** that are detrimental to human health. Burning consumer waste emits many toxins such as heavy metals, dioxins, lead, mercury, nitrogen oxides (NOx), and Particulate Matter (PM). People living close to these facilities are exposed through inhalation or through contaminated food and water. These toxins are linked to a variety of problems including **asthma, heart disease, miscarriage, stillbirth, kidney disease, high blood pressure, and lung disease**. Notably, long-term exposure to PM has been shown to increase the risk of death from **Covid-19**.³



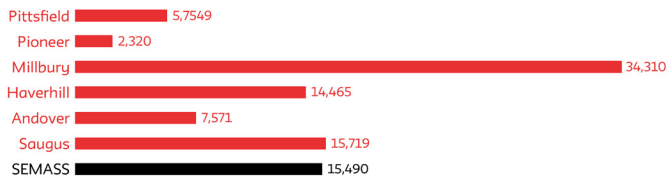
THE COST TO PUBLIC HEALTH IN MASSACHUSETTS

523,000 people live in a three-mile radius of Massachusetts' seven MSW incinerators, and are exposed to constant streams of **toxic air pollution**. Particulate Matter 2.5, lead and mercury are three of the most dangerous pollutants emitted from incinerators.

- SEMASS Resource Recovery Facility is the largest incinerator in the state, burning 2,700 tons of waste per day.⁷ In 2017, it was also the highest emitter of mercury in the state, emitting 12.8 pounds.
- Wheelabrator Millbury was the largest emitter of PM2.5 and lead in 2017, emitting 34,310 pounds of PM2.5 and 170 pounds of lead. Exposure to lead is particularly worrisome for children and can seriously affect mental and physical development.

AIR POLLUTANT EMISSIONS FOR MA INCINERATORS (2017)

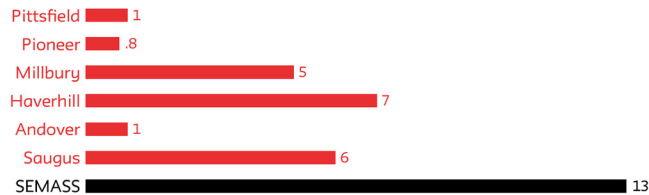
ANNUAL PM 2.5 (LBS)



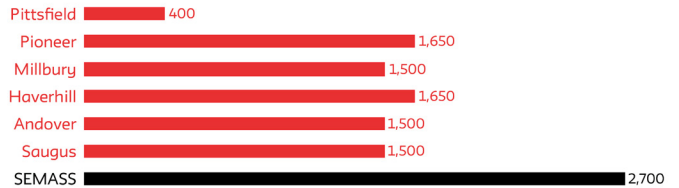
ANNUAL LEAD (LBS)



ANNUAL MERCURY (LBS)



DAILY TONS OF WASTE CAPACITY (LBS)



EJ-Community Non EJ-Community

THE COST TO MASSACHUSETTS' WALLET

The U.S. Energy Information Administration reports that burning trash in MSW incinerators is the most expensive way to make energy.⁸ Incinerators typically have a lifespan of 20-30 years.

- The majority of incinerators in Massachusetts were built in the 1980s, with one being built in 1975 (Wheelabrator Saugus). Aging incinerators pose various safety threats including dangerous fires and other accidents. Maintaining incinerators is also expensive. The cost generally gets passed to cities, towns, and residents.
- In 2016, Covanta's Pittsfield Resource Recovery Facility threatened to close because of high operating costs and declining profitability. Pittsfield lawmakers passed incentives totaling \$562,000, coming from an economic development fund, for the company to stay open for at least another four years.⁹

JOIN THE FIGHT

HELP ELIMINATE INCINERATION TO PROTECT MASSACHUSETTES HEALTH, ENVIRONMENT, AND HARD-EARNED MONEY. ADVOCATE FOR ZERO WASTE SOLUTIONS THAT MINIMIZE MUNICIPAL WASTE STREAMS AND CONSERVE RESOURCES THROUGH RESPONSIBLE PRODUCTION, CONSUMPTION, REUSE AND RECOVERY WITHOUT BURNING:

- End disposal in incinerators and landfills
- Utilize minimum recycled content standards in manufacturing processes
- Invest in infrastructure to recover maximum resources for reuse, recycling and composting
- Ensure community involvement in any state zero waste plan

To learn more, check out GAIA's Zero Waste Master Plan

**Join a Community Group to close MSW incinerators, please contact:
Global Alliance for Incinerator Alternatives (GAIA)**



