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Overburdened Communities and Power Plants in New Jersey

In New Jersey, and around the United States, pollution from power plants disproportionately affects communities with large populations of people of color and/or low-income households. Four-fifths of schools and more than three-quarters of hospitals and health clinics located within New Jersey's environmental justice (or "overburdened") communities are located less than 5 miles from a fossil fuel plant, putting these communities at higher risk for pollution-related health concerns. These discriminatory siting practices still persist today, with new power plants continuing to be built in New Jersey's overburdened communities.

NJ's Environmental Justice Law

On average, more people are packed into each square mile in New Jersey than anywhere else in the United States. Moreover, the top four most densely populated municipalities in the nation are in Hudson County: Hoboken, Guttenberg, Union City, and West New York.[1] Many of New Jersey's most population dense neighborhoods are also "overburdened communities" that face disproportionate health risks from the pollution emitted from fossil fuel plants and other polluters in the region (see Figure 1).
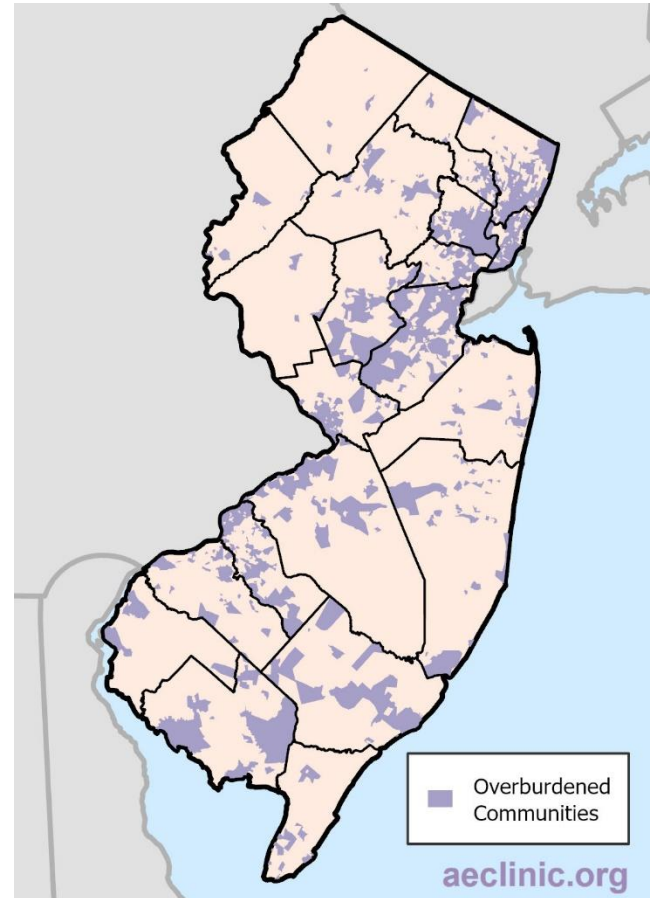
New Jersey's environmental justice law defines overburdened communities as census block groups[2] where:

- at least 35 percent of the households qualify as low-income households (are at or below twice the federal poverty level, or less than $54,000 annually for a family of four);[2] **or**
- at least 40 percent of residents identify as racial-ethnic minorities or members of a state-recognized tribal community; **or**
- at least 40 percent of the households have limited English language proficiency.[3]

In June 2020, New Jersey Governor Phil Murphy signed into law Senate No. 232 ("An Act concerning the disproportionate environmental and public health impacts of pollution on overburdened communities"),[4] which requires the New Jersey Department of Environmental Protection (DEP) to evaluate environmental and public health stressors of polluting facilities on overburdened communities when reviewing certain permit applications. The law applies to all major sources of air pollution including fossil fuel power plants, resource recovery facilities or incinerators, waste-to-energy facilities, landfills, and some medical waste incinerators.[5] In addition, the law orders NJ DEP to publish and maintain an online list of overburdened communities in the State, to be updated at least once every two years.[7]

Figure 1. Overburdened communities in New Jersey

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Pollution from Power Plants

Power plants emit harmful pollutants that place nearby residents at risk for a myriad of adverse health issues. Exposure to sulfur dioxide, for example, can increase the risk of lung cancer and heart disease in nearby areas, particularly for vulnerable communities (see Table 1).

