NEW JERSEY
League of Conservation Voters
EDUCATION FUND

ENVIRONMENTAL POLICY GUIDE

2021

NEW JERSEY LEAGUE OF CONSERVATION VOTERS EDUCATION FUND

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INTRODUCTION

The New Jersey League of Conservation Voters Education Fund (New Jersey LCV Education Fund) is pleased to present *Environmental Policy Guide: Green In '21*.

Drawing on the expertise of over twenty-five partner organizations -- including environmental, justice, community-based, health, student and civil rights groups -- this broad and holistic compendium illustrates environmental, public health issues and equity challenges facing New Jersey and our communities, as well as the opportunities that lie ahead.

Momentum is with us! The environment, particularly climate change, was a top issue for the majority of voters during the national election. At the state level, New Jersey LCV Education Fund's voice was heard after the release of the groundbreaking Green in '17 initiative which catalyzed all gubernatorial candidates to embrace a pro-conservation strategy. Since then, the New Jersey LCV Education Fund has emerged as a national leader on climate and environmental issues. The diligence of New Jersey LCV Education Fund along with its partners has placed New Jersey ahead of the curve on many environmental issues despite the irresponsible deregulatory agenda initiated by the previous state and federal administrations. Since 2018, innovative actions with regard to safe drinking water, a clean energy economy, environmental justice, and open spaces are just a few areas where significant progress has been made.

As you read through the guide, you'll find that New Jersey LCV Education Fund's goals remain simple and straightforward. Securing swimmable, fishable and drinkable water for all, cleaning up air pollution, limiting development in flood zones and codifying New Jersey's one hundred percent clean energy future for the health of the public – and the environment – are all priorities. We expect the opportunities outlined in this guide to lead to very real and tangible results that effect positive changes for New Jerseyan's, especially our most vulnerable communities.

We understand that the road to a clean energy, pro-conservation future is long and complex. There will be roadblocks that stand in the way of progress. However, our commitment to prepare a sustainable transition to a just, one hundred percent clean energy economy has never been more focused. We ask that you join us on our journey to make *Green In '21* a reality. Together we will leverage New Jersey's environmental accomplishments over the past four years, and work to build a more equitable, healthier and sustainable state for generations to come.

Yours in conservation,

Ed Potosnak
Executive Director
New Jersey LCV Education Fund

ABOUT THE NEW JERSEY LEAGUE OF CONSERVATION VOTERS EDUCATION FUND

The New Jersey League of Conservation Voters Education Fund is a non-profit organization that guides and educates to protect our families and communities and safeguard our natural resources, now and for future generations. We provide the public, policymakers, and opinion leaders with sound, objective information that encourages strong, equitable and environmentally just solutions. We work to protect democracy by empowering and mobilizing people to engage in the democratic process. We support and organize with communities to connect environmental policies to people's daily lives. Our mission is to work with and support marginalized communities to create policies that rectify environmental injustices, and establish a just, inclusive, and equitable environmental future. We cultivate environmental leaders that support policies and protect New Jersey's natural resources for our children and grandchildren and ensure a prosperous economic future.

For more information visit www.njlcvef.org

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GREEN IN '21

NEW JERSEY LEAGUE OF CONSERVATION VOTERS EDUCATION FUND

ACHIEVE 100% CLEAN ENERGY

- Create the pathway to our 100% Clean Energy Future
  - Develop a Clean Energy Standard that requires 100 percent clean electricity by 2035
  - Transition fossil fuel peaker power plants, often located in environmental justice communities, to clean renewables and battery storage
  - Initiate a gas planning proceeding to comprehensively evaluate the current and future fossil fuels needs of the state and empower New Jersey BPU to balance reliability, affordability, equity, and lowest possible emission energy products
  - Stop diversions of Clean Energy Fund
- Reduce Greenhouse Gas Emissions
  - Align state greenhouse gas emissions reduction goal with federal target of 50-52 percent reduction from 2005 levels in 2030
  - By 2030, new residential and commercial buildings should be 100 percent electric and 80 percent of existing housing stock that serves low-income households and 50 percent of all residential buildings should achieve high levels of energy efficiency
  - Incentivize the sale and installation of energy efficient and zero emission equipment, when replaced at the end of useful life in residential and commercial buildings
- Create jobs by establishing a Civilian Climate Corps and updating Career Technical Education standards to include climate change, green economy and energy

CLEAN WATER FOR ALL

- Update the Water Supply Master Plan to include long-range planning and climate change impacts
- Regulate emerging contaminants in our drinking water beyond the single-chemical approach and adopt new Lead and Copper Rule
- Invest in water infrastructure and utilities to eliminate combined sewer overflows and lead service lines and create community-based jobs
- Plan on a watershed scale, to recognize that land use impacts water quality and integrate water quality standards and existing water impairments into the land use permitting process, especially for vulnerable waterbodies like the Delaware River and Barnegat Bay
- Support the implementation of stormwater utilities at the local level