ENDNOTES

¹ Kevin Budris, “Aging Waste Incinerators Pose a Danger to New Englanders,” (Conservation Law Foundation, December 9, 2019) <https://www.clf.org/blog/aging-incinerators-pose-a-danger/> (accessed November 9, 2020)

² For the purposes of this study, an environmental justice community is defined using thresholds for race, Hispanic origin, and household income derived from the US Census Bureau. To determine the threshold for an EJ community, a review of the statewide average for these socio-demographic characteristics was completed and an EJ community was defined as any census tract where the thresholds for the socio-demographic data was near the state average. In MA, 31.8% of the population are people of color, including Hispanic origin and 23% of households have income below 200% of the federal poverty level. Based on these averages, any census tract in MA (a) where 20% or more of the residents within a three-mile radius of the plant are people of color [all people who are NOT white/non Hispanic] or (b) 25% or more of the households are at or below 200% of the Federal Poverty Level would be considered an EJ community. The demographic indicators for this project came from EJSCREEN. The source of all demographic data in EJSCREEN comes from American Community Survey five-year summary, compiled yearly. For this project, data from the ACS 2013-2017 5-year estimates was gathered and wrangled for analysis which replicates the demographic variables used in EJSCREEN.

³ Zhaozhong Zhu, Kohei Hasegawa, Baoshan Ma, Michimasa Fujiogi, Carlos A. Camargo, Liming Liang, “Association of asthma and its genetic predisposition with the risk of severe COVID-19” (Journal of Allergy and Clinical Immunology, 2020) <https://www.sciencedirect.com/science/article/pii/S009167492030806X>

⁴ EPA, “Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018,” (EPA, 2020): 2-3 <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

⁵ Steven C. Russo et al., Comments of the New York State Department of Environmental Conservation Regarding the Verified Petition of Covanta Energy Corporation, (Albany, New York: New York State Department of Environmental Conservation, 2011)

⁶ DSIRE, Renewable Energy Standard Program Overview: Massachusetts, (DSIRE, July 9, 2018) <https://programs.dsireusa.org/system/program/detail/479> (accessed November 9, 2020)

⁷ Enforcement and Compliance History Online, “Air Pollutant Report,” (EPA, 2017) <https://echo.epa.gov/air-pollutant-report?fid=110000312028>

⁸ U.S. Energy Information Administration, Updated Capital Cost Estimates for Utility Scale Electricity Generation Plants, (Washington, D.C.: U.S. Energy Information Administration, 2016), 9.

⁹ Dick Lindsay, “Covanta Will Continue Operating for at Least 4 More Years,” The Berkshire Eagle, October 12, 2016.

This fact sheet was prepared by The Tishman Environment and Design Center in consultation with GAIA and in collaboration with Moja Robison in November 2020.



GAIA is a worldwide alliance of more than 800 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.
www.no-burn.org



Tishman Environment
and Design Center

The Tishman Environment and Design Center integrates bold design, policy and social justice approaches to tackle the climate crisis and advance environmental justice.
www.tishmancenter.org

THE COST OF BURNING TRASH

HUMAN AND ECOLOGICAL IMPACTS OF INCINERATION IN MINNESOTA

Minnesota (MN) has the third highest number of Municipal Solid Waste (MSW) incinerators in the United States, with seven incinerators. The cost of burning trash in municipal incinerators are significant to human and ecological health, and expensive for community members and municipalities.

VISUALIZING THE COST

EJ Community ●
Non-EJ Community ○

- 1 Polk County Solid Waste Resource Recovery Facility**
(Fosston)
- 2 Perham Resource Recovery Facility**
(Perham)
- 3 Pope/Douglas Waste-to-Energy Facility**
(Alexandria)
- 4 Hennepin Energy Resource Center**
(Minneapolis)
- 5 Xcel Energy - Red Wing Steam Plant**
(Red Wing)
- 6 Olmsted Waste-to-Energy Facility**
(Rochester)
- 7 Xcel Energy - Wilmarth Plant**
(Mankato)



This map shows Minnesota MSW incinerators and their location in environmental justice (EJ) communities (low-income or communities of color disproportionately impacted by environmental burdens and pollution).¹ Incinerators are often located in communities which face cumulative impacts from multiple sources of pollution. In MN, 6 of the 7 MSW incinerators are located in an EJ community, within a three-mile radius.