Overburdened communities' air quality is impacted not only by polluters—like power plants—sited directly in or near the community but also by pollution sources many miles away when wind and water movement carry pollutants long distances.[9] In fact, the U.S. Environmental Protection Agency's (EPA) pollutant dispersion models include the assumption that communities that are as much as 50 miles from the source of pollution are at a higher risk of chronic exposure to hazardous air pollutants from power plants.[8]
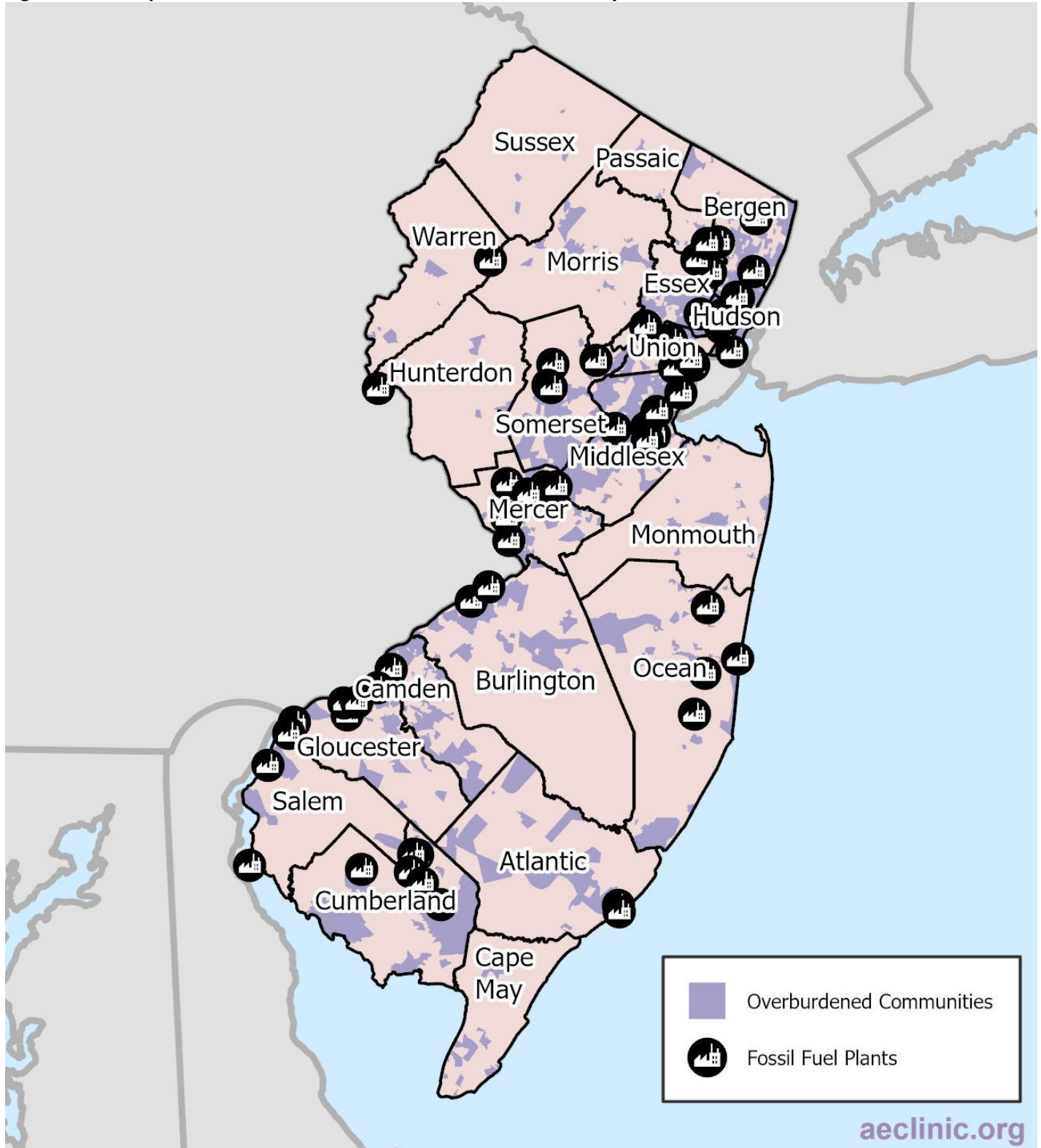
At-risk neighborhoods face multiple exposures to pollutants that compound negative health outcomes. The coalescence of multiple sources of health and environmental hazards, systemic inequities, and socioeconomic barriers in overburdened communities creates a myriad of interrelated structural harms with intersectional impacts on society's most vulnerable members.

