

CLIMATE POWER 2020

PENNSYLVANIA

What Do Trump's Attacks On Science Mean For Pennsylvania?

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TL/DR:

Pennsylvanians Believe In Climate Change - And They Want Their Leaders To Act:

- [65%](#) of Pennsylvanians believe in climate change, and [59% of the state's residents](#) are worried about climate change.
- [60% of Pennsylvanians](#) believe the President should do more to address climate change, [59%](#) believe Congress should do more, and [56%](#) believe their Governor should do more, and [55%](#) believe their local officials should do more.
- [Click here to jump to more research below](#)

Trump's Climate Denial Is Harmful To Pennsylvanians' Health:

- Currently, [more than 310,000](#) Pennsylvanians are especially vulnerable to extreme heat, and Philadelphia is the 17th [fastest-warming](#) city in the U.S.
- In 2019, [nine counties](#) in Pennsylvania received F grades for their number of days of unhealthy ozone levels, and Allegheny County [earned](#) an F grade for particle pollution.
- Air pollution from fracking sites in Pennsylvania has been [linked](#) to [adverse health conditions](#), and water pollution from [fracking waste](#) was [found](#) to have contaminated drinking water with [harmful chemicals](#).
- Trump's anti-science attitude led him to block action to make polluters pay for cleaning up toxic chemicals that have been [found](#) in water supplies [across the state](#). These chemicals, called PFAS, are [linked](#) to kidney and testicular cancer, hypertension and other diseases.
- Trump's close relationship with the coal industry has resulted in looser rules for dumping toxic coal ash.

- Coal ash contains chemicals [linked](#) to cancer, neurological damage, and other health impacts and is stored in sites at risk of spilling into nearby rivers and lakes under flood conditions.
- Pennsylvania [borders](#) the largest coal ash waste site in the U.S., and 2019 report found coal ash pollution was [leaking](#) into groundwater at nine power plants across the state.
- Toxic algae, which [threatens](#) the local tourism industry, has been [found](#) in Pennsylvania's Lake Erie.
- [Click here to jump to more research below](#)

Trump's Climate Denial Puts The Safety Of Pennsylvanians At Risk:

- Pennsylvania is at risk from climate-related hurricanes:
 - In the last decade, [Pennsylvania was hit by](#) Hurricane Sandy (2012) and Tropical Storm Lee (2011), which together caused a total of \$77 billion in damages and 180 deaths.
- Pennsylvania is at risk from climate-related droughts:
 - Climate change is [already affecting](#) global patterns of drought, and such trends are expected to continue, with longer and more intense droughts [predicted](#).
 - In the last decade, [Pennsylvania has witnessed two drought events](#) which caused a total of \$48.2 billion in damages and 218 deaths.
- Pennsylvania is at risk from climate-related coastal and inland flooding:
 - Scientists have [linked](#) an increase in heavy downpours to climate change.
 - Currently, 7,000 people are [at risk](#) of coastal flooding in Pennsylvania and by 2050, an additional 6,000 people are [projected to be at risk](#) of coastal flooding due to sea level rise.
 - Currently, more than 430,000 people are [at risk](#) of inland flooding in Pennsylvania.
 - In the last decade, in addition to flooding caused by hurricanes and tropical storms, Pennsylvania has [experienced](#) three flooding events costing a total of \$5.2 billion in damages and resulting in 44 deaths.
- Pennsylvania's military bases are at risk from extreme weather events:
 - Pennsylvania's Defense Distribution Depot (DDD) Susquehanna is [impacted](#) by current and potential future flooding and future potential drought.
- [Click here to jump to more research below](#)

Trump's Climate Denial Hurts Pennsylvania's Economy:

- Climate change will [cost](#) Pennsylvania \$18 billion a year by the year 2100.
- In 2017, agriculture [generated](#) \$135.6 billion in gross state product and employed more than 575,000 workers in Pennsylvania.
- Outdoor recreation in Pennsylvania [supports](#) 251,000 jobs and \$29.1 billion in consumer spending. In 2018, tourism [generated](#) \$44.8 billion in visitor spending and supported 515,072 jobs.
- In the past decade, Pennsylvania has [experienced](#) 32 climate-related disasters responsible for a total of \$190.6 billion in damages.
- Since Trump assumed office, Pennsylvania has [experienced](#) 10 climate-related disasters responsible for a total of \$17.9 billion in damages.
- Trump's clean cars rollback will [cost](#) Pennsylvanians over \$610 million per year.
- [Click here to jump to more research below](#)

Trump's Climate Denial Is Especially Harmful To People Of Color In Pennsylvania:

- Nine counties in Pennsylvania [received](#) "F" grades for ozone levels in 2019, and the Philadelphia metropolitan area was [ranked](#) 23rd for high ozone days in 2019.
- Ozone has been [linked](#) to asthma, and Black children are [four times](#) more likely to be admitted to the hospital and [ten times](#) more likely to die from asthma.
- The Philadelphia-Reading-Camden metropolitan area [ranked](#) 12th in the nation for annual particle pollution in 2019.
- Communities of color in Pennsylvania's Chester and Delaware counties [continue](#) to fight against pollution from industrial waste facilities, while Black and Latino residents in Philadelphia's Huntington Park heat island [face](#) extreme temperatures.
- [Click here to jump to more research below](#)

Pennsylvania Has An Opportunity To Build A Strong Green Economy:

- Pennsylvania was [ranked](#) eleventh for clean energy employment in 2019, with the sector providing 93,861 jobs.
- In 2019, Pennsylvania was home to 4,231 jobs in the [solar industry](#) and 2,001 to 3,000 direct jobs in the [wind industry](#).
- [Click here to jump to more research below](#)

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HERE'S WHAT'S HAPPENING:

A [majority](#) of Pennsylvanians both believe in climate change and want their elected officials at all levels to do more to address the issue. President Trump's climate denial is harmful to Pennsylvania's health, safety, and economy – and is particularly harmful to communities of color.

Currently, [more than 310,000](#) Pennsylvanians are especially vulnerable to extreme heat. In 2019, [nine counties](#) in Pennsylvania received F grades for their number of days of unhealthy ozone levels, and Allegheny County [earned](#) an F grade for particle pollution. Air pollution from fracking sites in Pennsylvania has been [linked](#) to [adverse health conditions](#).

In addition to extreme heat and air pollution concerns, Pennsylvania's waterways have been polluted by industrial chemicals. [Fracking waste](#) was [found](#) to have contaminated drinking water with [harmful chemicals](#), and toxic PFAS chemicals have been [found](#) in water supplies [across the state](#). PFAS chemicals are [linked](#) to kidney and testicular cancer, hypertension and other diseases. Pennsylvanians also face pollution from coal ash, which contains chemicals [linked](#) to cancer, neurological damage, and other health impacts. Coal ash is stored in sites at risk of spilling into nearby rivers and lakes under flood conditions. Pennsylvania [borders](#) the largest coal ash waste site in the U.S., and 2019 report found coal ash pollution was [leaking](#) into groundwater at nine power plants across the state. Toxic algae, which [threatens](#) the local tourism industry, has also been [found](#) in Pennsylvania's Lake Erie.

In addition to health factors, Trump's Climate Denial places the safety of Pennsylvanians at risk. Over the past decade, Pennsylvania has [experienced](#) 2 hurricanes, totaling \$77 billion in damages and 180 deaths. Alongside hurricanes, Pennsylvania is at risk from climate-related droughts. In the last decade, [Pennsylvania has witnessed two drought events](#) which caused a total of \$48.2 billion in damages and 218 deaths.

Currently, 7,000 people are [at risk](#) of coastal flooding in Pennsylvania and by 2050, an additional 6,000 people are [projected to be at risk](#) of coastal flooding due to sea level rise. In addition, more than 430,000 people are [at risk](#) of inland flooding in Pennsylvania. In the last decade, alongside flooding caused by hurricanes and tropical storms, Pennsylvania [experienced](#) three flooding events costing a total of \$5.2 billion in damages and resulting in 44 deaths. Pennsylvania's Defense Distribution Depot (DDD) Susquehanna military base is also [impacted](#) by current and potential future flooding and future potential drought.

Trump's climate change denial harms Pennsylvania's economy. Climate change is estimated to [cost](#) Pennsylvania \$18 billion a year by the year 2100. Climate change will also harm the state's [agriculture](#), [outdoor recreation](#) and [tourism](#) industries. In the past decade, Pennsylvania has [experienced](#) 32 climate-related disasters responsible for a total of \$190.6 billion in damages, and since Trump assumed office, Pennsylvania has [experienced](#) 10 climate-related disasters responsible for a total of \$17.9 billion in

damages. Trump's climate policies harm upon the state's economy can be evidenced with his administration's clean cars rollback , which will [cost](#) Pennsylvanians over \$610 million per year.

Trump's Climate Denial is especially harmful to people of color in Pennsylvania, which has [deep roots](#) to the Environmental Justice movement. Communities of color in Pennsylvania's Chester and Delaware counties [continue](#) to fight against pollution from industrial waste facilities, while Black and Latino residents in Philadelphia's Huntington Park heat island [face](#) extreme temperatures.

Despite Trump's climate change denial, Pennsylvania has an opportunity to build a strong green economy. Pennsylvania [ranked](#) fifteenth for clean energy employment in 2019, with the sector providing 93,861 jobs. In 2019, Pennsylvania was home to 4,798 jobs in the [solar industry](#) and 501 to 1,000 direct jobs in the [wind industry](#).

RESEARCH:

PENNSYLVANIANS WANT CLIMATE ACTION

65 Percent Of Pennsylvanians Believe In Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 65% of Pennsylvanians agree that global warming is happening. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

59 Percent Of Pennsylvanians Are Worried About Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 59% of Pennsylvanians are worried about global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

60 Percent Of Pennsylvanians Believe The President Should Do More To Address Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 60% of Pennsylvanians believe the President should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

59 Percent Of Pennsylvanians Believe That Congress Should Do More To Address Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 59% of Pennsylvanians believe that Congress should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

56 Percent Of Pennsylvanians Believe That Their Governor Should Do More To Address Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 56% of Pennsylvanians believe that their Governor should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

55 Percent Of Pennsylvanians Believe That Their Local Officials Should Do More To Address Climate Change. According to public opinion survey estimates modeled by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication, 55% of Pennsylvanians believe that their local officials

should do more to address global warming. [[Yale Program on Climate Change Communication, 9/17/2019](#)]

TRUMP'S CLIMATE DENIAL IS HARMFUL TO PENNSYLVANIANS' HEALTH

EXTREME HEAT

Currently, Pennsylvania Averages Less Than 5 Extreme Heat Days Annually. According to States At Risk, Pennsylvania currently averages fewer than 5 dangerous heat days a year. [[StatesAtRisk.Org. Accessed 4/29/2020](#)]

By 2050, The Number Of Extreme Heat Days Pennsylvania Experiences Annually Is Projected To Jump To More Than 15. According to States At Risk, Pennsylvania is expected to see more than 15 days of extreme heat per year by 2050. [[StatesAtRisk.Org. Accessed 4/29/2020](#)]

Philadelphia In The 17th Fastest-Warming City In The U.S. According to States At Risk, Philadelphia is currently the 17th fastest-warming city in the United States. [[StatesAtRisk.Org. Accessed 4/30/2020](#)]

Pennsylvania Is Project To See An Increase In Severity Of Widespread Summer Drought Of 50 Percent By 2050. According to States At Risk, "Pennsylvania is projected to see an increase in severity of widespread summer drought of approximately 50 percent by 2050." [[StatesAtRisk.Org. Accessed 4/30/2020](#)]

Currently, More Than 310,000 Pennsylvanians Are Especially Vulnerable To Extreme Heat. According to States At Risk, there are 310,000 people who are particularly vulnerable to extreme heat – those under 6 years old, above 65 years old, or living in extreme poverty – in Pennsylvania. [[StatesAtRisk.Org. Accessed 4/29/2020](#)]