THE COST TO THE PLANET

Waste incineration releases significant greenhouse gases into the atmosphere contributing to climate change. In 2018, MSW incinerators in the U.S. emitted 11 million tons of carbon dioxide and are nearly as carbon-intensive as burning coal.² Despite these contributions to air and climate pollution, incinerators have tried to re-brand as “waste-to-energy” facilities, and in some states, lobbying has earned renewable energy status and taxpayer-funded subsidies, which helps keep them afloat. This preferential treatment uses money and resources that could be going towards true clean energy like solar and wind.³

In Minnesota, burning MSW is considered a renewable energy source according to their Renewable Portfolio Standard (RPS).⁴ The MN RPS gives incinerators access to renewable energy subsidies funded through taxpayer dollars that contribute to the profitability of this dirty industry. These MN policies must change.

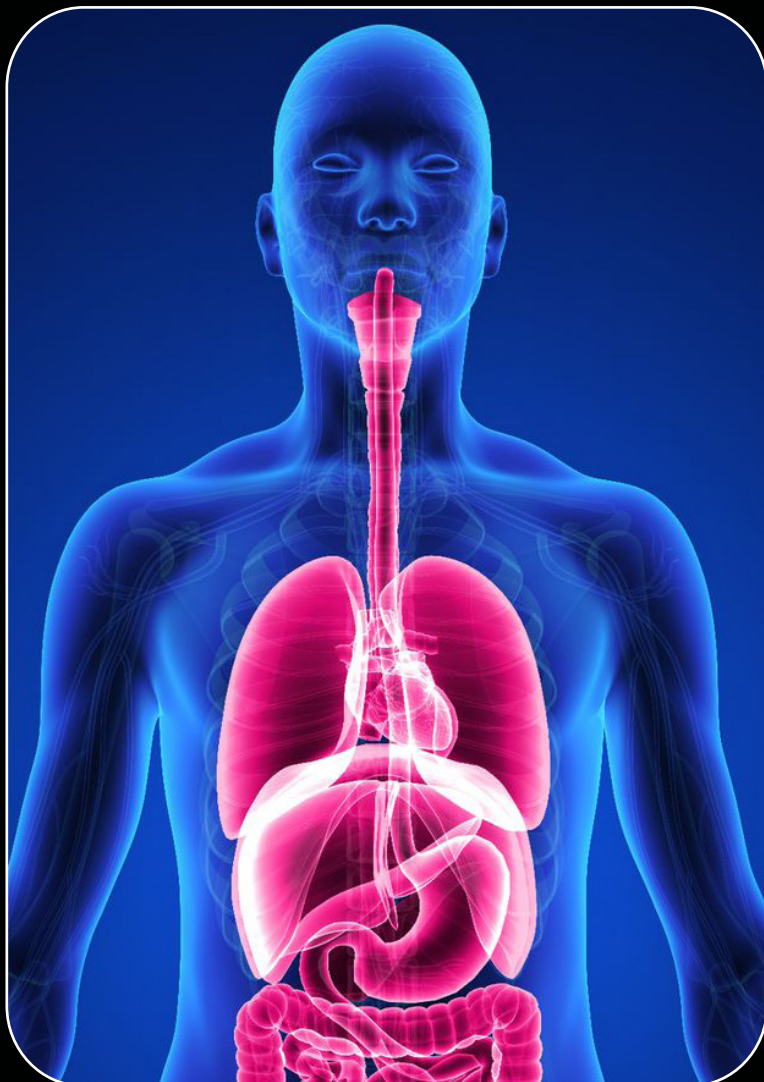
Incineration companies often enter into long-term (up to 30 years) contracts with local municipalities that enforce delivery of a set amount of trash (called a put-or-pay contract) with the threat of a financial penalty for the town if the requirement is not met. Incineration contracts may:

- Lock communities into waste incineration and decades of air pollution and carbon emissions
- Disincentivize the transition to recycling, composting, and zero waste
- Threaten the fiscal stability of communities by incineration industry debt and lawsuits

In spite of serious environmental and health risks associated with burning trash, renewable energy subsidies allow states and localities to promote incineration as an “environmentally-sound” way to manage waste.

THE COST TO HUMAN HEALTH

MSW incinerators are **large emitters of toxic air pollutants** that are detrimental to human health. Burning consumer waste emits many toxins such as heavy metals, dioxins, lead, mercury, nitrogen oxides (NOx), and Particulate Matter (PM). People living close to these facilities are exposed through inhalation or through contaminated food and water. These toxins are linked to a variety of problems including **asthma, heart disease, miscarriage, stillbirth, kidney disease, high blood pressure, and lung disease**. Notably, long-term exposure to PM has been shown to increase the risk of death from **Covid-19**.⁵