PROTECT OUR NATURAL LANDS AND PARKS

- Increase funding for preservation, stewardship and protection of natural lands and parks, including addressing critical backlog of capital park improvements, the development of new and maintenance of existing trails, and protection of critical habitat
- Ensure everyone in urban areas lives within a 10-minute walk to a park and prioritize establishing additional, and protect existing, state parks in these areas

PRIORITIZE OUR COMMUNITIES

- Increase support for urban agriculture and access to affordable and healthy foods
- Address warehouse sprawl without placing the burden on environmental justice communities to handle new demands of movement and storage of goods
- Stop plastic pollution and reduce food, textile and electronic waste that overwhelms our landfills and incinerators
- Support inclusive redevelopment and reconnect communities through safer streets
- Take a "whole house" approach to addressing lead, health and energy efficiency improvements, with low- and moderate-income households at the front of the line
- Promote green and resilient buildings through incentives, technical support and supportive policies
- Align all state revenues for climate change mitigation, adaption and investment in the clean energy economy under a common strategy that includes at least 40 percent be dedicated to front-line communities
- Provide stronger coastal management policies and rules to reduce risk, promote natural landscapes and allow municipalities and New Jersey DEP to say no to development and redevelopment in high-risk flood areas
- Adopt a statewide sea level rise standard and include climate data in reviewing risks and vulnerabilities for state investments and hazard mitigation planning

- Preserve 30 percent of our land and waters by 2030 and target 50 percent by 2050
- Create an Outdoor Recreation Council to promote the outdoor recreation economy
- Establish an umbrella organization to support "friends" groups for parks and open spaces
- Invest in and expand carbon sequestration provided by forests and wetlands

SAFE AND CLEAN TRANSPORTATION

- Establish a dedicated funding source for NJTransit to end capital to operating budget diversions
- Pursue opportunities for microtransit options for populations underserved by existing transit
- Get NJTransit climate and electrification ready and capitalize on federal funding opportunities
- Promote Complete and Green Streets and Implement Vision Zero initiative to eliminate transportation related deaths to build more walkable, bikeable and liveable communities
- Explore regional opportunities to invest in transportation sector emission reductions

CLIMATE

CLIMATE CHANGE IS A PUBLIC HEALTH CRISIS

Perhaps one of the most understated, yet wide ranging, impacts of climate change is the negative impact it has on human health. While climate affects all of us, very often health impacts are disproportionately experienced by our most vulnerable populations – leading to a host of equity concerns. To date, over a hundred medical and public health agencies have declared climate change an emergency, and the current trajectory suggests that the negative effects being observed now will compound over time.

Protecting New Jersey's vulnerable populations from the health impacts of climate change will require a holistic, multi-agency approach that addresses the root causes of these disparities.

Historically, New Jersey's low-income communities and communities of color have been subject to undue environmental and public health stressors including exceptionally high levels of air and water pollution. Additionally, overburdened or **environmental justice communities** are likely to live near flood zones and/or with antiquated infrastructure.

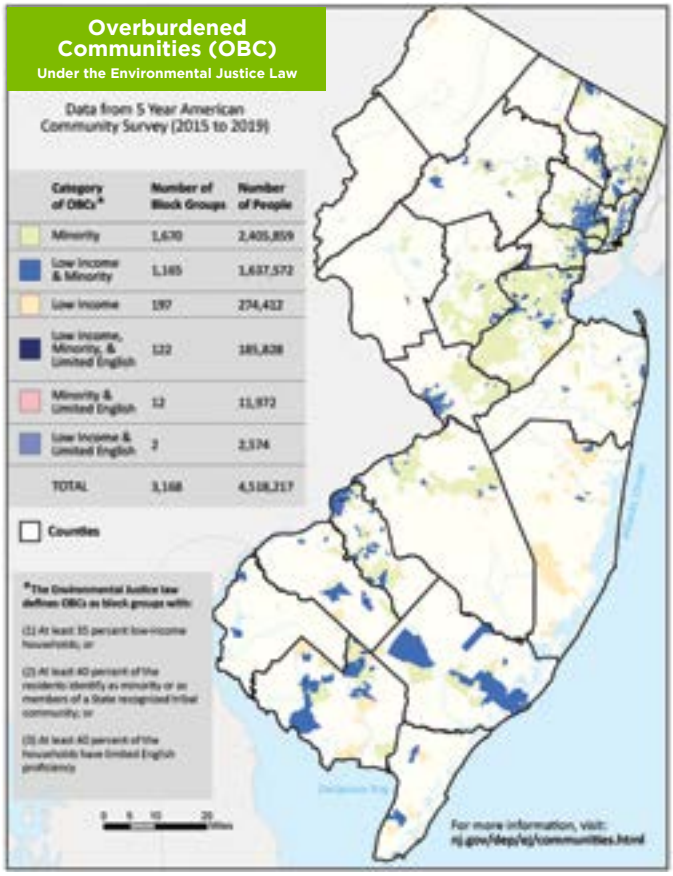
➔ What Is An Environmental Justice Community?