ISSUES WITH ACCESS TO CLEAN AIR

Ozone Levels

Nine Counties In Pennsylvania Received F Grades For Their Number Of Days Of Unhealthy Ozone Levels In 2019. According to the American Lung Association's 2020 State of the Air report, nine counties in Pennsylvania received "F" grades for the number of days with unhealthy ozone levels in 2019. Those counties are Allegheny, Beaver, Berks, Bucks, Chester, Delaware, Montgomery, Northampton, and Philadelphia. [[State of the Air, Pennsylvania Report Card, 2020](#)]

The Philadelphia-Reading-Camden Metropolitan Area Ranked 23rd For High Ozone Days In 2019. According to the American Lung Association's 2020 State of the Air report, the

Philadelphia-Reading-Camden metropolitan area ranked 23rd for high ozone days in 2019. [[State of the Air, City Rankings, 2020](#)]

In 2019, Ozone Pollution Placed The Health Of Over 1,260,000 Central Pennsylvanians At Risk. According to a press release from the American Lung Association on their 2020 State of the Air report: “The Lung Association’s annual air quality ‘report card’ tracks Americans’ exposure to unhealthful levels of particle pollution and ozone during a three-year period. Once again, the report found that nearly half of all Americans were exposed to unhealthy air in 2016-2018. In this 6-county metro area in central Pennsylvania, ozone pollution placed the health of over 1,260,000 residents at risk, including those who are more vulnerable to the effects of air pollution such as older adults, children and those with a lung disease.” [[Press Release, American Lung Association, 4/21/2020](#)]

In 2019, Adams County Saw An Uptick In Days With High Ozone Levels, Earning A “D” Grade. According to a press release from the American Lung Association on their 2020 State of the Air report: “Compared to the 2019 report, most counties in the metro area experienced fewer unhealthy days of high ozone in this year’s report. Only Adams County had a slight uptick, with its grade going from a ‘C’ to a ‘D.’” [[Press Release, American Lung Association, 4/21/2020](#)]

Particle Pollution

In 2019, Allegheny County Earned An “F” Grade For Particle Pollution. According to the American Lung Association’s 2020 State of the Air report, Pennsylvania’s Allegheny county received an “F” grade for having high particle pollution levels in 2019. [[State of the Air, Pennsylvania Report Card, 2020](#)]

The Philadelphia-Reading-Camden Metropolitan Area Ranked 12th For Annual Particle Pollution In 2019. According to the American Lung Association’s 2020 State of the Air report, the Philadelphia-Reading-Camden metropolitan area ranked 12th for annual particle pollution in 2019. [[State of the Air, City Rankings, 2020](#)]

2019 Marked The First Year That The Harrisburg-York-Lebanon Metropolitan Area Did Not Appear Within The Top 25 Metro Areas In The Country For Particle Pollution. According to a press release from the American Lung Association on their 2020 State of the Air report: “The area’s year-round level of fine particle pollution, based on the result from whichever county had the worst annual average, showed enough improvement that the Harrisburg-York-Lebanon metro area advanced from 24th worst in the country last year to 41st worst in the current report, taking the metro area off the list of 25 cities nationwide with the highest levels of that pollutant.” [[Press Release, American Lung Association, 4/21/2020](#)]

In 2019, Harrisburg, York And Lebanon Area Residents Continued To Breathe Some Of The More Unhealthy Air In The County, Driven By Emissions From Vehicles And Industrial Sources. According to a press release from the American Lung Association on their 2020 State of the Air report: “This year marks the 50th anniversary of the Clean Air Act, which

has been responsible for dramatic improvements in air quality. However, Harrisburg, York, and Lebanon area residents continue to breathe some of the more unhealthy air in the country, driven by emissions from vehicles and industrial sources, both locally generated as well as from upwind, placing their health and lives at risk,' said American Lung Association Director of Environmental Health Kevin Stewart.." [[Press Release, American Lung Association, 4/21/2020](#)]

Air Pollution From Fracking Sites

Air Pollution From Shale Gas Sites Is Difficult To Measure, But Scientists Found Health Outcomes Generally Worsen The Closer A Person Lives To Shale Gas Operations. In July of 2019, the Pittsburgh Post-Gazette reported: "Monitoring of air pollution concentrations near shale gas sites often fails to detect levels known to impact health, studies show. But medical research now is documenting health effects from shale-gas pollution exposure at levels below established safety thresholds. Health outcomes generally worsen the closer a person lives to shale gas operations, according to a UCLA Health Sciences review of 37 studies on health hazards associated with oil and natural gas extraction. The review also found that existing health benchmarks 'fail to adequately address potential risks associated with long-term, chronic, lower levels of exposure, or from the mixture of chemicals.' Pollution sampling methods also can fail to account for the degradation and dispersion of pollutants. Time frames when pollution levels are measured also 'may not capture peak emission periods characteristic of oil and natural-gas extraction,' the review said." [[Pittsburgh Post-Gazette, 7/18/2019](#)]

Volatile Organic Compounds Leaking From Natural Gas Wells Alongside Methane Can Cause Serious Health Issues Including Cancer And Birth Defects. In a 2015 story on the health effects of leaking gases in Aztec, NM, The Guardian, citing a study by University of Colorado professor Dr Detlev Helmig. The Guardian pointed out: "And it is not only methane that is leaking out of these gas wells but a host of other dangerous gasses, collectively known as volatile organic compounds (VOCs). They read like a devil's cookbook of nastiness, for example benzene, which causes leukemia and other health problems; polycyclic aromatic hydrocarbons that can cause cancer; and toluene, which is known to cause birth defects at high doses." [[The Guardian 8/14/2015](#)]

Gas Wells Release VOCs Which Create Ozone And Can Cause Respiratory Problems. In January of 2015, PBS News reported: "Often when industrial sources emit methane, they also release volatile organic compounds into the air, said Mary Uhl, an environmental protection specialist with the federal Bureau of Land Management. These compounds trigger chemical reactions that create ozone, which can harm people with asthma or respiratory conditions. Ozone levels in the Four Corners hover at 0.071 parts per million, which means they just barely meet the Environmental Protection Agency's national air quality standards of 0.075 parts per million. And if federal standards drop to 0.065 to 0.070 parts per million, as proposed, the Four Corners would no longer meet the legal rate." [[PBS News Hour, 1/3/2015](#)]

Fracking Has Been Linked To Cough, Shortness Of Breath, Wheezing, And

Asthma. According to Forbes, “Cough, shortness of breath and wheezing are the most common complaints of residents living near fracked wells. Toxic gases like benzene are released from the rock by fracking. Similarly, a toxic waste brew of water and chemicals is often stored in open pits, releasing volatile organic compounds into the air. These noxious chemicals and particulates are also released by the diesel powered pumps used to inject the water. An epidemiological study of more than 400,000 patients of Pennsylvania's Geisinger clinic, done with Johns Hopkins School of Public Health, found a significant association between fracking and increases in mild, moderate and severe cases of asthma (odds ratios 4.4 to 1.5). Hopkins' Dr. Brian Schwartz cautions that residents should be aware of this hazard as 'some 'pristine' rural areas are converted to heavily trafficked industrial areas.'” [Forbes, [2/23/17](#)]

USA Today: Research Has Shown That “People Living Near Natural-Gas Wells Were More Than Twice As Likely To Report Upper-Respiratory And Skin Problems Than Those Farther Away.” According to USA Today, “Another study this year in Environmental Health Perspectives found that people living near natural-gas wells were more than twice as likely to report upper-respiratory and skin problems than those farther away.” [USA Today, [12/17/14](#)]

General Health Outcomes From Living Near Fracking Sites

Pennsylvania Health Industry Made Plea To Gas Drilling Lobby To Embrace Methane Controls. According to the Pittsburgh Post-Gazette, “Thousands of Pennsylvania doctors, nurses and other health care professionals have sent a letter to the Marcellus Shale Coalition, requesting that it stop legal challenges and lobbying against regulations aimed at controlling drilling air emissions and safeguarding public health. The one-page letter to the shale gas drilling industry's major Pennsylvania lobbying organization states that drilling operations can have deleterious impacts on public health, especially children, seniors and people with existing lung problems, and urges the industry to abide by emissions controls proposed for methane, volatile organic compounds and other pollutants. ‘Reducing this pollution will have a positive impact on Pennsylvania's most vulnerable communities,’ the letter says. ‘As health care and public health professionals, we are asking that you stop attacking these reasonable safeguards for the Pennsylvanians we are committed to protecting.’” [[Pittsburgh Post-Gazette, 2/27/2017](#)]

Penn Medicine Reported A Higher Rate Of Hospitalizations For Heat Conditions, Neurological Illness, And Other Conditions In People Who Live Near Fracking Sites. In July of 2015, a press release from the University of Pennsylvania's medical school, Penn Medicine announced: “Hospitalizations for heart conditions, neurological illness, and other conditions were higher among people who live near unconventional gas and oil drilling (hydraulic fracturing), according to new research from the University of Pennsylvania and Columbia University published this week in PLOS ONE. Over the past ten years in the United States, hydraulic fracturing has experienced a meteoric increase. Due to substantial

increases in well drilling, potential for air and water pollution posing a health threat has been a concern for nearby residents." [[Penn Medicine press release, 6/15/2015](#)]

Southwestern Pennsylvania Has A High Rate Of Rare Childhood Cancers. In May of 2019, the Pittsburgh Post-Gazette reported: "There are high numbers of childhood cancers — some of them rare — in mostly rural areas of southwestern Pennsylvania, and no one knows why. Most notably, the Canon-McMillan School District in Washington County has seen six rare Ewing sarcoma cases in a decade, including two diagnosed in 2018; only 250 cases are diagnosed each year in the U.S. And 10 other students and preschoolers currently living in the district have other types of cancers. In addition, the Pittsburgh Post-Gazette has confirmed seven young cancer patients in recent years in and near the Fort Cherry School District, a smaller, rural school district next to Canon-McMillan. And over the past decade, as many as 12 students living in Bethlehem-Center School District in southern Washington County have had cancer." [[Pittsburgh Post-Gazette, 5/14/2019](#)]

Studies Show Increased Risks Of Health Impacts From Shale Gas Development For Fetuses, Infants, and Children. In July of 2019, the Pittsburgh Post-Gazette reported: "While there's no established scientific link between drilling and fracking and rare cancers, the latest Compendium of Scientific, Medical and Media Findings Demonstrating Risks and Harms of Fracking that includes 1,778 studies does show that fetuses, infants and children face increased risk of air- and water pollution-induced health impacts from shale gas development, ranging from preterm births and birth defects to asthma, headaches, nosebleeds, neurological problems, depression and cognitive decline. It also cites 'substantial evidence' that drilling and fracking activities and wastewater disposal 'inherently threaten groundwater and have polluted drinking water sources.'" [[Pittsburgh Post-Gazette, 7/18/2019](#)]

Report Found That 84% Of Studies Published From 2009-2015 Conclude That Fracking Causes Harm to Human Health. In June of 2019, Environmental Health News reported: "A group of doctors and scientists have released a report highlighting that 84 percent of studies published from 2009-2015 on the health impacts of fracking conclude the industry causes harm to human health. The report, published by two groups, Physicians for Social Responsibility and Concerned Health Professionals of New York, sites an earlier literature review that found 69 percent of studies on water quality during the same time period found evidence of or potential for fracking-associated water contamination, and 87 percent of studies on air quality found "significant air pollutant emissions" associated with the industry. The new report looks at 1,778 articles from peer-reviewed medical or scientific journals, investigative reports by journalists, and reports from government agencies on fracking. Fracking is another name for hydraulic fracturing, which is a process of extracting natural oil and gas from the Earth by drilling deep wells and injecting liquid at high pressure." [[Environmental Health News, 6/20/2019](#)]

ISSUES WITH ACCESS TO CLEAN WATER

PFAS Chemical Contamination

Pennsylvania Capital-Star Headline: New Report Finds PFAS Exposure Much More Widespread Than Previously Reported [[Pennsylvania Capital-Star, 1/23/2020](#)]

17 Sites In Pennsylvania Have Been Found To Be Contaminated By PFAS Chemicals.

According to State Impact Pennsylvania, an NRP project: "Seventeen sites in Pennsylvania have been contaminated by PFAS chemicals in recent years, and are still likely to contain at least some of the toxic material even if water supplies there have been treated by local authorities, according to data released by a national advocacy group on Monday.