The siting of power plants in and near overburdened communities is an especially pernicious form of harm in environmental justice communities. Not only do power plants release pollutants that can cause damage to human health in the immediate and near terms, but such polluting facilities—which rely on dirty energy—are also responsible for emissions that fuel climate change and its resulting weather crises. Vulnerable neighborhoods, like New Jersey's overburdened communities, face the first and worst impacts of climate change.

Table 1. Summary of health impacts by pollutant type

Pollutant	Health Impacts
Sulfur Dioxide (SO$_2$)	SO$_2$ emissions are linked to lung and heart disease, and a higher risk of low birth weight—infants born to mothers as far as 30 miles downwind from coal-fired power plants are 7 percent more likely to be born with a low birth weight and 17 percent more likely to be born with a very low birth weight
Nitrogen Dioxide (NO$_2$)	NO$_2$ can irritate respiratory systems and aggravate existing respiratory diseases. Prolonged exposure may lead to asthma and an increased risk of respiratory infections.
Particulate Matter (PM)	PM is formed by reactions of NO$_2$, NO$_x$, and SO$_x$ with other compounds in the air. Exposure to these particles is linked to problems such as nonfatal heart attacks, irregular heartbeat, decreased lung function, and premature death in people with existing lung or heart disease.
Coal Ash and Heavy Metals	Coal ash, which contains toxic metals such as mercury, arsenic, and lead, is a byproduct of burning coal. Breathing in coal ash may cause cardiovascular problems, nervous system damage, and cancer. Children who live near coal ash disposal areas have increased health problems.
Other Toxic Chemicals	Exposure to toxic chemical emissions—such as hydrogen sulfide, toluene, xylene benzene, and formaldehyde—is linked to adverse birth outcomes such as low birth weight and premature birth. Toxic chemical exposure is also known to aggravate asthma, increase emergency room visits, and may lead to premature death.

Figure 2. Power plants and overburdened communities in New Jersey

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Power Plants in Neighborhoods

While the impacts of emissions from stationary pollution sources like power plants vary[10]—in general terms, the closer the polluting facility is to population centers, the more serious the human and environmental effects. In New Jersey today there are 30 gas- and oil-fired power plants located directly within overburdened, under-resourced, and underserved communities—side by side with homes, playgrounds, schools, health clinics, and community centers.

Almost half (46 percent) of New Jersey's fossil fuel plants are located within the communities that the State's environmental justice law defines as "overburdened"; an astounding 97 percent of these polluting facilities have been sited within 5 miles of these vulnerable neighborhoods (see Figure 2 and Table 2).

Four-fifths of schools and more than three-quarters of hospitals and health clinics located within New Jersey's overburdened communities are less than 5 miles from a fossil fuel plant.

Outside of overburdened communities, these statistics are very different: Schools and health facilities are much less likely to be close by to a power plant; in less vulnerable communities, just 48 percent and 2 percent, respectively, are within 5 miles (see Table 3).

Table 2. Share of power plants near overburdened communities

Proximity to an Overburdened Community	Plants
Within a community	46.2%
Less than 1-mile	78.5%
Less than 5-miles	96.9%

In addition, particular groups, like children and those with respiratory diseases, are more vulnerable to exposure to pollution than the general public. Children absorb more contaminants than adults and metabolize them differently, making children particularly susceptible to ill effects from pollution exposure as they explore their environment.[11] Similarly, since air pollution from fossil fuel-fired power plants increases the risk of hospitalization for respiratory disease, patients and people with pre-existing conditions that require them to live in close proximity to a hospital in the event of a health emergency also face a disproportionate risk.[12]

For children and people living with respiratory disease within overburdened communities, these risks are compounded. Siting power plants in close quarters to overburdened neighborhoods and their schools and clinics is a recipe for worse health outcomes.