An environmental justice community is an area where residents have the highest risk of exposure to pollution in the air, water and soil. This pollution may be caused by passing vehicles or by past or present activities of businesses and institutions.

Recent legislation signed into law identifies New Jersey's overburdened or environmental justice communities.

AIR POLLUTION

At the federal level, the Clean Air Act (CAA) – the United States federal law that limits national air pollution – has been a successful piece of legislation in terms of health outcomes. Studies estimate that the emission-cutting regulations have prevented 130,000 heart attacks, 1.7 million asthma attacks, and 13 million lost workdays between 1990 and 2010. In 2020 alone, an estimated 230,000 adult premature deaths and 280 infant deaths have been prevented. While these statistics give much cause for celebration,



New Jerseyans still breathe some of the worst air in the nation. In fact, New Jersey is ranked among the bottom fifteen states for air quality. Strikingly, nine counties in New Jersey earned a failing grade for ground-level ozone pollution according to a 2021 American Lung Association report.

Urban residents endure some of the worst air quality – and subsequent ill health effects – as these areas tend to be populated with low income residents and communities of color as a result of historic redlining throughout the country. Many of the emissions are from burning fossil fuels. Fossil fuels not only produce

greenhouse gases (GHGs), which warm the planet, but also produce harmful air pollution. Some of the major components of this air pollution are nitrogen dioxide (NO2), carbon monoxide (CO), fine particulate matter (PM2.5) and other volatile organic compounds (VOCs).

The statistics are alarming. According to a 2018 American Public Health Association report, African Americans have a 36 percent higher rate of asthma incidents and are three times more likely to die or visit the emergency room from asthma-related complications than non-Hispanic whites. And, nearly one in two Latinos live in counties with poor air quality. Latino children are twice as likely to die from asthma as non-Latino whites, and Latino children living in areas with high levels of air pollution have a heightened risk of developing type 2 diabetes.

In the United States, outdoor air pollution is estimated to be responsible for 5 to 10 percent of the total annual premature mortality in the contiguous United States, according to a 2020 report published by Nature, and in New Jersey long-term exposure to particulate matter from fossil fuel combustion has been responsible for 17,646 premature deaths according to a Harvard 2021 study as reported by Environment New Jersey, Research and Policy Center. In New Jersey's densely populated urban communities, pollutants emitted from burning gas, oil and propane in buildings – particularly particulate matter (PM2.5) and gaseous pollutants like nitrogen oxides (NOx) which form ground-level ozone – are a leading cause of poor air quality and premature deaths.

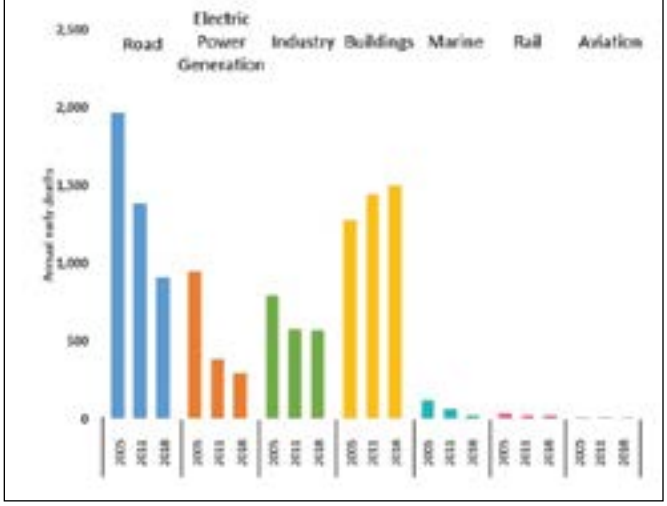
Long-term exposure to NOx can decrease lung function as well as increase the risk of respiratory conditions and allergen response. When combined with sunlight and other pollutants, NOx forms a secondary pollutant – ozone – which is also associated with respiratory illnesses.

HEAT AND EXTREME WEATHER CONCERNS

New Jersey's average temperature is 3.5 degrees Fahrenheit higher than the first records from 1895 according to a 2020 scientific report by the Department of Environmental Protection (DEP). Continued warming at historically unprecedented levels is projected, with the state's average annual temperature expected to rise another 4.1 to 5.7 degrees Fahrenheit by 2050.