Environmental Working Group compiled PFAS reports from local utilities, the Department of Defense, and researchers at Northeastern University, and presented the information in a national map showing public water systems, military bases, civilian airports, industrial plants and dumps where contamination has been found at various times since 2013."

[[State Impact Pennsylvania, 3/6/2019](#)]

Former Military Sites At Harrisburg Airport And The U.S. Navy Facility In Hampden Township Were Found To Have PFAS Contaminates.

According to PennLive: "Authorities and homeowners are finding high levels of PFAS, toxic chemicals linked to cancer and other health problems, in drinking water across Pennsylvania. That includes samples taken around former military sites at Harrisburg International Airport and the U.S. Navy facility in Hampden Township, where the likely source was firefighting foam." [[PennLive, 11/19/2019](#)]

Health Risks

Environmental Working Group: PFAS Contamination of Drinking Water Far More Prevalent Than Previously Reported, Detectable In All Major Water Supplies In The U.S.

In January of 2020, the Environmental Working Group published a report stating: "New laboratory tests commissioned by EWG have for the first time found the toxic fluorinated chemicals known as PFAS in the drinking water of dozens of U.S. cities, including major metropolitan areas. The results confirm that the number of Americans exposed to PFAS from contaminated tap water has been dramatically underestimated by previous studies, both from the Environmental Protection Agency and EWG's own research. Based on our tests and new academic research that found PFAS widespread in rainwater, EWG scientists now believe PFAS is likely detectable in all major water supplies in the U.S., almost certainly in all that use surface water. EWG's tests also found chemicals from the PFAS family that are not commonly tested for in drinking water." [[Environmental Working Group, 1/22/2020](#)]

PFAS Chemicals Were Linked To Kidney And Testicular Cancer, Hypertension, And Other Diseases.

According to Politico: "The chemicals, known as PFOA and PFOS, have been linked to kidney and testicular cancer, hypertension and other ailments. Major chemical companies like 3M as well as the Defense Department would face billions of dollars in

liability from aggressive efforts to regulate and clean up the chemical, which has contaminated groundwater near hundreds of military bases and chemical plants.” [Politico, [1/28/19](#)]

Per- And Polyfluoroalkyl Substances, Known As PFAS, Are Prevalent Man-Made Chemicals That Do Not Break Down And Accumulate Over Time In The Environment And Human Body. According to the EPA, “Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body – meaning they don't break down and they can accumulate over time. There is evidence that exposure to PFAS can lead to adverse human health effects.” [EPA.gov, accessed [3/8/19](#)]

PFAS Are Known As “Forever Chemicals” Because They Do Not Break Down. According to The Washington Post, “Because PFAS do not break down in the environment, they have become known as ‘forever chemicals.’” [Washington Post, [2/14/19](#)]

PFAS Chemicals Are Currently Not Designated “Hazardous Substances” Under The Superfund Law. According to the Environmental Working Group: “Superfund distinguishes between chemicals that have been designated as ‘hazardous substances’ and things that are merely considered ‘pollutants or contaminants.’ Under current law, PFAS chemicals are considered ‘pollutants or contaminants’ but not ‘hazardous substances.’ This significantly limits the power of the Environmental Protection Agency and the states to clean up PFAS pollution. A ‘hazardous substance’ designation under Superfund triggers reporting requirements for releases over a certain threshold. Anytime the hazardous substance is released into the air, land or water in amounts exceeding the threshold, it triggers an investigation and potential cleanup. By contrast, when a substance is simply a ‘pollutant or contaminant,’ it must be shown to pose an ‘imminent and substantial danger’ to public health before the site can be investigated and cleaned up – and, even then, the EPA has considerable discretion over whether to pursue cleanup.” [[Environmental Working Group, 7/3/2019](#)]

Under Superfund, Parties Responsible For Contamination Are Forced To Either Perform The Cleanup Work Or Reimburse The Government For Cleanup Costs. According to the Environmental Protection Agency, “CERCLA is informally called Superfund. It allows EPA to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work.” [[Environmental Protection Agency “What is Superfund” accessed 2/5/2020](#)]

COAL ASH

Pollution Risks

Coal Ash Contains Chemicals Known To Cause Cancer, Neurological Damage, Or Heart Ailments And Is Stored In Sites At Risk Of Spilling Into Nearby Rivers And Lakes Under Flood Conditions. In August of 2019, Politico reported: “The ash, left behind when coal is burned for power generation, contains arsenic, selenium, lead, mercury, boron and other contaminants known to cause cancer, neurological damage or heart ailments. Electric utilities usually store it in massive landfills or unlined ponds that are at a risk of spilling when nearby lakes and rivers flood — as happened in a \$1.2 billion disaster that damaged dozens of homes in Tennessee in 2008, as well as two breaches that fouled a river and lake in North Carolina last year after Hurricane Florence.” [[Politico, 8/26/2019](#)]

Unsafe Levels Of Toxic Metals Found In Groundwater Near More Than 90% Of Power Plants Subject To Monitoring Requirements. In March of 2019, Reuters reported “More than 90 percent of U.S. coal-fired power plants that are required to monitor groundwater near their coal ash dumps show unsafe levels of toxic metals, according to a study released on Monday by environmental groups. The groups, led by the Environmental Integrity Project and Earthjustice, said their findings show the potential harm to drinking water from coal ash and indicate that stronger regulations are needed. Data made public by power companies showed 241 of the 265 plants, or 91 percent, that were subject to the monitoring requirement showed unsafe levels of one or more coal ash components in nearby groundwater compared to EPA standards, according to the analysis by the groups. The report also found that 52 percent of those plants had unsafe levels of cancer-causing arsenic in nearby groundwater, while 60 percent showed unsafe levels of lithium, which can cause neurological damage.” [[Reuters, 3/4/2019](#)]

More Than 100 Storage Sites For Coal Ash Are At High Risk For Flooding. In August of 2019, Politico reported: “More than 100 storage sites for coal-burning power plants' toxic leftovers lie in areas that federal emergency managers have labeled a high risk for flooding, according to POLITICO's examination of government and industry data. That finding comes as scientists and pollution experts warn that coal ash — a multibillion-dollar liability problem for communities across the country — may become an even greater danger because of heavier rains triggered by climate change. Already, federal agencies warn that the government's flood maps most likely understate the risks of deluges in much of the country, including the Southeast, where at least 42 storage sites in POLITICO's analysis are located.” [[Politico, 8/26/2019](#)]

Local Incidents

A 2019 Report Found Coal Ash Pollution Was Leaking Into Groundwater At Nine Power Plants Across Pennsylvania. According to State Impact Pennsylvania, an NPR project: “A new report finds coal ash pollution is leaking into groundwater at nine power plants around Pennsylvania and over 200 nationwide. The report, from the Environmental

Integrity Project, found over 90 percent of sites that store coal ash are leaking levels of contamination exceeding EPA health standards. At one former coal plant near Pittsburgh, arsenic levels in the groundwater are 372 times EPA's safe drinking water standards. Though groundwater near these sites isn't necessarily used for drinking water, the contaminants can migrate underground into private drinking water wells, rivers and streams, and eventually into public drinking water systems, said the report's lead author, Abel Russ with the Environmental Integrity Project." [[NPR, State Impact Pennsylvania, 3/4/2019](#)]

Pennsylvania Borders The Largest Coal Ash Waste Site In The United States., Little Blue Lake According to Allegheny Front: "The region's rolling hills are dotted with family farms and the 'world's largest teapot' proudly welcomes visitors into downtown. But the area is also home to another object of record-breaking size: the largest coal ash waste site in the United States. [...] Little Blue's 16 miles of shoreline cross from West Virginia into Pennsylvania. On Google maps, the site is called 'Little Blue Lake' and has a five-star rating. 'Really big and beautiful,' wrote one reviewer. The problem is, Little Blue is not a lake, it's a dump for coal ash. Coal carries trace amounts of many elements, many of them toxic, such as arsenic, lead and mercury. After burning, those contaminants remain in the ash." [[Allegheny Front, 11/4/2019](#)]

Lawmakers From Pennsylvania's Greene County Raised Concerns That Water From Little Blue Was Contaminating Local Groundwater. According to Allegheny Front: "In Greene Township, Pennsylvania, home to two-thirds of Little Blue's landmass, local lawmakers have for decades raised concerns that water from Little Blue was contaminating local groundwater. The township relies on groundwater for both individual and agricultural use." [[Allegheny Front, 11/4/2019](#)]

WATER POLLUTION FROM FRACKING WASTE

USA Today: Extracting Gas From Shale Has Required "Pumping Hundreds Of Thousands Of Gallons Of Water, Sand And Chemicals Into The Ground" With Some Of The Water Returning To The Surface Polluted. According to USA Today, "Extracting fuel from shale formations requires pumping hundreds of thousands of gallons of water, sand and chemicals into the ground to break apart rock and free the gas. Some of that water, along with large quantities of existing underground water, returns to the surface, and it can contain high levels of salt, drilling chemicals, heavy metals and naturally occurring low-level radiation." [USA Today, [1/5/14](#)]

The EPA Concluded In 2015 That Fracking Has Contaminated Drinking Water. According to the New York Times, "The Environmental Protection Agency has concluded that hydraulic fracturing, the oil and gas extraction technique also known as fracking, has contaminated drinking water in some circumstances, according to the final version of a comprehensive study first issued in 2015." [New York Times, [12/13/16](#)]

Chemicals Harmful To Pregnant Women Found Near Fracking Wastewater Disposal Sites. According to Forbes, “Fracking chemicals are harmful to pregnant women and their developing babies. West Virginia researchers found endocrine-disrupting chemicals in surface waters near wastewater disposal sites; these types of chemicals can hurt the developing fetus even when present at very low concentrations. Another Hopkins/Geisinger study looked at records of almost 11,000 women with newborns who lived near fracking sites and found a 40% increased chance of having a premature baby and a 30% risk of having the pregnancy be classified as ‘high-risk,’ though they controlled for socioeconomic status and other risk factors. Contributing factors likely include air and water pollution, stress from the noise and traffic (1,000 tankers/well on average).” [Forbes, [2/23/17](#)]

Forbes: Fracking Has Been Linked To A “40% Increase In Having A Premature Baby And A 30% Risk Of Having The Pregnancy Be Classified As High-Risk.” According to Forbes, “Fracking chemicals are harmful to pregnant women and their developing babies. West Virginia researchers found endocrine-disrupting chemicals in surface waters near wastewater disposal sites; these types of chemicals can hurt the developing fetus even when present at very low concentrations. Another Hopkins/Geisinger study looked at records of almost 11,000 women with newborns who lived near fracking sites and found a 40% increased chance of having a premature baby and a 30% risk of having the pregnancy be classified as ‘high-risk,’ though they controlled for socioeconomic status and other risk factors. Contributing factors likely include air and water pollution, stress from the noise and traffic (1,000 tankers/well on average).” [Forbes, [2/23/17](#)]

Methane Contamination Of Water Wells (Flaming Tap Water)
2011 Study Found Methane Contamination Of Drinking Water Linked To Gas Extraction Sites At Levels Posing A Potential Explosion Hazard. According to an abstract of a paper on hydraulic fracturing published in 2011 in the Proceedings of the National Academy of Sciences: “Directional drilling and hydraulic-fracturing technologies are dramatically increasing natural-gas extraction. In aquifers overlying the Marcellus and Utica shale formations of northeastern Pennsylvania and upstate New York, we document systematic evidence for methane contamination of drinking water associated with shale-gas extraction. In active gas-extraction areas (one or more gas wells within 1 km), average and maximum methane concentrations in drinking-water wells increased with proximity to the nearest gas well and were 19.2 and 64 mg CH₄ L⁻¹ (n = 26), a potential explosion hazard; in contrast, dissolved methane samples in neighboring nonextraction sites (no gas wells within 1 km) within similar geologic formations and hydrogeologic regimes averaged only 1.1 mg L⁻¹ (P < 0.05; n = 34).” [[Osborn, Stephen et al, “Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing.” Proceedings of the National Academy of Sciences May 2011, 108](#)]