**Table 3. Schools and hospitals relative to overburdened communities**

Proximity to a Fossil Fuel Plant	In Overburdened Community		Outside Overburdened Community	
	Schools	Hospitals	Schools	Hospitals
Less than 0.5-mile	2.3%	9.1%	0.5%	0.3%
Less than 1-mile	9.9%	18.2%	2.9%	0.4%
Less than 5-miles	80.9%	76.6%	48.0%	2.0%

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Newark/Jersey City Region

Hudson and Essex Counties are densely populated areas that border New York City and include the cities of Jersey City, Newark, and East Orange. The vast majority (85 percent) of these counties' population reside in overburdened communities (see Figure 3). In 2020, Essex County had the third highest asthma rates relative to the rest of the State; nearly 7 percent of community members have asthma—compared with the state average of just under 4 percent.[13]

Expressing health concerns and citing the State's newly passed Environmental Justice Law, residents of Newark's

Figure 3. Newark-Jersey City: Power plants, schools, hospitals, and overburdened communities[14]
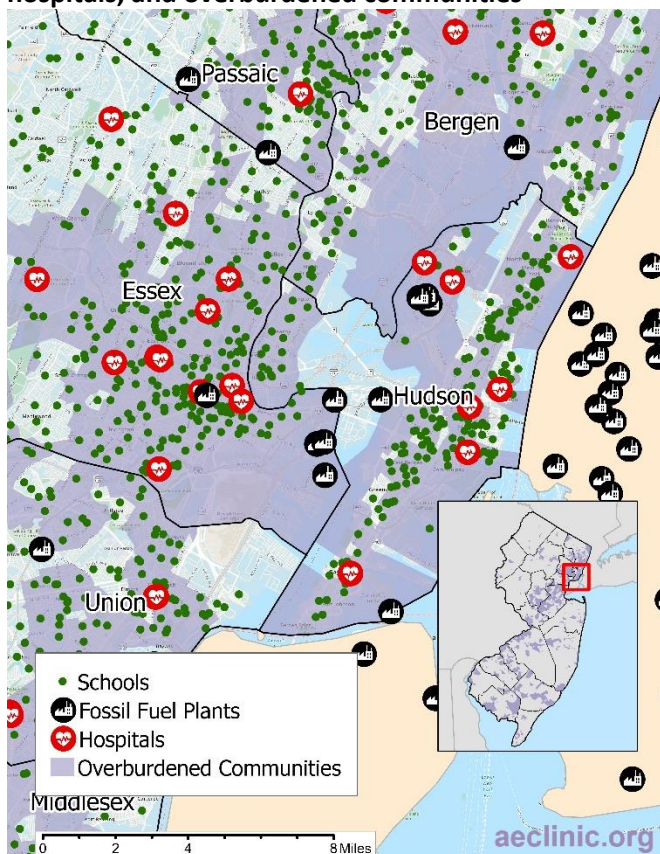
Note: The region without symbols in the southeastern part of Essex County is Newark International Airport, and in the southern part of Bergen County is warehouses and other large commercial sites.

Ironbound neighborhood have denounced the Passaic Valley Sewerage Commission's plan to construct a gas-fired plant for backup power at one of the largest sewage-treatment plants in the country.[14]

This proposed gas-fired plant in Newark would join the six fossil fuel-fired plants already in operation in Essex County. The largest of these facilities, Newark Energy Center, is a gas combined cycle plant located directly within the already overburdened Ironbound community.

Trenton Region

The City of Trenton is composed entirely of overburdened communities and is home to Vicinity Energy, a 39-year-old gas-fired CHP power plant located in Mill Hill, an overburdened community in the Downtown area (see Figure 4 on the next page). Trenton's neighbors, Ewing and Lawrence, are also home to fossil fuel plants, and the oil-fired Falls Generating Station in Pennsylvania is about three miles from both Trenton and Hamilton. The presence of multiple fossil fuel plants in such close proximity to Trenton puts the entire community at risk of adverse health and environmental events due to fossil fuel pollution and its effects.