Overburdened communities are some of the most impacted by this trend as residents are less likely to have air conditioning. These communities also live among an abundance of heat absorbing paved surfaces, and lack tree cover to provide a cooling effect. This is known as Urban Heat Island (UHI) effect. The effects of UHI are felt disproportionately by formerly redlined neighborhoods, where temperatures are on average 4.7° F warmer than non-redlined areas.

Annual Premature Deaths in New Jersey due to In-State Combustion Emissions (PM2.5 & Ozone) by Sector



Graph depicts in-state and cross-state pollution. All combustion emission sources include gas, wood, oil, propane, etc. from the commercial and residential building sector. Source: Dedoussi et al., Nature Feb 2020 (MIT study- supplemental material).

➔ What is redlining?

Redlining describes the historic and discriminatory practice of fencing off areas where banks would avoid investments based on the racial makeup of certain communities. This practice was banned under the Fair Housing Act of 1968, however its legacy has persisted in other ways where pollution and climate change disproportionately impact former redlined communities.

Studies show that hot days are associated with an increase in medical services for heart and lung conditions, renal failure, electrolyte imbalance, kidney stones, fetal health and preterm birth. Heat stress can exacerbate chronic health conditions including cardiovascular and respiratory diseases. High temperatures also degrade air quality, which is already a problem in many parts of the state. And, sunlight and high temperatures, particularly in summer, accelerate the production of ground-level ozone, which can irritate the lining of

the lungs, trigger asthma as well as aggravate respiratory diseases like chronic obstructive pulmonary disease (COPD) and bronchitis.

Extreme weather events are also on the rise. Superstorm Sandy – the strongest, most destructive hurricane of the 2012 Atlantic hurricane season – not only caused significant economic losses through damage to homes, businesses, infrastructure and lost productivity, but also harmed the physical and mental health of many residents.

Other health issues related to extreme weather include carbon monoxide poisoning from improper generator use and stomach and intestinal illness due to mold and mildew exposure from water-damaged buildings. Disruptions in power and transportation and displacement of residents after a storm can hinder access to medications or treatment of chronic conditions. While Sandy was arguably the most devastating storm in New Jersey's recent history, it's important to remember that it was downgraded to a tropical storm before it hit the New Jersey shoreline. This should be both humbling and alarming in terms of the state's vulnerability and what life could look like with accelerated climate change.

WATER CONTAMINATION

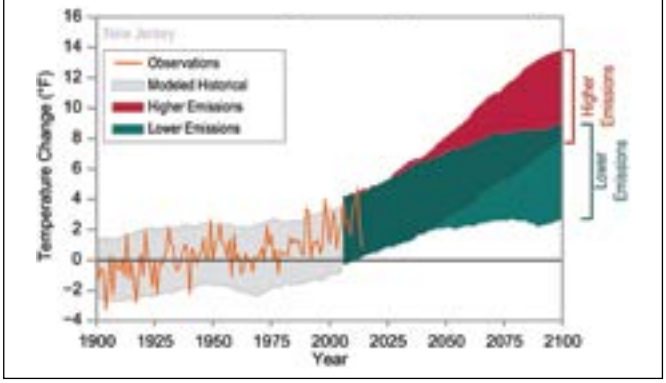
New Jersey is the most densely developed state with 12 percent of its land mass covered by impervious or paved surfaces. This makes stormwater management and water pollution increasingly problematic. In New Jersey, annual rainfall is expected to increase 7 percent to 11 percent by 2050 according to a 2020 report from the New Jersey Department of Environmental Protection and will likely result in more frequent and intense rain events that cause localized flooding. Heavy rains and flooding put many communities in New Jersey at risk of water contamination caused by antiquated combined sewer systems (CSOs) that are designed to release sewage overflow into nearby waterways when rain overwhelms the system. During overflows, local waterways and streets can be flooded with raw sewage. Direct exposure to sewage has many serious health implications, including infectious diseases such as cholera, typhoid, hepatitis, polio, cryptosporidiosis, ascariasis and schistosomiasis. New Jersey has more than two hundred CSOs, and they are mostly located in large, population-dense cities, such as Newark, Jersey City and Camden.

Increased stormwater runoff contributes to declining water quality all over the state. Runoff from roofs, roads and parking lots can contain significant concentrations of copper, zinc and lead, which can have toxic effects in humans. According to New Jersey Department of Environmental Protection (DEP), nearly 95 percent of New Jersey's waterways do not meet water quality standards. Runoff pollution can also introduce bacteria and chemicals into surface waters. Exposure to biotoxins from swimming and other forms of recreation in water contaminated by failing septics, animal waste or excess nitrogen can cause various illnesses including ear and eye discharges, skin rashes, gastrointestinal problems and even miscarriages.