2013 Study Found Methane Concentrations Six Times Higher In Drinking Water Close To Natural Gas Wells. According to an abstract of a paper on hydraulic fracturing published in 2013 in the Proceedings of the National Academy of Sciences: “Horizontal drilling and

hydraulic fracturing are transforming energy production, but their potential environmental effects remain controversial. We analyzed 141 drinking water wells across the Appalachian Plateaus physiographic province of northeastern Pennsylvania, examining natural gas concentrations and isotopic signatures with proximity to shale gas wells. Methane was detected in 82% of drinking water samples, with average concentrations six times higher for homes <1 km from natural gas wells (P = 0.0006). Ethane was 23 times higher in homes <1 km from gas wells (P = 0.0013); propane was detected in 10 water wells, all within approximately 1 km distance (P = 0.01)." [[Jackson, Robert et al. "Stray gases in drinking water over Marcellus shale, "Proceedings of the National Academy of Sciences Jul 2013, 110\]](#)]

2013 Study Linked Methane In Drinking Water To Natural Gas Drilling Operations, "Likely Through Poor Well Construction." A paper on hydraulic fracturing published in 2013 in the Proceedings of the National Academy of Sciences concluded: "This study examined natural gas composition of drinking water using concentration and isotope data for methane, ethane, propane, and 4He. Based on the spatial distribution of the hydrocarbons (Figs. 1 and 2), isotopic signatures for the gases (Figs. 3 and 4), wetness of the gases (Fig. 2 and Figs. S5, S6, and S7), and observed differences in 4He:CH₄ ratios (Fig. 5), we propose that a subset of homeowners has drinking water contaminated by drilling operations, likely through poor well construction." [[Jackson, Robert et al. "Stray gases in drinking water over Marcellus shale, "Proceedings of the National Academy of Sciences Jul 2013, 110\]](#)]

Methane Contamination Blamed For Water Well Explosions And Drinking Water That Could Be Set On Fire. In May of 2011, ProPublica reported: "Methane contamination of drinking water wells has been a common complaint among people living in gas drilling areas across the country. A 2009 investigation by ProPublica revealed that methane contamination from drilling was widespread, including in Colorado, Ohio and Pennsylvania. In several cases, homes blew up after gas seeped into their basements or water supplies. In Pennsylvania a 2004 accident killed three people, including a baby. In Dimock, Pa., where part of the Duke study was performed, some residents' water wells exploded, or their water could be lit on fire. In at least a dozen cases in Colorado, ProPublica's investigation found, methane had infiltrated drinking water supplies that residents said were clean until hydraulic fracturing was performed nearby." [[ProPublica, 5/9/2011\]](#)]

TOXIC ALGAE IN LAKE ERIE

Toxic Algae Has Been Found Off Erie County's Shores, Most Notably In Presque Isle Bay

Headline: "Harmful Algae Blooms Cause Closure Of Some Presque Isle Beaches On The Fourth Of July." [[YourErie.com, 7/6/18\]](#)]

Harmful Algae Bloom Advisories Issued For Elevated Toxin Levels Increased From 150 In 2018 To 185 In 2019. In November of 2019, the Erie Times-News reported: "These blooms, which produce toxins that attack the liver and nervous system, are occurring more

frequently in Lake Erie, Presque Isle Bay and other Erie County waters. HAB advisories are issued when testing shows toxin levels have reached a particular threshold. Erie County reported 185 advisories in 2019 compared to 150 in 2018. 'Not only are there more blooms, they are more sustained,' said Amber Stilwell, who helps test for HABs in Erie County as the Regional Science Consortium's lab manager. 'So the elevated toxin levels persist for longer periods of time.'" [[Erie Times-News, 11/7/2019](#)]

May 2018: Tests Showed High Levels Of Toxic Algae At 8 Locations Around Erie County, Including Parts Of Presque Isle. According to Erie News Now, "As the temperatures rise, so does the threat for harmful algal blooms. Water sample testing recently prompted several algal advisories in Erie County. The tests showed high toxin levels at eight separate locations in Erie County, including parts of Presque Isle. You should watch out for a blue-green substance that is floating on the water's surface. If ingested, the toxins can cause a variety of symptoms from vomiting to diarrhea and, in rare cases, life-threatening illness. The harmful blooms can appear and disappear quickly. People are urged to keep their dogs or other pets out of the water. The blooms are especially dangerous to pets because they can accidentally ingest more water than humans." [Erie News Now, [5/28/18](#)]

July 2017: Several Presque Isle Beaches Prohibited Swimming Due To Algae Levels. According to The Erie Times-News, "Harmful algae blooms have been detected in several bodies of water throughout the region this summer. The blooms, which can contain toxins that make humans and animals sick, have been found in Presque Isle Bay and, more recently, in Findley Lake and Chautauqua Lake in New York state. They also have been detected in Lake Erie, though most of them have been concentrated in the western end of the lake near Toledo. 'We have seen isolated pockets of algae in Presque Isle Bay. The algae is much more productive in the bay than it's been in Lake Erie,' said Nate Irwin, an aquatic biologist with the Pennsylvania Department of Environmental Protection and member of the Erie County Harmful Algae Bloom Task Force. 'We're probably seeing the peak right now because daylight hours (are) diminishing and the algae will follow suit shortly.' Presque Isle State Park lifeguards reported seeing algae blooms July 11 off several beaches. The park prohibited swimming at Beaches 6, 7, 9 and Barracks Beach until tests showed the next day that the water was safe for humans. 'Some of the results came back harmful for dogs, so we set up signs on those beaches as a precaution,' said Ryan Rager, an assistant park manager. 'Dogs tend to ingest a lot of water when they are in the lake, especially for their weight, so the acceptable toxin level is much lower for them.' Subsequent water samples collected off Presque Isle beaches have contained enough toxin to issue dog advisories but not for humans, Rager said." [[Erie Times-News, 8/25/2017](#)]

Algae Threatens Erie's Tourism Economy

A June 2018 Editorial On GoErie.Com Celebrated The Recreational And Economic Benefits Of Lake Erie, Warned Of The Risk Of Algae Blooms, And Called On Federal Lawmakers To Keep Prioritizing Lake Research And Monitoring. According to an editorial from the Erie

Times-News, “It was just a year ago that the region celebrated the 10th and final Bay Swim. The annual event celebrated the transformation of Presque Isle Bay from a toxic pool filled with human and industrial waste into a natural resource pure enough to plant your face in and swim. Each year participants would stroke across the more than 1-mile stretch from a parking lot at Presque Isle State Park to the Erie Yacht Club. Organizers called off the event, in essence, because clean bay water had become old news. This week brought a fresh — and delicious — reminder of the lasting payoff of the decades-long fight to clean up our waterways. The venerable Field & Stream magazine named Lake Erie to top ‘new’ fishing spot in Pennsylvania and cited Erie as the hub specifically for hosting ‘healthy populations of numerous freshwater species, including panfish, walleyes, smallmouths, and steelhead.’ [...] This is no time to let down our guard. Dangerous algal blooms fueled by fertilizer runoffs in the western Lake Erie basin continue. This month there have been worrisome blooms closer to home that have been deemed unsafe for pets. A 2017 joint U.S.-Canadian report said Lake Erie’s ecosystem is in ‘poor’ condition and continues to deteriorate. ‘Beach closures, habitat loss and degradation, and beach fouling in the eastern basin continue to be major concerns,’ it said. Erie’s federal lawmakers have consistently in bipartisan fashion supported funding for vital Lake Erie research and monitoring. The recognition of Lake Erie’s strengthening fishery validates those efforts. Keep up the good work.” [[Erie Times-News Editorial, 6/12/2018](#)]

Erie’s Tourism Website Boasts Of Presque Isle As A Nationally-Ranked Tourist Attraction. According to VisitErie.com, “PRESQUE ISLE STATE PARK - USA Today’s Readers’ Choice for ‘Top Pennsylvania Attraction 2017’ and the ‘#1 Freshwater Beach in the Country 2016’, a National Natural Landmark and Pennsylvania’s most visited State Park. Sandy beaches and endless outdoor recreation! Presque Isle (French for ‘almost an island’) welcomes over 4 million visitors annually. Visitors flock to Presque Isle for its distinctive blend of natural beauty and year-round recreation including swimming, boating, biking, surfing, birding and fishing. Explore on foot, wheels, surreys, skis, pontoons and kayaks.” [VisitErie.Com, accessed [5/1/19](#)]

Brenda Sanberg, Executive Director Of The Erie-Western Pennsylvania Port Authority: “The Waterfront Is Perceived By The Entire Community As Really The One Primary Asset That We Have.” According to The Erie Times-News, “‘The waterfront is perceived by the entire community as really the one primary asset that we have,’ said Brenda Sanberg, executive director of the Erie-Western Pennsylvania Port Authority. ‘There is still a lot of potential for development on that.’” [[Erie Times-News, 10/2/2018](#)]

Algae Blooms Are Expected To Worsen Due To Climate Change

Severe Algae Blooms On Lake Erie Are Expected To Double This Century Due To The Influence Of Climate Change. In December of 2015, Vice News reported: “While not quite as bleak as the lake’s 1970s pollution heyday of actual burning water, images of supernaturally green sludge lapping at the city’s shores were about the next best/worst thing. And, according to research presented Wednesday at the annual American Geophysical Union meeting in San Francisco, they’re also likely to be a new normal, with

the number of severe Lake Erie algae blooms expected to double this century. The increasing severity of Lake Erie blooms over the past few decades traces back to the vast farmlands spread across the Midwestern Great Lakes states and Ontario. As farmers apply nutrients to benefit crops, often in extreme excess, all of the leftovers wind up being flushed into creeks and rivers and, eventually, lakes. Here, instead of soybeans and wheat, the rogue phosphorous and nitrogen kickstart marine life. In the case of cyanobacteria like blue-green algae, that invigorated life goes on to produce dangerous toxins. The new prediction, which comes courtesy of engineers and ecologists at Ohio State University, is the result of combining runoff and climate change models, which together offer a considerably more dire prediction than runoff-only models. While regional governments in Ohio, Michigan, and Ontario have together pledged to reduce phosphorous runoff by 40 percent, it may not be enough to prevent toxic blooms from becoming even more commonplace." [\[Vice News, 12/17/2015\]](#)

TRUMP'S CLIMATE DENIAL PUTS THE SAFETY OF PENNSYLVANIANS AT RISK

HURRICANES

Link To Climate Change

New York Times Headline: "Climate Change Is Making Hurricanes Stronger, Researchers Find." On May 18, 2020, the New York Times reported: "Hurricanes have become stronger worldwide during the past four decades, an analysis of observational data shows, supporting what theory and computer models have long suggested: climate change is making these storms more intense and destructive. The analysis, of satellite images dating to 1979, shows that warming has increased the likelihood of a hurricane developing into a major one of Category 3 or higher, with sustained winds greater than 110 miles an hour, by about 8 percent a decade." [[New York Times, 5/18/2020](#)]

NOAA: Human Activities May Have Already Made Changes To Atlantic Hurricanes.

According to the Geophysical Fluid Dynamics Laboratory, "It is premature to conclude that human activities—and particularly greenhouse gas emissions that cause global warming—have already had a detectable impact on Atlantic hurricane or global tropical cyclone activity. That said, human activities may have already caused changes that are not yet detectable due to the small magnitude of the changes or observational limitations, or are not yet confidently modeled (e.g., aerosol effects on regional climate)." [NOAA, Geophysical Fluid Dynamics Laboratory, accessed [8/29/17](#)]

Anthropogenic Warming Is Likely To Increase Intensity Of Hurricanes By As Much As 11%.