The strong concentration of fossil fuel facilities in and around Trenton is not without material effects on the population: A recent study from the New Jersey Department of Health and the New Jersey Asthma Awareness and Education Program finds that Trenton's asthma-related emergency department (ED) visit rate was 3.8 times the state average, accounting for 76 percent of Mercer County's total asthma ED visits despite comprising only 23 percent of its population.[15] Both of Trenton's hospitals, and many of its schools, lie in close proximity to Vicinity Energy, presenting especially serious risks to vulnerable populations such as hospital patients and schoolchildren. In addition, hazards like explosions—one of which occurred at the College of New Jersey CHP power plant in Ewing in February 2022[16]—pose further dangers to Trenton's residents, particularly its most vulnerable.

Figure 4. Trenton: Power plants, schools, hospitals, and overburdened communities
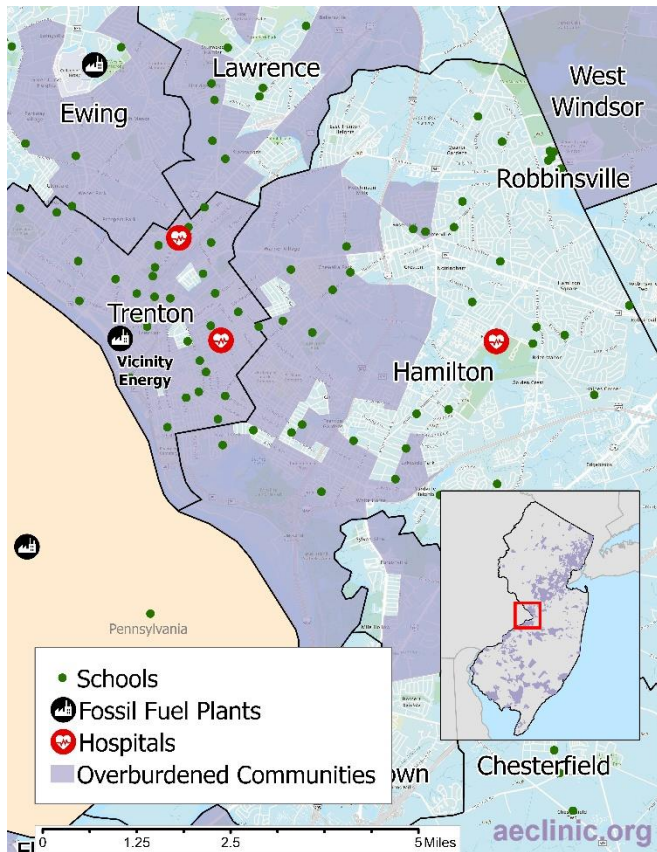
South Jersey Region