GREENHOUSE GAS EMISSIONS CONTINUE TO SOAR

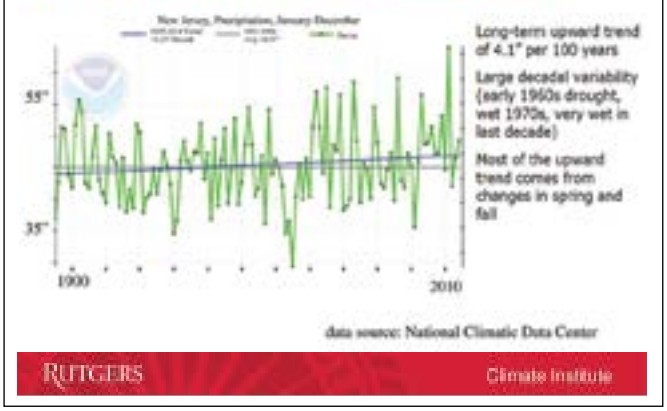
Despite the growth of clean energy resources, GHG emissions and atmospheric concentrations of greenhouse gases continue to soar. A 2018 Intergovernmental Panel on Climate Change's

Observed and Projected Temperature Change



Source: National Oceanic and Atmospheric Administration

Trends in Annual Mean NJ Precipitation: 1895-2014



(IPCC's) special report: Global Warming of 1.5 Degrees C, indicates that in order to product clear benefits to people and natural ecosystems, it is advisable to avoid more than a 1.5 degree Centigrade average warming. To accomplish this, overall global CO2 emissions must decline by roughly 50 percent from current levels by 2030, with moderately negative (negative 110 percent) net reductions by 2050.

These reductions will be absolutely necessary if we are to avoid the worst impacts from climate change. Sea level rise in New Jersey is already twice the global average and a recent Union of Concerned Scientists study found that during the next 30 years, 62,000 homes in New Jersey are at risk of chronic flooding. Disturbingly, 15 to 20 percent of the at-risk homes were built after 2000 and 2,600 of those homes were built or rebuilt after the ravages of Superstorm Sandy.

Our atmosphere is not the only thing that is warming. Oceans absorb about 50 percent of carbon emissions along with heat from the atmosphere. This warming causes the oceans to become more acidic and threatens many delicate ecosystems which are major sources of the world's food supply.

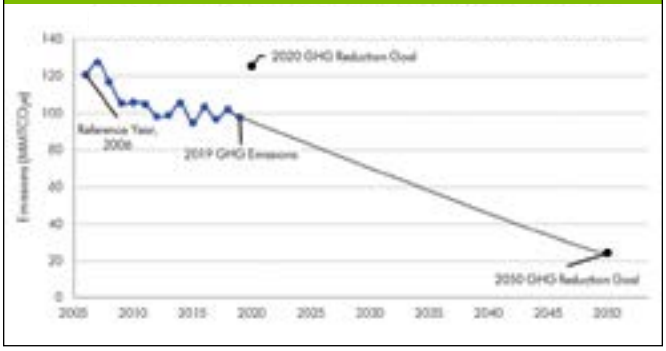
DECARBONIZING THE SYSTEM

Decarbonization is the reduction of carbon dioxide emissions through the use of low-carbon power sources in order to achieve a lower output of greenhouse gases into the atmosphere. Reducing carbon dioxide emissions from the electric generation system will be important as more products and energy uses switch to electric. Keeping clean electricity affordable is critically important, as low electricity prices will help ensure that consumers choose electric heating and cooling technologies over natural gas for manufacturing and heating, and electric vehicles over those powered by fossil fuels.

The IPCC report indicates that global emissions from electricity generation must be reduced by nearly 70 percent by 2030, including both the PJM region's (the electrical market that encompasses Pennsylvania, New Jersey, Maryland, and several other states) and New Jersey's own internal electric generation emissions. Such deep early reductions from electricity are essential for success and can be achieved at a reasonable cost in the coming decade by the rapid deployment of today's low-cost wind and solar energy technologies.

The first step is to achieve a reduction of 70 percent of current power sector emissions in the next ten years. This will require substantial amounts of new carbon-free resources to be deployed throughout the state and region. In addition, the maintenance of mechanically and economically sound nuclear plants will be needed to drive the necessary reductions from fossil-fueled energy generation. Given the scale of GHG emission reductions needed in the next ten years, limits on financial resources and need to control costs, it will be essential to get the most tons of GHG emission reductions for every dollar spent on clean electricity.