According to the Geophysical Fluid Dynamics Laboratory, "Anthropogenic warming by the end of the 21st century will likely cause tropical cyclones globally to be more intense on average (by 2 to 11% according to model projections for an IPCC A1B scenario). This change would imply an even larger percentage increase in the destructive potential per storm, assuming no reduction in storm size." [NOAA, Geophysical Fluid Dynamics Laboratory, accessed [8/29/17](#)]

Increased Hurricane Activity Is Linked To Higher Surface Temperatures Caused By Man Made Carbon Emissions. According to the National Climate Assessment, "The recent increases in activity are linked, in part, to higher sea surface temperatures in the region that Atlantic hurricanes form in and move through. Numerous factors have been shown to influence these local sea surface temperatures, including natural variability, human-induced emissions of heat-trapping gases, and particulate pollution. Quantifying the

relative contributions of natural and human-caused factors is an active focus of research.” [National Climate Assessment, Extreme Weather, [2014](#)]

Warming Water Would Provide Fuel For More Intense Hurricanes. According to NASA, “The one way in which global warming could impact hurricanes is by making them more intense. More heat and water in the atmosphere and warmer sea surface temperatures could provide more fuel to increase the wind speeds of tropical storms.” [NASA, Earth Observatory, accessed [8/28/17](#)]

2012: Hurricane Sandy

October 2012: Hurricane Sandy Caused \$74.1 Billion In Damages And 159

Deaths. According to NOAA’s National Centers for Environmental Information, Hurricane Sandy, which hit Pennsylvania in October 2012, caused \$74.1 billion in damages and 159 deaths. [[ncdc.noaa.gov, Accessed 4/30/2020](#)]

- **Damage From Wind, Rain And Heavy Snow Impacted Pennsylvania As Hurricane Sandy Merged With A Developing Nor'easter Storm.** According to NOAA’s National Centers for Environmental Information, “Extensive damage across several northeastern states (MD, DE, NJ, NY, CT, MA, RI) due to high wind and coastal storm surge, particularly NY and NJ. Damage from wind, rain and heavy snow also extended more broadly to other states (NC, VA, WV, OH, PA, NH), as Sandy merged with a developing Nor'easter.” [[ncdc.noaa.gov, Accessed 4/30/2020](#)]

2011: Tropical Storm Lee

September 2011: Tropical Storm Lee Caused \$2.9 Billion In Damages And 21 Deaths.

According to NOAA’s National Centers for Environmental Information, Tropical Storm Lee, which hit Pennsylvania in September 2011, caused \$2.9 billion in damages and 21 deaths. [[ncdc.noaa.gov, Accessed 4/30/2020](#)]

- **Pennsylvania And New York Were Most Affected By Flooding From Tropical Storm Lee.** According to NOAA’s National Centers for Environmental Information, “Wind and flood damage across the southeast (LA, MS, AL, GA, TN) but considerably more damage from record flooding across the northeast (PA, NY, NJ, CT, VA, MD). Pennsylvania and New York were most affected.” [[ncdc.noaa.gov, Accessed 4/30/2020](#)]

DROUGHT

Link To Climate Change

NASA Research Showed Human Activity Has Been Influencing Global Patterns Of Drought, With Increased Drought Occurring In Response To Greenhouse Gas Emissions. According to NASA, “Warming temperatures and changing precipitation patterns can lead to droughts, and NASA research shows that humans have been influencing global patterns of drought for nearly a century. Kate Marvel and Ben Cook, researchers at NASA’s Goddard Institute for Space Studies and Columbia University in New York City, investigated humans’ influence on 20th-century drought patterns using historical weather data and drought maps calculated from tree rings. They found that a data ‘fingerprint’ – a drying and wetting

pattern predicted to occur in response to greenhouse gas emissions – was visible as far back as the early 1900s.” [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Climate Change Is Already Affecting Global Patterns Of Drought, And Such Trends Are Expected To Continue. According to NASA, “Demonstrating that humans influenced global drought patterns in the past is an important part of understanding how we may influence them in the future, said Cook. ‘Climate change is not just a future problem,’ he said. ‘This shows it’s already affecting global patterns of drought, hydroclimate, trends, variability — it’s happening now. And we expect these trends to continue, as long as we keep warming the world.’” [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Longer And More Intense Droughts Are Expected In The Future Due To Climate Change. According to NASA, “Demonstrating climate models’ ability to accurately depict past droughts, helps to confirm their ability to model future droughts as well. Other research of Cook’s shows that if greenhouse gas emissions continue to increase along current trajectories, the U.S. Southwest could see ‘megadroughts’ lasting more than three decades. Cook and his team ran 17 different climate models, and all of them agree that there are likely to be longer and more intense droughts in the future.” [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Recent Droughts Affecting Pennsylvania

2012 Drought

2012: Nationwide Droughts And Heatwaves Caused \$34.2 Billion In Damages And 123 Deaths. According to NOAA’s National Centers for Environmental Information, drought and heatwaves across the U.S. in 2012 caused \$34.2 billion in damages and 123 deaths. [[ncdc.noaa.gov, Accessed 4/30/2020](https://ncdc.noaa.gov/4/30/2020)]

- **The 2012 Drought Impacted Over Half Of The U.S. And Was The Most Extensive Drought In America Since The 1930s.** According to NOAA’s National Centers for Environmental Information, “The 2012 drought is the most extensive drought to affect the U.S. since the 1930s. Moderate to extreme drought conditions affected more than half the country for a majority of 2012. The following states were affected: CA, NV, ID, MT, WY, UT, CO, AZ, NM, TX, ND, SD, NE, KS, OK, AR, MO, IA, MN, IL, IN, GA. Costly drought impacts occurred across the central agriculture states resulting in widespread harvest failure for corn, sorghum and soybean crops, among others. The associated summer heatwave also caused 123 direct deaths, but an estimate of the excess mortality due to heat stress is still unknown.” [[ncdc.noaa.gov, Accessed 4/30/2020](https://ncdc.noaa.gov/4/30/2020)]

2011 Drought

Spring - Summer 2011: Drought And Heat Waves Across The Southern Plains And Southwest Caused \$14 Billion In Damages And 95 Deaths. According to NOAA’s National Centers for Environmental Information, drought and heat waves across the Southern Plains and Southwest, which impacted Pennsylvania in the Spring and Summer

of 2011, caused \$14 billion in damages and 95 deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

WILDFIRE

Link To Climate Change

Climate Change Is Increasing The Severity, Frequency, And Extent Of Wildfires. According to a report from the EPA: “Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires in Colorado, which could harm property, livelihoods, and human health. In 2013, the Black Forest Fire burned 14,000 acres and destroyed over 500 homes. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems. The size and number of western forest fires have increased substantially since 1985.” [[Environmental Protection Agency, “What Climate Change Means for Colorado” August 2016](#)]

The National Climate Assessment Has Found That The Number Of Wildfires Is Likely To Increase As The Climate Warms And Could Induce “Profound Changes To Certain Ecosystems.” In August of 2018, The Atlantic reported: “As if there wasn’t enough evidence of that. Last year, the National Climate Assessment—written by a panel of scientists in the military, federal civilian agencies, and private universities—reviewed the complete scientific literature on climate change and wildfires. They concluded that the number of large blazes had increased since the early 1980s. They also said the number of wildfires ‘is projected to further increase in those regions as the climate warms.’ They warned this could induce ‘profound changes to certain ecosystems.’” [The Atlantic, [8/10/18](#)]

Acres Burned By Wildfire Doubled In Recent Decades Due To Climate Change. According to the 2018 National Climate Assessment Report: “Wildfire is a natural part of many ecosystems in the Southwest, facilitating germination of new seedlings and killing pests. Although many ecosystems require fire, excessive wildfire can permanently alter ecosystem integrity. Climate change has led to an increase in the area burned by wildfire in the western United States. Analyses estimate that the area burned by wildfire from 1984 to 2015 was twice what would have burned had climate change not occurred. Furthermore, the area burned from 1916 to 2003 was more closely related to climate factors than to fire suppression, local fire management, or other non-climate factors.” [[National Climate Assessment, Chapter 25, 2018](#)]

Recent Wildfire Seasons

2017 Wildfire Season

In 2017, 1,652 Acres Of Land Were Burned Due To Wildfire In Pennsylvania. According to the National Interagency Fire Center's 2017 report, 1,652 acres of land were burned in 537 fires across Pennsylvania in 2017. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2017 Report](#)]

2018 Wildfire Season

In 2018, 3,614 Acres Of Land Were Burned Due To Wildfire In Pennsylvania. According to the National Interagency Fire Center's 2018 report, 3,614 acres of land were burned in 1,276 fires across Pennsylvania in 2018. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2018 Report](#)]

2019 Wildfire Season

In 2019, 1,691 Acres Of Land Were Burned Due To Wildfire In Pennsylvania. According to the National Interagency Fire Center's 2019 report, 691 acres of land were burned in 547 fires across Pennsylvania in 2019. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2019 Report](#)]

FLOODS

Link To Climate Change

Scientists Have Linked Increases in Flooding to Climate Change. According to the National Climate Assessment, "Floods are caused or amplified by both weather- and human-related factors. Major weather factors include heavy or prolonged precipitation, snowmelt, thunderstorms, storm surges from hurricanes, and ice or debris jams [...] Increasingly, humanity is also adding to weather-related factors, as human-induced warming increases heavy downpours, causes more extensive storm surges due to sea level rise, and leads to more rapid spring snowmelt [...] The risks from future floods are significant, given expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and human-induced climate change" [National Climate Assessment, Extreme Weather, [2014](#)]

Heavy Rainstorms Have Become Heavier And More Frequent In The U.S. In The Past Three To Five Decades. According to the National Climate Assessment, "Heavy downpours are increasing nationally, especially over the last three to five decades. The heaviest rainfall events have become heavier and more frequent, and the amount of rain falling on the heaviest rain days has also increased. " [National Climate Assessment, Extreme Weather, [2014](#)]

Scientists Have Linked An Increase in Heavy Downpours To Climate Change. According to the National Climate Assessment, "Global analyses show that the amount of water vapor in the atmosphere has in fact increased due to human-caused warming. This extra moisture is available to storm systems, resulting in heavier rainfalls." [National Climate Assessment, Extreme Weather, [2014](#)]

National Climate Assessment: "Heavy Downpours Are Increasing Nationally...The Mechanism Driving These Changes Is Well Understood." According to the 2014 National Climate Assessment: "Heavy downpours are increasing nationally, especially over the last three to five decades. The heaviest rainfall events have become heavier and more frequent, and the amount of rain falling on the heaviest rain days has also increased. Since

1991, the amount of rain falling in very heavy precipitation events has been significantly above average. This increase has been greatest in the Northeast, Midwest, and upper Great Plains – more than 30% above the 1901-1960 average. There has also been an increase in flooding events in the Midwest and Northeast, where the largest increases in heavy rain amounts have occurred. The mechanism driving these changes is well understood. Warmer air can contain more water vapor than cooler air. Global analyses show that the amount of water vapor in the atmosphere has in fact increased due to human-caused warming.,,, This extra moisture is available to storm systems, resulting in heavier rainfalls. Climate change also alters characteristics of the atmosphere that affect weather patterns and storms.” [[2014 National Climate Assessment: Extreme Weather](#)]

Sea Level Rise

Currently, 7,000 People In Pennsylvania At Risk Of Coastal Flooding And 13,000 Are Projected To Be At Risk In The State By 2050. According to States At Risk, “Today, Pennsylvania has 7,000 people at risk of coastal flooding. By 2050, an additional 6,000 people are projected to be at risk due to sea level rise.” [[StatesAtRisk.Org. Accessed 4/30/2020](#)]