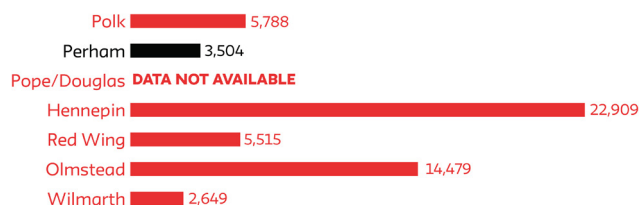
THE COST TO MINNESOTANS' HEALTH

338,454 people live within a three-mile radius of Minnesota's seven incinerators, and are exposed to constant streams of toxic air pollution. Particulate Matter 2.5, lead and mercury are three of the most dangerous pollutants emitted from incinerators. Hennepin Energy Resource Center, in downtown Minneapolis, is the largest MSW incinerator in the state burning 1,200 tons of waste per day and is located beside North Minneapolis where many of the city's Black population has been segregated by decades of discriminatory policies.⁶

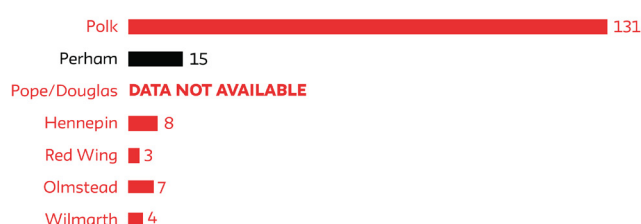
- In 2017, Hennepin was the largest emitter of both PM2.5 and mercury.
- Polk County Resource Recovery emitted the largest amount of lead at 131 lbs. Exposure to lead is particularly worrisome for children and can seriously affect mental and physical development.

AIR POLLUTANT EMISSIONS FOR MN INCINERATORS (2017)

ANNUAL PM 2.5 (LBS)



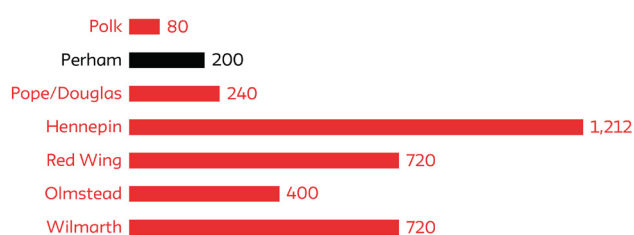
ANNUAL LEAD (LBS)



ANNUAL MERCURY (LBS)



DAILY TONS OF WASTE CAPACITY (LBS)



EJ-Community Non EJ-Community

THE COST TO MINNESOTANS' WALLET

In addition to paying more for healthcare due to a higher “pollution burden”, residents in MN may also **pay more to have waste burned instead of landfilled**. The U.S. Energy Information Administration reports that burning trash in MSW incinerators is the most expensive way to make energy.⁷

- The average tipping fee in MN to an incinerator is \$83.20/ton compared to an average cost of \$63.52/ton for landfilling waste in the state.⁸
- In 2017, Washington and Ramsey Counties announced a decision to burn all waste, which resulted in a 10% increase for customers' trash bills.⁹
- Both incineration and landfilling are more expensive than zero waste solutions such as reducing waste, recycling, and composting.

JOIN THE FIGHT

HELP ELIMINATE INCINERATION TO PROTECT MINNESOTA'S HEALTH, ENVIRONMENT, AND HARD-EARNED MONEY. ADVOCATE FOR ZERO WASTE SOLUTIONS THAT MINIMIZE MUNICIPAL WASTE STREAMS AND CONSERVE RESOURCES THROUGH RESPONSIBLE PRODUCTION, CONSUMPTION, REUSE AND RECOVERY WITHOUT BURNING:

- End disposal in incinerators and landfills
- Utilize minimum recycled content standards in manufacturing processes
- Invest in infrastructure to recover maximum resources for reuse, recycling and composting
- Ensure community involvement in any state zero waste plan

To learn more, check out GAIA's Zero Waste Master Plan

Join a Community Group to close MSW incinerators, please contact:
Minnesota BIPOC Environmental & Climate Justice Table at no.incinerators@gmail.com



ENDNOTES

¹ For the purposes of this study, an environmental justice community is defined using thresholds for race, Hispanic origin, and household income derived from the US Census Bureau. To determine the threshold for an EJ community, a review of the statewide average for these socio-demographic characteristics was completed and an EJ community was defined as any census tract where the thresholds for the socio-demographic data was near the state average. In MN, 22% of the population are people of color, including Hispanic origin and 22% of households have income below 200% of the federal poverty level. Based on these averages, any census tract in MN (a) where 20% or more of the residents within a three-mile radius of the plant are people of color [all people who are NOT white/non Hispanic] or (b) 30% or more of the households are at or below 200% of the Federal Poverty Level would be considered an EJ community. The demographic indicators for this project came from EJSCREEN. The source of all demographic data in EJSCREEN comes from American Community Survey five-year summary, compiled yearly. For this project, data from the ACS 2013-2017 5-year estimates was gathered and wrangled for analysis which replicates the demographic variables used in EJSCREEN.

² EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018," (EPA, 2020): 2-3 <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

³ Steven C. Russo et al., Comments of the New York State Department of Environmental Conservation Regarding the Verified Petition of Covanta Energy Corporation, (Albany, New York: New York State Department of Environmental Conservation, 2011).

⁴ DSIRE, Renewable Energy Standard Program Overview: Minnesota, (DSIRE, June 15, 2018) <https://programs.dsireusa.org/system/program/detail/2401>

⁵ Zhaozhong Zhu, Kohei Hasegawa, Baoshan Ma, Michimasa Fujiogi, Carlos A. Camargo, Liming Liang, "Association of asthma and its genetic predisposition with the risk of severe COVID-19" (Journal of Allergy and Clinical Immunology, 2020) <https://www.sciencedirect.com/science/article/pii/S009167492030806X>

⁶ University of Minnesota Libraries, Mapping Prejudice, (Accessed October, 28, 2020) from <https://www.mappingprejudice.org/what-are-covenants/>

⁷ U.S. Energy Information Administration, Updated Capital Cost Estimates for Utility Scale Electricity Generation Plants, (Washington, D.C.: U.S. Energy Information Administration, 2016), 9.

⁸ Tipping fee is the cost that a facility charges for each ton of waste received. Tip fees vary by region and municipality. Average landfill tip fees serve as a proxy for regional waste management prices. States can export waste to landfills out of state in the region which may have different tipping fees from in-state facilities. (Tishman Environment and Design Center, "U.S. Municipal Solid Waste Incinerators: An Industry in Decline," Tishman Center, May, 2019: 69-70 https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/5d5c4bea0d59ad00012d220e/1566329840732/CR_GaiaReportFinal_05.21.pdf); and Staley, Kantner, and Choi, Analysis of MSW Landfill Tipping Fees, 1-5.

⁹ Bob Shaw, "Two Minn. counties to burn all trash in incinerators for electricity," (St. Paul Pioneer Press, Dec 28th 2017) <https://www.duluthnewtribune.com/news/4380437-two-minn-counties-burn-all-trash-incinerators-electricity>

This fact sheet was prepared by The Tishman Environment and Design Center in consultation with GAIA and in collaboration with Moja Robison in November 2020.



GAIA is a worldwide alliance of more than 800 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.
www.no-burn.org



Tishman Environment and Design Center

The Tishman Environment and Design Center integrates bold design, policy and social justice approaches to tackle the climate crisis and advance environmental justice.
www.tishmancenter.org

THE COST OF BURNING TRASH

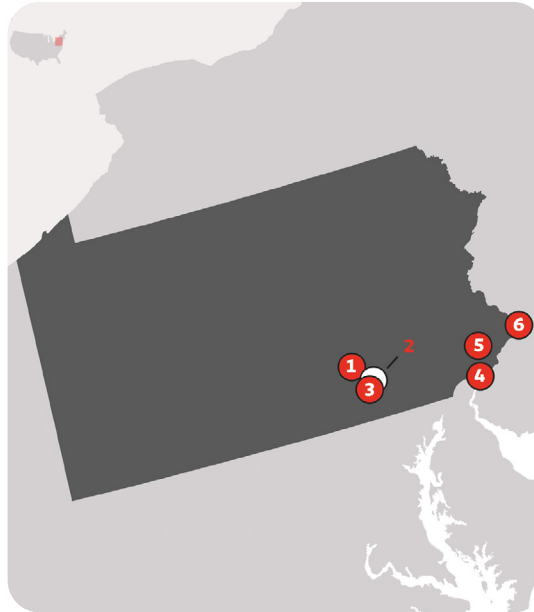
HUMAN AND ECOLOGICAL IMPACTS OF INCINERATION IN PENNSYLVANIA

Pennsylvania (PA) has six Municipal Solid Waste (MSW) incinerators in the United States. The cost of burning trash in municipal incinerators are significant to human and ecological health, and expensive for community members and municipalities.