New Jersey's Historical Greenhouse Gas Emission and Reduction Targets



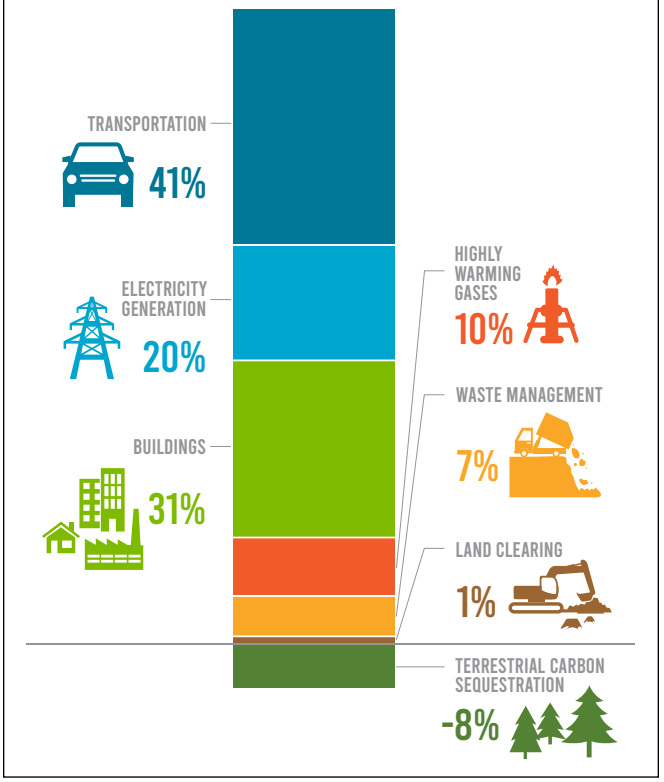
The New Jersey Legislature enacted the Global Warming Response Act (GWRA) in 2007 in order to help curb global climate change by establishing aggressive goals to reduce emissions of greenhouse gases in the state:. The goals were to 1990 emissions levels (approximately 125 MMTCO2e) by the year 2020, and to 80 percent below 2006 levels (approximately 24.1 MMTCO2e) by 2050.

Source: New Jersey Department of Environmental Protection

Keeping clean electricity affordable during the coming decades of rapid decarbonization is particularly important for low- and moderate-income consumers as is the reduction/elimination of emissions. Fossil fuel use, including for electricity generation, often has a disproportionate impact on such communities. The combustion of fossil fuels also emits co-pollutants – such as PM2.5 and ozone precursors – which negatively impact the health of those adjacent to fossil generators.

Policies to avert the climate crisis through reduced GHG emissions must prioritize the reduction of local emissions of co-pollutants to address environmental injustices. Careful planning is required to ensure that existing pollutant generation is eliminated or replaced with clean energy resources, and that new fossil fuel projects are not located in such communities. Careful planning must also consider the entire

NJ Greenhouse Gas Sources & Sinks 2019 (Projected)



Source: New Jersey Department of Environmental Protection

regional electric system, so that reductions do not result in increased emissions – or "leakage" – in power plants located outside of the state.

Ensuring environmental justice requires looking beyond the electric sector alone for achieving clean energy use in all of today's major fossil fuel end uses. For example, the largest source of co-pollutants in New Jersey, by type of energy using activity, is transportation (41 percent), buildings and industrial (31 percent), and electric generation (20 percent).

Most experts agree that the path to fully clean energy starts with the rapid deployment of clean electricity resources in the electricity sector, on the path to zero electric generation emissions by 2050. Concurrently, clean electricity can be used to replace fossil fuel use in the transportation and building sectors, as clean electric technologies displace the use of fossil fuels in vehicles and buildings. Electrification of the transportation sector must also be done hand in hand with reducing total vehicle miles traveled to achieve GHG reduction goals.

Environmental justice concerns must be addressed throughout the GHG reduction process. For example, successful electric heating and cooling of buildings depends on the buildings being well-insulated and weatherized. Enhanced building efficiency can immediately bring direct and indirect benefits to low- and moderate-income communities, including lower housing costs and better indoor air quality. And, as a result, increased job opportunities may arise. As weatherized buildings shift from using gas, oil or propane for heating to highly efficient electric appliances, communities will eliminate the primary source of premature deaths due to combustion emissions in New Jersey. These and many more environmental justice benefits as a result of the shift to one hundred percent clean energy must be identified and developed through the direct involvement of affected communities.