Inland Flooding

Currently, More Than 430,000 People In Pennsylvania Are Living In Areas At Elevated Risk Of Inland Flooding. According to States At Risk, “In Pennsylvania, there are more than 430,000 people living in areas at an elevated risk of inland flooding.” [[StatesAtRisk.Org. Accessed 4/30/2020](#)]

In 2018, Climate-Related Costs To Pennsylvania Totaled At Least \$261 Million. “In 2018 alone, climate-related costs to Pennsylvania totaled at least \$261 million; that number includes the record-breaking floods and landslides that caused over \$125.7 million in infrastructure damage. Severe weather has also caused deaths, property damage and loss of livelihood.” [Pennsylvania Auditor General, [11/12/19](#)]

Pennsylvania Floods In 2018 Caused An Estimated \$163.5 Million In Damage To Public Infrastructure, Over Half Of Which Was Not Covered By Federal Disaster Aid. “On February 21, Randy Padfield, Acting Director of the PA Emergency Management Agency, told the Senate Appropriations Committee the Commonwealth had over \$101.5 million in public infrastructure flood damages that were not covered by federal disaster assistance in 2018...Padfield said PEMA documented about \$163.5 million in public infrastructure damages in Pennsylvania during 2018, but only just over \$62 million was covered by federal disaster aid. The remaining \$101.5 million in damage had to be absorbed by municipalities, counties and state agencies.” [David E. Hess, PA Environmental Digest, [2/22/19](#)]

Flooding Was By Far The Most Extensive Hazard In Pennsylvania; Yet Pennsylvania's Homes And Businesses Were Underinsured With Only 15 Percent Of Property Owners Who Should Have Had Flood Insurance Obtained It. “According to PEMA, flooding is by far

the most extensive hazard in Pennsylvania,77 and 'more intense precipitation incidents that are localized and not widespread' are becoming more common. This type of flooding — flash flooding — is difficult to predict and is occurring in places that haven't previously flooded...Yet Pennsylvania's homes and businesses are underinsured: Just 15 percent of property owners who should have flood insurance obtain it. That number has decreased 24 percent since 2013." [Pennsylvania Auditor General, [11/12/19](#)]

Out Of Pennsylvania's 12.8 Million People, Roughly 831,000 Lived In Floodplains, Or 6.5 Percent Of Pennsylvania's Population. "This research estimates that, out of Pennsylvania's 12.8 million people, there are about 831,000 living in floodplains, or 6.5 percent of Pennsylvania's population. This is more than double the population identified in a recent Pew Charitable Trust report, which estimated around 400,000 people living in floodplains. In addition, the spatial analysis of this research found that roughly 374,000 housing units are in floodplains, or 6.7 percent of the Commonwealth's total housing units." [Center for Rural Pennsylvania, [September 2017](#)]

Roughly 374,000 Pennsylvania Housing Units Were Located In Floodplains, Or 6.7 Percent Of Pennsylvania's Housing Units. "This research estimates that, out of Pennsylvania's 12.8 million people, there are about 831,000 living in floodplains, or 6.5 percent of Pennsylvania's population. This is more than double the population identified in a recent Pew Charitable Trust report, which estimated around 400,000 people living in floodplains. In addition, the spatial analysis of this research found that roughly 374,000 housing units are in floodplains, or 6.7 percent of the Commonwealth's total housing units." [Center for Rural Pennsylvania, [September 2017](#)]

Recent Flooding Events

2014 Flooding

April 2014: Tornadoes And Flooding Caused \$1.9 Billion In Damages And 33

Deaths. According to NOAA's National Centers for Environmental Information, tornadoes and flooding across the Midwest, Southeast and Northeast which hit Pennsylvania in April 2014 caused \$1.9 billion in damages and 33 deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

- **83 Confirmed Tornadoes Impacted Across Fifteen States Including Pennsylvania.** According to NOAA's National Centers for Environmental Information, "Tornado outbreak across the Midwest, Southeast and Northeast states (AL, AR, DE, FL, GA, KS, MD, MO, MS, NC, NJ, NY, PA, TN, VA) with 83 confirmed tornadoes." [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

2010 Flooding

July 2010: Midwest/Northeast Severe Storms And Flooding Caused \$1.1 Billion In

Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, severe storms and flooding across the Midwest and Northeast that hit Pennsylvania in July 2010 caused \$1.1 billion in damages and zero deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

March 2010: Northeast Flooding Caused \$2.2 Billion In Damages And 11 Deaths.

According to NOAA's National Centers for Environmental Information, flooding across the Northeast that impacted Pennsylvania in March 2010 caused \$2.2 billion in damages and 11 deaths. [[ncdc.noaa.gov](https://www.ncdc.noaa.gov), Accessed 4/30/2020]

MILITARY BASES AFFECTED BY CLIMATE CHANGE

Pennsylvania's Defense Distribution Depot (DDD) Susquehanna Is Impacted By Current And Future Flooding And Future Drought. According to the Department of Defense, Defense Distribution Depot (DDD) Susquehanna in Pennsylvania is impacted by current and future flooding and future potential drought events. [[Report on Effects of a Changing Climate to the Department of Defense, January 2019](#)]

PIPELINE POLLUTION

Pollution And Sinkholes In Chester County Neighborhoods

Pipeline Construction Projects Raise Questions Of Environmental Safety In Central Pennsylvania. In March of 2019, the Lebanon Daily News reported: "When two companies finalized plans to build natural gas-related pipelines through the heart of central Pennsylvania, it raised a classic public policy conundrum: which is more important, economic benefits or environmental risk? Since then, most debate has focused on whether the pipelines imperiled the region's environmental and water quality. But recently, pipeline skeptics – spurred on by a high-profile pipeline contractor's bankruptcy – have begun questioning the economic promises of pipeline builders. The bankruptcy has left some local businesses in the lurch, according to Michael Schroeder of anti-pipeline group Lebanon Pipeline Awareness." [[Lebanon Daily News, 3/15/2019](#)]

Forbes: Chester County, PA Is "Home To An Immense Amount Of Major Oil And Gas Pipelines." In October of 2019, Forbes reported: "Less than an hour from the busy streets of Philadelphia in Southeastern Pennsylvania lies Chester County, PA. Long known as relatively rural and wealthy, Chester County also is home to an immense amount of major oil and gas pipelines, with major transmission lines connecting from the South to the North through Chester County." [[Forbes, 10/2/2019](#)]

Mariner East Pipeline

Project Overview

Sunoco Pipeline, A Subsidiary Of Energy Transfer LP Is Building Two New Mariner East Pipelines Along The Path Of An Older Pipeline Of The Same Name. In an article about a leak on the original Mariner East pipeline, the Philadelphia Inquirer reported: "The pipeline, built by Atlantic Refining in 1931 to deliver motor fuel and heating oil from its Philadelphia refinery to Western Pennsylvania, was acquired by Sunoco in 1988. Sunoco Pipeline in 2014 patched up and converted the pipeline, now renamed Mariner East, to carry gas

liquids from the Marcellus Shale fields to a terminal in Marcus Hook. Sunoco, a subsidiary of Energy Transfer LP of Dallas, Tex., is building two new Mariner East pipelines along roughly the same path as the older pipeline to carry additional gas liquids to its Delaware County terminal. The contentious project, much delayed by construction mishaps, is nearing completion this year. But it is still being litigated in several venues, including the PUC." [[Philadelphia Inquirer, 2/27/2020](#)]

Mariner East 2 Pipeline Spans 303 Miles, Crosses 570 Wetlands And More Than 1,200 Streams. In October of 2018, the Pittsburgh Post-Gazette reported: "Since February 2017, a feat of audacious engineering has been unfolding across southern Pennsylvania. The Mariner East 2 pipeline, spanning 303 miles, crossing 570 wetlands and more than 1,200 streams — the largest project that state environmental regulators have ever dealt with — has put the Department of Environmental Protection in the crosshairs of what, from the sidelines, can feel like a moral judgment." [[Pittsburgh Post-Gazette, 10/23/2018](#)]

Mariner East Pipelines Will Carry Volatile Liquid Gases Such As Ethane, Butane, And Propane Next To Elementary Schools And Senior Centers. At the end of 2019, the Daily Local News of Chester County reported: "When completed, the multi-billion dollar Mariner East project will carry hundreds of thousands of volatile liquid gases such as ethane, butane and propane across the full width of Pennsylvania, from the Marcellus Shale region of the state to a facility at the former refinery in Marcus Hook. It has sparked heated opposition in the community, with residents objecting to the routing next to elementary schools and senior centers, and the lack of communication by the company, especially when it comes to emergency response plans in the event of a major leak or accident." [[Chester County Daily Local News, 12/31/2019](#)]

Horizontal Directional Drilling Problems

In Delaware And Chester Counties, Mariner East Uses Horizontal Directional Drilling Technique Linked To Fouled Water Wells And Sinkholes. In April of 2018, the Philadelphia Inquirer reported: "Mariner East's critics suspect the common thread between the sinkholes and the fouled water wells is Sunoco's construction method. Sunoco is using horizontal directional drilling (HDD) to bore an underground pathway for the pipeline in much of densely populated Delaware and Chester Counties. HDD allows it to pass under streams, roadways, and neighborhoods without causing surface disturbances associated with a conventional open-cut trench. Sunoco Pipeline LP's use of horizontal directional drilling (HDD) has been linked to fouled water wells, sinkholes, and leaks of drilling fluid into waterways. Some of the most serious issues have emerged in West Whiteland Township, Chester County, where the pipeline's route traverses a porous limestone formation called karst, which is characterized by sinkholes and depressions." [[Philadelphia Inquirer, 4/6/2018](#)]

Horizontal Directional Drilling Involves A Steerable Drill Aided By Drilling Fluids. In April of 2018, the Philadelphia Inquirer reported: "Horizontal drilling involves the use of a steerable drill bit that chews its way through the earth, aided by drilling fluid that carries

back the rock cuttings from the drill bit. The drilling mud also seals the bore's interior. But drilling fluid can leak through underground fractures and faults, causing "inadvertent returns," as it did when Sunoco began horizontal drilling in November near Lisa Drive. Though drilling mud is composed of water and nontoxic bentonite clay, it can harm aquatic life if enough of it leaks into a stream. And horizontal drilling can disturb underground aquifers, as it did on Valleyview Drive." [[Philadelphia Inquirer, 4/6/2018](#)]

Mariner East Pipelines Builder Spilled 208,000 Gallons Of Drilling Fluid Into A Raystown Lake In Huntingdon County And Tried To Keep It A Secret. In January of 2020, the Associated Press reported: "A Texas-based pipeline giant that is heavily penalized in Pennsylvania has agreed to pay another \$2 million in fines for spilling drilling fluids into a reservoir during construction on a 350-mile multibillion-dollar pipeline carrying highly volatile natural gas liquids. The consent agreement was made public Thursday after it was signed Jan. 3 by officials from Gov. Tom Wolf's administration and a subsidiary of Energy Transfer LP. The state Department of Environmental Protection said more than 208,000 gallons (787,400 liters) of drilling fluids spilled into Raystown Lake in Huntingdon County in 2017 during construction on the company's Mariner East pipelines. The agency said that, in numerous cases, the company didn't immediately report the contamination, as required by its permits, until 2018 or 2019." [[Associated Press, 1/17/2020](#)]

Mariner East Pipelines Construction Has Spurred More Than \$15 Million In Fines For Polluting Waterways And Drinking Water Wells. In January of 2020, the Associated Press reported: "Construction on the Mariner East pipelines stretching across southern Pennsylvania has now spurred more than \$15 million in fines and several temporary shutdown orders by state agencies, primarily for polluting waterways and drinking water wells, and using construction methods not approved by state regulators." [[Associated Press, 1/17/2020](#)]