VISUALIZING THE COST

EJ Community ●
Non-EJ Community ○

- 1 Susquehanna Resource Management Complex**
(Harrisburg)
- 2 Lancaster County Resource Recovery Facility**
(Marrietta)
- 3 York County Resource Recovery Center**
(York)
- 4 Delaware Valley Resource Recovery Facility**
(Chester)
- 5 Covanta Plymouth Renewable Energy**
(Conshohocken)
- 6 Wheelabrator Falls**
(Morrisville)



The map shows Pennsylvania MSW incinerators and their location in environmental justice (EJ) communities (low-income or communities of color disproportionately impacted by environmental burdens and pollution).¹ Incinerators are often located in communities which face cumulative impacts from multiple sources of pollution. **In PA, 5 of the 6 MSW incinerators are located within a 3-mile radius of an EJ community.**

THE COST TO THE PLANET

Waste incineration **releases significant greenhouse gases** into the atmosphere contributing to climate change. In 2018, MSW incinerators in the U.S. emitted **11 million tons of carbon dioxide** and are nearly as carbon-intensive as burning coal.² Despite these contributions to air and climate pollution, incinerators have tried to re-brand as “waste-to-energy” facilities, and in some states, lobbying has earned renewable energy status and taxpayer-funded subsidies, which helps keep them afloat. This preferential treatment uses money and resources that could be going towards true clean energy like solar and wind.³

In Pennsylvania, burning municipal solid waste is considered a renewable energy source according to their Renewable Portfolio Standard (RPS).⁴ The PA RPS gives incinerators access to renewable energy subsidies funded through taxpayer dollars that contribute to the profitability of this dirty industry. **These PA policies must change.**

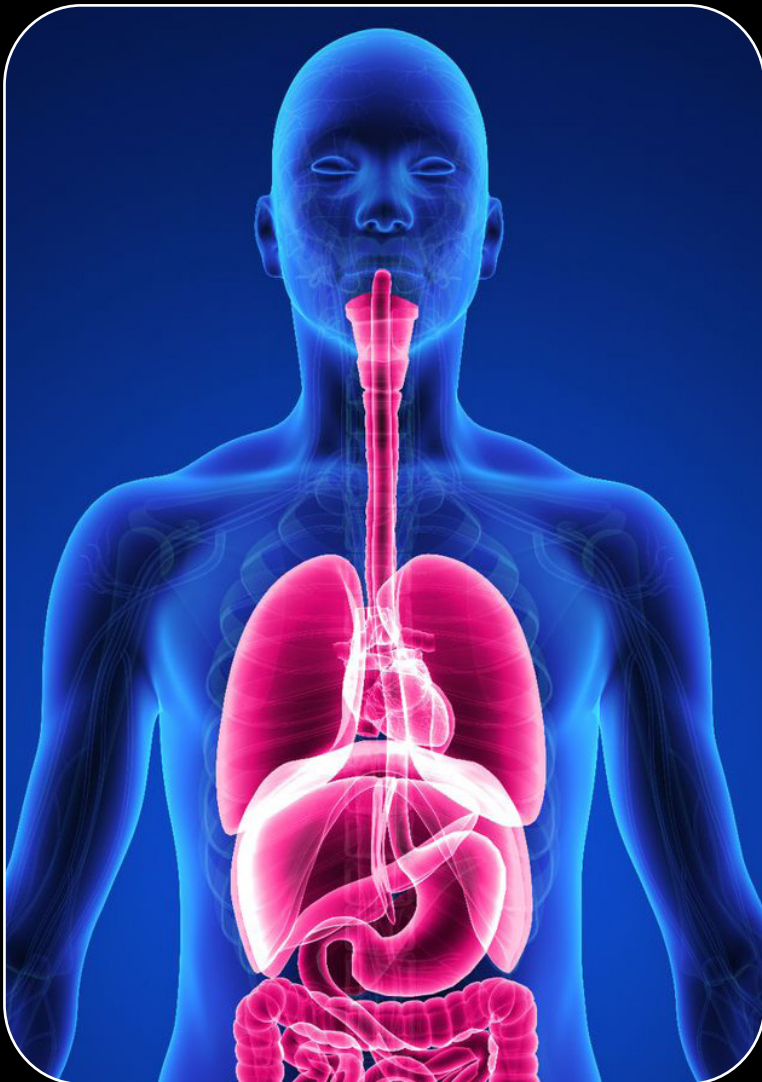
Incineration companies often enter into **long-term (up to 30 years) contracts** with local municipalities that enforce delivery of a set amount of trash (called a put-or-pay contract) with the **threat of a financial penalty** for the town if the requirement is not met. Incineration contracts may:

- lock communities into waste incineration and decades of air pollution and carbon emissions
- disincentivize the transition to recycling, composting, and zero waste programs
- threaten the fiscal stability of communities by incineration industry debt and lawsuits

In spite of **serious environmental and health risks** associated with burning trash, renewable energy subsidies allow states and localities to promote incineration as an “environmentally-sound” way to manage waste.