The southernmost counties of New Jersey (Cape May, Cumberland, and Atlantic Counties) are far less densely populated then the state's northern regions (95,661 residents in Cape May County versus 854,917 in Essex County) but are still home to many overburdened communities in close proximity to fossil power plants.
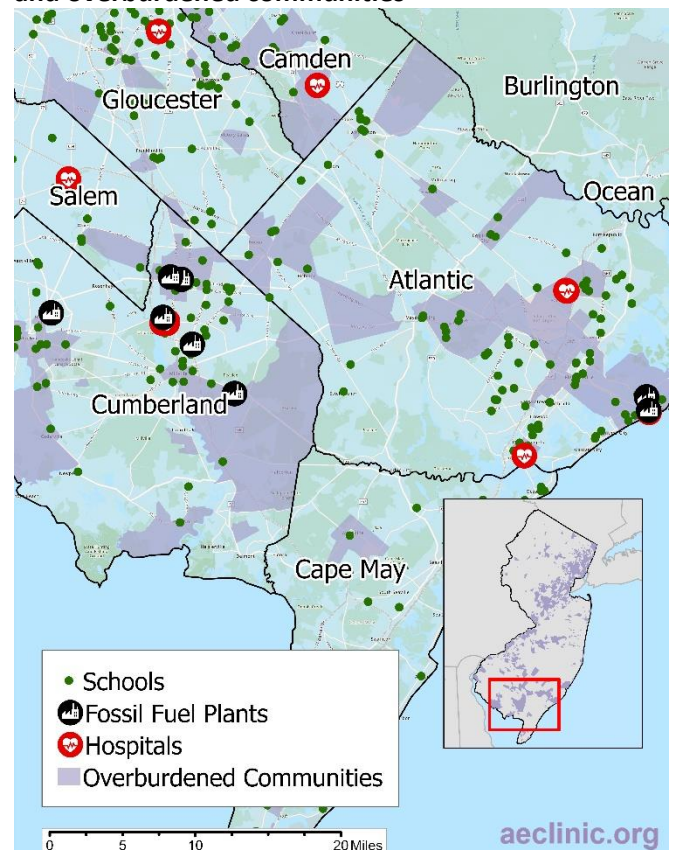
Cumberland County hosts a cluster of fossil fuel-fired plants with a combined capacity of over 400 MW, including the five gas combustion generators located at the Carlls Corner, Cumberland, and Sherman Avenue plants. Cumberland County also has the highest asthma rate in the state: just over 9 percent in 2020.

Camden and Gloucester Counties have some of the lowest air quality ratings in the country—however, recent efforts to improve air quality, like replacing diesel

trucks with electric ones, have led to improvement in particulate matter (PM) pollution.

Exposure to PM pollution poses significant health risks, including cardiovascular effects such as cardiac arrythmias and heart attacks, respiratory effects such as asthma attacks and bronchitis, increased hospital admissions, ED visits, restricted activity days, and premature death, particularly among people with pre-existing conditions, elderly people, and children.[17] The potentially lethal risks of PM exposure are especially concerning in South Jersey, where Cumberland and Salem counties have among the largest senior citizen populations in the state, and many schools and hospitals are located in close proximity to fossil fuel plants, putting already vulnerable groups at further risk.

Figure 5. South Jersey: Power plants, schools, hospitals, and overburdened communities

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Policy Recommendations

In 2020, the Murphy Administration reinstated New Jersey's participation in the Regional Greenhouse Gas Initiative (RGGI) in order to meet the state climate target of 80 percent greenhouse gas emission reductions by 2050. The administration continues to pursue legislative channels to implement the EJ law and provide additional protections for overburdened communities. Existing policy actions alone, however, are not sufficient to stem the expansion of fossil fuel industries and their resulting environmental and public health harms.

For example, in January Governor Murphy halted a proposal for a proposed gas-fired power plant in Newark to conduct an environmental review. But there are still active plans to build the plant, which would be the fourth gas-fired power plant in the Ironbound section of Newark, an already overburdened neighborhood where residents experience the cumulative ill effects of pollution from power plants and other industrial sites.[17]

The cumulative impacts of social and economic inequities, paired with unequal health outcomes from air pollution, result in overburdened communities experiencing the most severe effects of climate change and environmental pollution. While New Jersey is pursuing stronger environmental justice laws to protect overburdened communities and the DEP released draft rules for public review in June 2022, the new rules have yet to be finalized, leaving New Jersey's environmental justice communities vulnerable to continued, unfettered exploitation from fossil fuel companies.

The burdens of pollution on New Jersey residents originate not just from polluting plants within the state's borders, but also from other polluting facilities in surrounding states and from contributors to climate change around the world. A complete understanding of the climate impacts of polluting facilities on New Jersey residents must account for impacts from polluters beyond New Jersey's borders, and statewide policy actions aimed at mitigating such climate impacts must be coordinated with other state governments and decision-making agencies to address the global nature of the climate crises that wreak disproportionate harm on all overburdened communities.

Notes

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Note: The fossil plant and hospital that seem to be overlapping in Essex County are a university hospital/Rutgers Biomedical and Health Cogeneration Gas CT. The region without symbols in the southeastern part of Essex County is Newark International Airport, and in the southern part of Bergen County is warehouses and other large commercial sites.

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