For Reference: Current Climate Change Goals

	2050	2035	2030	2020
FEDERAL	☐ Net-Zero GHG Emissions ☐ Limit Global Warming to 1.5° C	☐ 100% Carbon Pollution-free Electricity	☐ 50-52% GHG Reduction From 2005 Levels ☐ Conserve 30% of Lands + Oceans	☐ Justice40 Initiative
NEW JERSEY	☐ Achieve 100% Clean Energy ☐ 80% Below 2006 GHG Levels		☐ Retail Electricity Must be 50% Renewable Energy Resources ☐ 2,000MW Energy Storage	☑ Draft Climate Resilience Plan ☑ 1990 GHG Emission levels ☑ Energy Master Plan Update

ACCELERATE DECARBONIZATION THROUGH A CLEAN ENERGY STANDARD (CES) FOR NEW JERSEY

New Jersey policymakers recognize the critical need to decarbonize the state as well as the region to promote clean energy and mitigate climate change. New policy tools and regional approaches to dramatically expand the development of renewable resources within the regional electric grid, extending from Illinois to Virginia, have been explored and require finalization. New Jersey's Energy Master Plan of 2019 called for a Clean Electricity Standard (CES) to augment or replace the Renewable Portfolio Standard (RPS). After more than two years of policy exploration and development, technical conferences with national experts and stakeholder input, it is time to mandate the adoption of a Clean Energy Standard.

WHY A CLEAN ENERGY STANDARD IS NECESSARY

An addendum to the existing RPS, New Jersey's CES would greenlight more aggressive clean energy requirements for operation by 2023 in order to generate additional GHG emission reductions in New Jersey and the wider regional grid. The current Renewable Portfolio Standard (RPS) and Renewable Energy Credit (REC) market were important policy tools to begin the buildout of solar and wind resources, but lack key features needed to reduce emissions at higher levels of renewable deployment. Based on the most recent IPCC findings, the new CES should require 100 percent of all electricity sold be from clean electricity by 2035, with net negative emissions by 2050. At the same time, the CES should be structured so as to provide strong ratepayer protections against excessive costs.

HOW THE CLEAN ENERGY STANDARD WOULD WORK

Under the CES, each new or existing generating resource in the region that emits zero carbon (i.e., wind, solar, nuclear and hydroelectricity) will be eligible to sell one Clean Electricity Credit (CEC) for each megawatt-hour (MWH) of electricity generated. All New Jersey load-serving entities who sell electricity to retail customers would be required to procure enough CECs to meet the required share of clean electricity. Various types of Renewable Energy Credits (RECs) used to meet existing RPS requirements would also count toward the CES requirement. Every CEC, like every regional REC, will represent one measured, verified and real MWH of clean electricity that has been injected into the regional electric grid.

Because the grid cannot hold or store more electricity than is generated, each injection of a clean MWH displaces another MWH from an existing regional generator. A CEC therefore demonstrates this displacement of existing generation, as well as the avoidance of the CO2 that would have been emitted. However, there is no guarantee that this displacement of existing generation will take place in communities disproportionately affected by local, fossil-generation resources, due to the electricity market and the disproportionate existence of existing fossil fuel infrastructure. Therefore, environmental justice will require additional policies to ensure that such emissions are not allowed to circumvent the CES. This will spur highly sustainable development in such communities.

NEW JERSEY'S CES CAN:

- **Be structured to provide new clean electricity projects with a predictable multi-year revenue stream from the sale of Clean Electricity Credits (CECs).** These additional, relatively stable revenues will directly support new investment in a variety of in-state and regional clean energy resources needed for New Jersey and other PJM states with clean energy goals to aggressively reduce emissions. And, since projects would compete to sell CECs, the resulting competition will tend to select the best managed projects, resulting in the most affordable mix of clean energy resources being continually developed.
- **Support a reliable clean grid.** The CES will go beyond the limited incentives for wind and solar provided by the RPS and offer incentives for the entire mix of resources needed to maintain a reliable electric grid. A properly designed

CES can support the rapid development and efficient deployment of flexible resources like batteries and "always available" clean firm resources (e.g., zero-carbon gas, new types of long-term storage and, potentially, new, safe and economical nuclear technologies) that will be essential for reliability and low costs during extended weather extremes.

- **Support a mix of New Jersey and regional resources that ensures affordability for all customers and is critical for electrification goals.** New Jersey has relied on regional clean energy resources to meet RPS targets from the outset, a policy that was necessary to reduce the impact on electric rates. In 2020, regional resources provided 75 percent of New Jersey's RPS credits, while requiring only 12 percent of the total spent to meet the RPS target.

  One approach to ensure that the overall costs of decarbonization remain affordable would be for the state to establish a budget for total ratepayer costs for clean electricity that is sufficient to meet the decarbonization goal using an evolving mix of resources. Targeted carve-outs can ensure that competitively procured in-state resources with net ratepayer benefits are part of the mix, and within the budget. An aggressive CES with such a realistic budget to ensure electricity rates remain affordable will create a virtuous cycle that accelerates decarbonization in the electric, transportation and building sectors. Coupled with appropriate policies to ensure equitable benefits across communities, as discussed above, this dynamic can not only protect the future, but help remedy historic energy-related inequities.

- **Enlist regional resources to faster decarbonization.** Faster deployment of new regional clean energy resources reduces emissions on a scale required by climate science.