THE COST TO HUMAN HEALTH

MSW incinerators are **large emitters of toxic air pollutants** that are detrimental to human health. Burning consumer waste emits many toxins such as heavy metals, dioxins, lead, mercury, nitrogen oxides (NOx), and Particulate Matter (PM). People living close to these facilities are exposed through inhalation or through contaminated food and water. These toxins are linked to a variety of problems including **asthma, heart disease, miscarriage, stillbirth, kidney disease, high blood pressure, and lung disease**. Notably, long-term exposure to PM has been shown to increase the risk of death from **Covid-19**.⁵



THE COST TO PENNSYLVANIANS' HEALTH

310,373 people live within a three-mile radius of Pennsylvania's six incinerators, and are exposed to constant streams of toxic air pollution. Delaware Valley Resource Recovery Facility is the largest incinerator in the state, and one of the largest incinerators in the country, burning 3,500 tons of waste per day.⁶ It is located in an EJ community with 583 people living within its three mile radius, 44% of whom are low income residents, and 57% of whom are people of color.

- In 2017, emission data was not found for Delaware Valley Resource Recovery Facility, but in 2014 it was the largest emitter of PM2.5 in the country, emitting more than 200,000 pounds of PM2.5.⁷
- In 2017, Wheelabrator Falls was the largest emitter of PM2.5, lead and mercury.⁸
- In 2017, China imposed a ban on importing most residential recyclables. From this ban, about 200 tons of recyclables were sent to Chester City's Delaware Valley Resource Recovery Facility, located outside of Philadelphia and in an EJ community. Nearly four in 10 children in the city have asthma, the rate of ovarian cancer is 64% higher than the rest of Pennsylvania and lung cancer rates are 24% higher, according to state health statistics.⁹

AIR POLLUTANT EMISSIONS FOR PA INCINERATORS (2017)

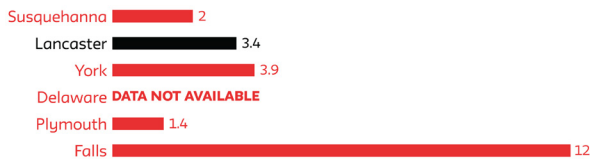
ANNUAL PM 2.5 (LBS)



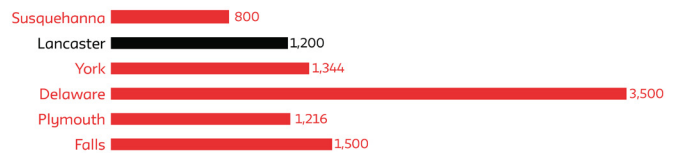
ANNUAL LEAD (LBS)



ANNUAL MERCURY (LBS)



DAILY TONS OF WASTE CAPACITY (LBS)



EJ-Community

Non EJ-Community

THE COST TO PENNSYLVANIANS' WALLET

In addition to paying more for healthcare due to a higher “pollution burden”, residents in PA may also pay more to have waste burned instead of landfilled. The U.S. Energy Information Administration reports that burning trash in MSW incinerators is the most expensive way to make energy.¹⁰

- The public debt from building and maintaining incinerators can cause serious fiscal problems for municipalities, as shown in Harrisburg, PA.
- In 2003, due to excessive dioxin emissions, the U.S. EPA threatened to shut down the incinerator.¹¹ However, the incinerator already held more than \$100 million in debt. Instead of shutting down the facility, then Mayor Stephen Reed, chose to retrofit it using \$130 million in city-backed debt. This debt became a financial nightmare for the city leading to a major budget deficit that caused government layoffs, a 17% increase in property taxes and an attempt at Chapter 9 bankruptcy.¹² In 2018, the state filed a lawsuit against responsible parties, including law firms and private investors, who made millions of dollars in fees from structuring this financial debacle.
- Both incineration and landfilling are more expensive than zero waste solutions such as reducing waste, recycling, and composting.