TRUMP'S CLIMATE DENIAL HURTS PENNSYLVANIA'S ECONOMY

GDP IMPACT

Climate Change Will Cost Pennsylvania \$18 Billion A Year By The Year 2100. According to data on the impacts of climate change as part of a study published in Science Magazine, Pennsylvania can expect to lose \$18 billion from annual GDP by the year 2100 if action isn't taken to immediately curtail carbon emissions. The study used a model that aimed to calculate the future impact on each state's gross domestic product (GDP) from events including hurricanes, storm surges, changes in agricultural yields, changing electricity demands, changes in mortality rates, changes to the labor supply, rising sea levels and rising crime rates. [[Hsiang, S., Kopp, R.E., et al. "Estimating economic damage from climate change in the United States" Science Magazine, 6/30/2017, MarketWatch, 4/30/2018](#)]

AGRICULTURAL IMPACTS

Agriculture In Pennsylvania Generates An Economic Impact Of \$135.6 Billion And Supports More Than 575,000 Jobs. A January, 2018 report from the Pennsylvania Department of Agriculture found: "Our economic impact analysis demonstrates that agriculture is a core part of Pennsylvania's economy. The industry supports more than 575,000 jobs in the Commonwealth, with an annual economic impact of \$135.6 billion." [[Pennsylvania Department of Agriculture, January, 2018](#)]

TOURISM & OUTDOOR RECREATION IMPACTS

Outdoor Recreation In Pennsylvania Supports 251,000 Jobs And \$29.1 Billion In Consumer Spending. According to data collected by the Outdoor Industry Association, outdoor recreation in Pennsylvania supports 251,000 direct jobs and generates \$8.6 billion in wages and salaries. Outdoor recreation generates \$29.1 billion in consumer spending for the state, which brings in \$1.9 billion in state and local tax revenue. [[Outdoor Industry Association accessed 6/9/2020](#)]

In 2018, The Tourism Industry In Pennsylvania Supported 515,072 Jobs And Resulted In \$44.8 Billion In Consumer Spending. According to a 2018 report on the economic impact of travel in Pennsylvania, the state's tourism industry supported 515,072 jobs and generated \$22.9 billion in wages and salaries in 2018. That same year, tourism generated \$44.8 billion in consumer spending for the state, which brings in \$4.645 in state and local tax revenue. [[The Economic Impact of Travel in Pennsylvania, 2018 Report](#)]

SPENDING ON DISASTERS

In The Past Decade, Pennsylvania Has Experienced 32 Climate-Related Disasters Responsible For A Total Of \$190.6 Billion Dollars' Worth Of Damages. According to NOAA's National Centers for Environmental Information, Pennsylvania experienced 32 climate-related disasters that were responsible for total damages of \$190.6 billion. These 32 disasters, each responsible for over one billion dollars' worth of damages, include 22 severe storms, five winter storms, two droughts, two tropical cyclones and one flooding event from 2009 to 2019. [ndcd.noaa.gov, Accessed 4/30/2020]

Since Trump Assumed The Office Of The Presidency In 2017, Pennsylvania Has Experienced 10 Climate-Related Disasters Responsible For A Total Of \$17.9 Billion In Of Damages. According to NOAA's National Centers for Environmental Information, since President Trump assumed office in 2017, Pennsylvania has experienced 10 climate-related disasters responsible for total damages of \$17.9 billion. These 10 disasters, each responsible for over one billion dollars' worth of damages, are all severe storm events. [ndcd.noaa.gov, Accessed 4/30/2020]

THE COST OF TRUMP CLIMATE POLICIES

Trump's Clean Cars Rollback Will Cost Pennsylvanians Over \$610 Million Per Year. In March of 2019, the Center for American Progress analyzed the costs of some of Donald Trump's regulatory changes. For Trump's rollback of clean cars standards, they combined data from M.J. Bradley and Associates' analysis of the net cost for American families of freezing fuel economy targets at model-year 2020 along with data from the Energy Information Agency's oil price forecasts as well as the American Community Survey. The analysis found that Trump's rollback of clean cars standards will cost Pennsylvanians \$610,300,000 per year. [[Center for American Progress](https://www.americanprogressaction.org), 3/27/2019]

TRUMP'S CLIMATE DENIAL IS ESPECIALLY HARMFUL TO PEOPLE OF COLOR IN PENNSYLVANIA

AIR QUALITY ISSUES

In 2019, Ozone Pollution Placed The Health Of Over 1,260,000 Central Pennsylvanians At Risk. According to a press release from the American Lung Association on their 2020 State of the Air report: "The Lung Association's annual air quality 'report card' tracks Americans' exposure to unhealthy levels of particle pollution and ozone during a three-

year period. Once again, the report found that nearly half of all Americans were exposed to unhealthy air in 2016-2018. In this 6-county metro area in central Pennsylvania, ozone pollution placed the health of over 1,260,000 residents at risk, including those who are more vulnerable to the effects of air pollution such as older adults, children and those with a lung disease." [[Press Release, American Lung Association, 4/21/2020](#)]

The Philadelphia-Reading-Camden Metropolitan Area Ranked 23rd For High Ozone Days In 2019. According to the American Lung Association's 2020 State of the Air report, the Philadelphia-Reading-Camden metropolitan area ranked 23rd for high ozone days in 2019. [[State of the Air, City Rankings, 2020](#)]

Nine Counties In Pennsylvania Received F Grades For Their Number Of Days Of Unhealthy Ozone Levels In 2019. According to the American Lung Association's 2020 State of the Air report, nine counties in Pennsylvania received "F" grades for the number of days with unhealthy ozone levels in 2019. Those counties are Allegheny, Beaver, Berks, Bucks, Chester, Delaware, Montgomery, Northampton, and Philadelphia. [[State of the Air, Pennsylvania Report Card, 2020](#)]

- **Asthma And Allergy Foundation: "Ozone Triggers Asthma."** According to the Asthma and Allergy Foundation of America, "Ozone, a gas, is one of the most common air pollutants. Ozone contributes to what we typically experience as "smog" or haze. It is most common in cities where there are more cars. It is also more common in the summer when there is more sunlight and low winds. Ozone triggers asthma because it is very irritating to the lungs and airways. It is well known that ozone concentration is directly related to asthma attacks. It has also caused the need for more doses of asthma drugs and emergency treatment for asthma. Ozone can reduce lung function. Ozone can make it more difficult for you to breathe deeply." [[Asthma and Allergy Foundation of America, October 2015](#)]
- **African American Children Were Four Times More Likely To Be Admitted To The Hospital And Ten Times More Likely To Die From Asthma.** According to the Department of Health and Human Services, "In 2015, African American children had a death rate ten times that of non-Hispanic white children. Black children are 4 times more likely to be admitted to the hospital for asthma, as compared to non-Hispanic white children. [Department of Health and Human Services, Accessed [9/7/18](#)]

In 2019, Harrisburg, York And Lebanon Area Residents Continued To Breathe Some Of The More Unhealthy Air In The County, Driven By Emissions From Vehicles And Industrial Sources. According to a press release from the American Lung Association on their 2020 State of the Air report: "This year marks the 50th anniversary of the Clean Air Act, which has been responsible for dramatic improvements in air quality. However, Harrisburg, York, and Lebanon area residents continue to breathe some of the more unhealthy air in the country, driven by emissions from vehicles and industrial sources, both locally generated as well as from upwind, placing their health and lives at risk,' said American Lung Association Director of Environmental Health Kevin Stewart.." [[Press Release, American Lung Association, 4/21/2020](#)]

The Philadelphia-Reading-Camden Metropolitan Area Ranked 12th For Annual Particle Pollution In 2019. According to the American Lung Association's 2020 State of the Air report, the Philadelphia-Reading-Camden metropolitan area ranked 12th for annual particle pollution in 2019. [[State of the Air, City Rankings, 2020](#)]

In 2019, Allegheny County Earned An "F" Grade For Particle Pollution. According to the American Lung Association's 2020 State of the Air report, Pennsylvania's Allegheny county received an "F" grade for having high particle pollution levels in 2019. [[State of the Air, Pennsylvania Report Card, 2020](#)]

- **Headline: "Hispanics And Blacks Create Less Air Pollution Than Whites, But Breathe More Of It, Study Finds."** [[CNN, 3/13/2019](#)]
- **Study: Blacks And Hispanic Are Exposed To 56% And 63% More Particulate Air Pollution (PM2.5) Than Is Caused By Their Consumption, While Non-Hispanic Whites Are Exposed To Less Pollution Than They Cause.** According to a study published in the Proceedings of the National Academy of Sciences, "Fine particulate matter (PM2.5) air pollution exposure is the largest environmental health risk factor in the United States. Here, we link PM2.5 exposure to the human activities responsible for PM2.5 pollution. We use these results to explore "pollution inequity": the difference between the environmental health damage caused by a racial-ethnic group and the damage that group experiences. We show that, in the United States, PM2.5 exposure is disproportionately caused by consumption of goods and services mainly by the non-Hispanic white majority, but disproportionately inhaled by black and Hispanic minorities. On average, non-Hispanic whites experience a "pollution advantage": They experience ~17% less air pollution exposure than is caused by their consumption. Blacks and Hispanics on average bear a "pollution burden" of 56% and 63% excess exposure, respectively, relative to the exposure caused by their consumption. The total disparity is caused as much by how much people consume as by how much pollution they breathe. Differences in the types of goods and services consumed by each group are less important. PM2.5 exposures declined ~50% during 2002-2015 for all three racial-ethnic groups, but pollution inequity has remained high." [[Tessum, Christopher W. et al. "Inequity in consumption of goods and services adds to racial-ethnic disparities in air pollution exposure." Proceedings of the National Academy of Sciences Mar 2019, 116 \(13\) 6001-6006](#)]

ENVIRONMENTAL JUSTICE HAS DEEP ROOTS IN PENNSYLVANIA

A Grassroots Effort In The 1990s To Stop The Clustering Of Commercial Waste Facilities In Chester Helped Spur The Environmental Justice Movement. According to State Impact Pennsylvania, an NRP project: "The grassroots struggle in the 1990's to stop the clustering of commercial waste facilities in Chester, Pennsylvania helped spur the environmental justice movement." [[State Impact Pennsylvania, 7/18/2018](#)]

Chester Residents Filed Suit Against The State Department Of Environmental Protection And Permits Were Denied For An Additional Waste Facility In The Area. According to DelCo

Times: “In 1998, a group of residents in the Chester Residents Concerned for Quality Living sued the DEP in federal court, alleging discrimination. They contended that a variety of waste facilities in Chester, which hosts only 8 percent of the total county population but contains 60 percent of all its waste facilities. Soil Reclamation Service, which had intended to construct and begin business in Chester, was denied an operations permit and therefore the court case was declared moot all the way at the United States Supreme Court.” [[DelCo Times, 3/23/2017](#)]

CURRENT ENVIRONMENTAL JUSTICE ISSUES

Chester Pollution

Chester Is Home To Three Major Polluting Facilities: A Trash Incinerator, A Waste-Water Treatment Plant And A Power Plant. According to PBS: “What do a bag of potato chips thrown out in Manhattan, a lightbulb unwittingly tossed in Philadelphia, and a cigarette butt discarded in New Jersey have in common? There's a chance all three are burned in the same trash incinerator in Chester, Pennsylvania. The Delaware Valley Resource Recovery Facility, one of the country's largest municipal waste incinerators, sits on the bank of the Delaware River, which separates Pennsylvania from New Jersey. It's only a mile-and-a-half from a wastewater treatment plant that handles waste from throughout Delaware County. A few miles down the road on West Front Street, you can see the smokestacks of a massive power plant that burns coal, crude oil by-products, and paper-mill sludge from the neighboring Kimberly-Clark paper mill.” [[PBS, 8/23/2017](#)]

The Delaware Valley Resource Recovery Facility In Chester Emits More Particulate Matter Than Any Such Facility In The Country. According to WHYY: “Two of the country's most polluting incinerators are in poor cities near Philadelphia, the study says. The Delaware Valley Resource Recovery Facility in Chester emits more particulate matter than any other such facility in the country, the study says, releasing in 2014 over 200,000 pounds of PM2.5 — very fine particles that are less than 2.5 microns in width. The Covanta Camden Energy Recovery Facility is the second largest emitter of lead among incinerators nationwide, at 380 pounds in 2014, the study says.” [[WHYY, 5/23/2019](#)]

The Community Surrounding The Plant Was 75 Percent African American. According to PBS: “A few miles down the road on West Front Street, you can see the smokestacks of a massive power plant that burns coal, crude oil by-products, and paper-mill sludge from the neighboring Kimberly-Clark paper mill. In the neighborhoods around Front Street, a third of residents live below the poverty line, and 75% of the population is African American. Neighborhood residents have more than their fair share of public health problems, thanks in large part to the pollutants from these facilities. ‘Chester residents have borne the brunt of the whole region's waste disposal problems for far too many years,’ says Mike Ewall, a local environmental activist and Executive Director of the Energy Justice Network.” [[PBS, 8/23/2017](#)]

The City's Rate Of Child Hospitalization Due To Asthma Is More Than Three Times The State's Average. According to WHYY: "Zulene Mayfield chairs Chester Residents Concerned for Quality Living, a group fighting against the city's incinerator. In an interview Thursday, she said the city's rate of child hospitalization due to asthma is more than three times the state average. 'It's literally killing people,' said Mayfield." [[WHYY, 5/23/2019](#)]

Heat Islands – Huntington Park

The Heat Island Effect Occurred When Tall Buildings, Roads And Pavement, And Black Rooftops On Homes Trap In Heat, While A Lack Of Trees And Vegetation Prevent The Area From Cooling Down. "Some parts of Philadelphia can be as many as 22°F hotter than other neighborhoods. When looking at the index, the blocks in red are the hottest places in the city. These blocks are located in the central regions of North, West, and South Philadelphia. Tall buildings, roads and pavement, and black rooftops on homes trap in heat, and a lack of trees and vegetation prevent the area from cooling down. This is called the 'urban heat island effect.'" [City of Philadelphia, [7/16/19](#)]

The Nature Conservancy: "Issues Related To Urban Heat Islands Jeopardize More People In The United States Each Year Than Hurricanes, Floods, Tornadoes And Lightening Combined." [Nature Conservancy, Accessed [6/4/20](#)]

Climate Change Would Exacerbate The Problem Of Heat Islands With Increasingly Frequent And Severe Record-Breaking Heat Waves. "Climate change is likely to exacerbate the situation with increasingly frequent and severe record-breaking heat waves...In fact, issues related to urban heat islands jeopardize more people in the United States each year than hurricanes, floods, tornadoes and lightening combined." [Nature Conservancy, Accessed [6/4/20](#)]

By 2100, Philadelphia Could See Between 17 And 52 Days Above 95 Degrees. "Between 1961 and 2000, Philly experienced an average of four days per year when the temperature went above 95 degrees. By 2100, the city could see between 17 and 52 such days annually. But those A.C.-busting numbers don't tell the whole story, because there's another element to consider: the fact that there are significant temperature variances within our city." [Philadelphia Magazine, [10/26/19](#)]

Philadelphia City Summers Were On Average 3.8 Degrees Hotter Than In Rural Areas And Had Eight More Days Above 90 Degrees Each Year. [Climate Central, Accessed [6/5/20](#)]

Warmer Temperatures In Philadelphia From Heat Islands Result In Higher Energy Costs, Increased Air Pollution And More Heat-Related Illnesses. "You can see for yourself in South Philadelphia where brick row homes, stacked next to each other in a concrete checkerboard that goes on for miles, experience a summer heat index that often hits triple digits. At night, there's no respite from the heat. It just doesn't cool down. Warmer temperatures emerging from urban heat islands result in higher energy costs, increased air pollution and more heat-related illnesses." [Nature Conservancy, Accessed [6/4/20](#)]

Hunting Park, A Predominately Latino And Black Neighborhood, Suffered From Temperatures 22 Degrees Hotter Than Other Areas Of Philadelphia As A Result Of The Heat Island Effect

Hunting Park Is Both A Park And A Neighborhood In North Philadelphia With A Largely Black And Hispanic Population. “Philadelphia has released its first plan for dealing with the impact of climate change on its neighborhoods, focusing first on Hunting Park, a section of North Philly that can run 22 degrees warmer than some other areas of the city during a heat wave. Hunting Park is both a park and a neighborhood in North Philadelphia...These amenities serve Hunting Park’s racially and culturally diverse population (29,842) that is largely Hispanic (56%), African American (46%), bilingual (47% Spanish speaking), and young (39% of the population under the age of 18).” [Philadelphia Inquirer, [7/24/19](#)]

75% Of Land Cover In Hunting Park Was Buildings, Roads, And Paved Surfaces Compared To 52% In Philadelphia. “Extreme heat is concentrated in neighborhoods like Hunting Park where there is more pavement and exposed asphalt, older and less reflective building surfaces, and limited vegetation. In Hunting Park, the significant presence of industry, an aging housing stock (and coinciding dark roof tops), and a lack of trees and green space all contribute to higher temperatures. More than 75% of land cover in Hunting Park is buildings, roads, and paved surfaces compared to 52% in Philadelphia overall. In contrast, tree canopy is only 9%, compared to 19% in Philadelphia and 48% in neighborhoods like Chestnut Hill.”

59% Of Hunting Park Households Have An Annual Income Of Less Than \$25,000, Making It Difficult To Upgrade To Air Conditioning Or Weatherize A Home. “While the homeownership rate in Hunting Park is relatively high at around 51%, a majority of households (59%) have an annual income of less than \$25,000 (compared to 34% of households in Philadelphia). As a result, many Hunting Park residents are housing cost-burdened, which means that they spend more than 30% of their income on housing. Therefore, being able to afford home updates to help with weatherization, energy efficiency, and cooling may not be an option for many homeowners.” [City of Philadelphia, [7/19/19](#)]

Higher Temperatures And Poor Air Quality In Hunting Park Challenged Residents Who Suffer From Chronic Illnesses Like Asthma, Where Rates Were Two To Three Times Higher Than Other Neighborhoods In Philadelphia. “Additionally, the combination of higher temperatures and poor air quality in Hunting Park are extremely challenging for residents who suffer from chronic illnesses like asthma. According to the Pennsylvania Health Care Cost Containment Council (2016), the 19140 zip code has one of the highest rates of childhood asthma hospitalizations in the city. These rates can be two to three times higher than in other zip codes in Philadelphia.” [City of Philadelphia, [7/19/19](#)]

Communities Of Color And Low-Income Neighborhoods Are Disproportionately Affected By The Heat Island Effect

Temperatures In Low-Income Neighborhoods Of Philadelphia Can Be As 22 Degrees Hotter Than The Often-Wealthier Neighborhoods. “Unfortunately, there’s a strong

correlation between high poverty rates and lack of trees in Philly neighborhoods. Areas with comparatively low median household incomes — Hunting Park, Strawberry Mansion, and parts of Southwest Philadelphia, for instance — can be as much as 22 degrees hotter than leafier, and often wealthier, blocks in Center City and parts of West Philly.” [Philadelphia Magazine, [10/26/19](#)]

Black, Latino, And People Of Color In Philadelphia Were More Likely To Live In The Hottest Neighborhoods Of The City, More Prone To Heat-Related Illnesses And Death, And Less Likely To Have Air Conditioning. “The city’s heat vulnerability index also shows that black people, Latinos, and other residents of color are more likely to live in the hottest neighborhoods. As a result, these residents — especially the elderly and those without air-conditioning — are more prone to heat-related illnesses and death.” [Philadelphia Magazine, [10/26/19](#)]

Lower-Income Residents Of Color Bear The Brunt Of Heat Island Effects In Neighborhoods Such As Hunting Park Has A History Associated With The Practice Of Redlining. “A heat island is an area that is hotter than others because it has fewer trees, less green space, more exposed asphalt, and many black roofs, all of which decrease shade while increasing temperature, a phenomenon The Inquirer has reported on in depth. Lower-income residents of color bear the brunt of this problem, a disparity the city acknowledges and says it wants to address...Officials note that Hunting Park has a history associated with the practice of redlining — areas where banks, citing credit risks, would shun writing loans and mortgages. The practice helped concentrate poverty.” [Philadelphia Inquirer, [7/24/19](#)]

There Was Strong Correlation Between High Poverty Rates And Lack Of Trees In Philly Neighborhoods. “Unfortunately, there’s a strong correlation between high poverty rates and lack of trees in Philly neighborhoods. Areas with comparatively low median household incomes — Hunting Park, Strawberry Mansion, and parts of Southwest Philadelphia, for instance — can be as much as 22 degrees hotter than leafier, and often wealthier, blocks in Center City and parts of West Philly.” [Philadelphia Magazine, [10/26/19](#)]

Philadelphia Has Started To Address Urban Heat Islands And The Disproportionate Impacts On Minority Communities

HEADLINE: “Philadelphia Launching 10-Year ‘Urban Forest’ Plan After Startling Tree Decline.” [Philadelphia Inquirer, [12/5/19](#)]

Philadelphia Released A Plan To Deal With The Heat Island Effects By Launching A Heat Relief Network And Study How Climate Change Will Impact Other Neighborhoods. “Philadelphia has released its first plan for dealing with the impact of climate change on its neighborhoods, focusing first on Hunting Park, a section of North Philly that can run 22 degrees warmer than some other areas of the city during a heat wave...A heat island is an area that is hotter than others because it has fewer trees, less green space, more exposed asphalt, and many black roofs, all of which decrease

shade while increasing temperature, a phenomenon The Inquirer has reported on in depth. The city plans to launch a heat relief network this summer and begin to look at how climate change will impact other neighborhoods." [Philadelphia Inquirer, [7/24/19](#)]

PENNSYLVANIA HAS AN OPPORTUNITY TO BUILD A STRONG GREEN ECONOMY

PENNSYLVANIA'S GREEN ECONOMY

Pennsylvania Was Ranked 11th For Clean Energy Employment In 2019. According to the 2020 Clean Jobs America Report by E2, Pennsylvania was 11th in clean energy employment in 2019, with the clean energy sector providing 93,861 jobs. [[Clean Jobs America Report, E2, 2020](#)]

SOLAR

2019: Pennsylvania Was Home To 4,231 Jobs In The Solar Industry. According to The Solar Foundation, in 2019 there were 4,231 solar jobs in Pennsylvania and the state was ranked eighteenth in the nation for solar jobs. [[The Solar Foundation, Solar Jobs Census 2019: Pennsylvania](#), Accessed 4/29/2020]

2019: There Were 592 Solar Companies In Pennsylvania. According to The Solar Foundation, in 2019 there were 592 total solar companies in Pennsylvania. [[The Solar Foundation, Solar Jobs Census 2019: Pennsylvania](#), Accessed 4/29/2020]

2019: 59,292 Equivalent Homes Were Powered By Solar In Pennsylvania. According to The Solar Foundation, in 2019 the number of equivalent homes powered by solar in Pennsylvania stood at 59,292. [[The Solar Foundation, Solar Jobs Census 2019: Pennsylvania](#), Accessed 4/29/2020]

WIND

2019: Pennsylvania Was Home To 2,001 To 3,000 Direct Jobs In The Wind Industry. According to American Wind Energy Association, in 2019 the wind industry supplied 2,001 to 3,000 direct jobs in Pennsylvania. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Pennsylvania, April 2020](#)]

2019: There Were 32 Wind Energy Manufacturing Facilities In Pennsylvania. According to American Wind Energy Association, in 2019 there were 32 active manufacturing facilities in Pennsylvania. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Pennsylvania, April 2020](#)]

2019: There Were 751 Wind Turbines In Pennsylvania. According to American Wind Energy Association, in 2019 Pennsylvania was home to 751 wind turbines. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Pennsylvania, April 2020](#)]

2019: The Equivalent Number Of Homes Powered By Wind In Pennsylvania Was 325,600. According to American Wind Energy Association, the equivalent number of homes powered by wind in Pennsylvania in 2019 was 325,600. [[American Wind Energy Association, State Fact Sheet: Wind Energy In Pennsylvania, April 2020](#)]