JOIN THE FIGHT

HELP ELIMINATE INCINERATION TO PROTECT PENNSYLVANIANS HEALTH, ENVIRONMENT, AND HARD-EARNED MONEY. ADVOCATE FOR ZERO WASTE SOLUTIONS THAT MINIMIZE MUNICIPAL WASTE STREAMS AND CONSERVE RESOURCES THROUGH RESPONSIBLE PRODUCTION, CONSUMPTION, REUSE AND RECOVERY WITHOUT BURNING:

- End disposal in incinerators and landfills
- Utilize minimum recycled content standards in manufacturing processes
- Invest in infrastructure to recover maximum resources for reuse, recycling and composting
- Ensure community involvement in any state zero waste plan

To learn more, check out GAIA's [Zero Waste Master Plan](#)

Join a Community Group to close MSW incinerators, please contact:
Global Alliance for Incinerator Alternatives (GAIA)



ENDNOTES

¹ For the purposes of this study, an environmental justice community is defined using thresholds for race, Hispanic origin, and household income derived from the US Census Bureau. To determine the threshold for an EJ community, a review of the statewide average for these socio-demographic characteristics was completed and an EJ community was defined as any census tract where the thresholds for the socio-demographic data was near the state average. In PA, 26.2% of the population are people of color, including Hispanic origin and 28% of households have income below 200% of the federal poverty level. Based on these averages, any census tract in PA (a) where 30% or more of the residents within a three-mile radius of the plant are people of color [all people who are NOT white/non Hispanic] or (b) 25% or more of the households are at or below 200% of the Federal Poverty Level would be considered an EJ community. The demographic indicators for this project came from EJSCREEN. The source of all demographic data in EJSCREEN comes from American Community Survey five-year summary, compiled yearly. For this project, data from the ACS 2013-2017 5-year estimates was gathered and wrangled for analysis which replicates the demographic variables used in EJSCREEN.

² EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018," (EPA, 2020): 2-3 <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

³ Steven C. Russo et al., Comments of the New York State Department of Environmental Conservation Regarding the Verified Petition of Covanta Energy Corporation, (Albany, New York: New York State Department of Environmental Conservation, 2011.

⁴ DSIRE, Renewable Energy Standard Program Overview: Pennsylvania, (DSIRE, July 10, 2018) <https://programs.dsireusa.org/system/program/detail/262> (accessed November 9, 2020)

⁵ Zhaozhong Zhu, Kohei Hasegawa, Baoshan Ma, Michimasa Fujiogi, Carlos A. Camargo, Liming Liang, "Association of asthma and its genetic predisposition with the risk of severe COVID-19" (Journal of Allergy and Clinical Immunology, 2020) <https://www.sciencedirect.com/science/article/pii/S009167492030806X>

⁶ Tishman Center, "U.S. Municipal Solid Waste Incinerators: An Industry in Decline," (Tishman Center, 2019): 41 https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/5d5c4bea0d59ad00012d220e/1566329840732/CR_GaiaReportFinal_05.21.pdf

⁷ U.S. Environmental Protection Agency, "Enforcement and Compliance History Online: Detailed Facility Report for Covanta Delaware Valley," Accessed April 17, 2019.

⁸ Enforcement and Compliance History Online, "Air Pollutant Report," (EPA, 2017) <https://echo.epa.gov/air-pollutant-report?fid=110001064703> (Accessed September, 2020)

⁹ Public Health Management Corporation, "Community Health Database," (PHMC) <https://www.data.publichealthmanagementcorporation.org/> and Oliver Milman, "'Moment of reckoning': US cities burn recyclables after China bans imports," (The Guardian, February 21, 2019) <https://www.theguardian.com/cities/2019/feb/21/philadelphia-covanta-incinerator-recyclables-china-ban-imports>

⁹ Public Health Management Corporation, "Community Health Database," (PHMC) <https://www.data.publichealthmanagementcorporation.org/> and Oliver Milman, "'Moment of reckoning': US cities burn recyclables after China bans imports," (The Guardian, February 21, 2019) <https://www.theguardian.com/cities/2019/feb/21/philadelphia-covanta-incinerator-recyclables-china-ban-imports>

¹⁰ U.S. Energy Information Administration, Updated Capital Cost Estimates for Utility Scale Electricity Generation Plants, (Washington, D.C.:U.S. Energy Information Administration, 2016), 9.

¹¹ Lambert, Lisa. "Special Report: The Incinerator That May Burn Muni Investors." Reuters, May 12, 2010. <https://www.reuters.com/article/us-muni-investors/special-report-the-incinerator-that-may-burn-muni-investors-idUSTRE64B2PM20100512?ty pe=domesticNews>

¹² Lawrence Blinda, "Worst Municipal Finance Disaster: Commonwealth Files Lawsuit Against Actors in HBG Incinerator Debacle," The Burg, May 21, 2018.

This fact sheet was prepared by The Tishman Environment and Design Center in consultation with GAIA and in collaboration with Moja Robison in November 2020.



GAIA is a worldwide alliance of more than 800 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.
www.no-burn.org



Tishman Environment and Design Center

The Tishman Environment and Design Center integrates bold design, policy and social justice approaches to tackle the climate crisis and advance environmental justice.
www.tishmancenter.org