- **Initiate the development of a large-scale, competitive regional clean electricity credit market.** To ensure low-cost compliance with such an aggressive CES will require a highly competitive, regional market for clean energy credits (CECs). New Jersey is well positioned to lead the development of such a market, in collaboration with other clean energy states and with PJM. This market will help keep costs low for consumers and maximize the amount of GHG emissions abated per dollar spent. Not only will it ensure a competitive price for clean energy credits, but it could further lower the cost to develop new clean energy projects by providing a multi-year revenue commitment to clean energy project developers. With a more secure revenue stream and a much higher demand for CECs (and the clean megawatt-hours they represent), more clean projects can be financed and built in the near term, at lower cost, which is critical to averting the growing climate crisis.

POLICY RECOMMENDATIONS

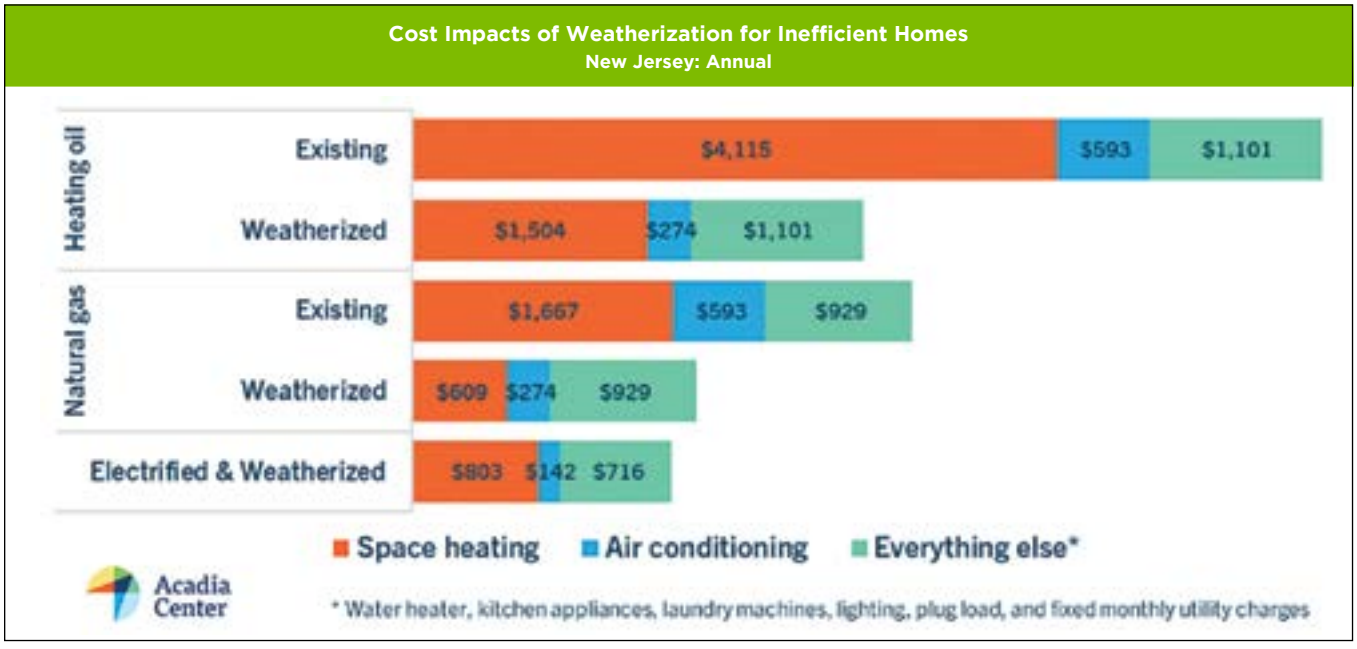
- ➔ **Ensure the administration and advocates work with the Legislature to develop Clean Energy Standard (CES) legislation for New Jersey, requiring 100 percent of all electricity sold be from clean electricity by 2035 and negative 110 percent by 2050 (no emissions plus 10 percent of current emissions permanently removed from the atmosphere).**
- ➔ **Build off of existing stakeholder processes, such as BPU's RPS process, to inform the development of legislation and implementation.**
- ➔ **Utilize agency expertise and resources to answer technical questions in the development of a CES.**
- ➔ **Allow for external and internal stakeholders to design the implementation of any program, including consideration of sources and budget.**
- ➔ **Consider equity goals – including achieving high levels of greenhouse gas emissions avoided per dollar spent on clean electricity – targeting environmental justice communities and ensuring affordable electricity for consumers. Include savings from mitigating climate change and its public health implications in any cost-benefit analysis.**
- ➔ **Create policies that ensure reductions through electrification of vehicles, improved building energy efficiency and rapid building electrification. New approaches will be needed to reduce emissions from power plants located in New Jersey.**

REDUCE HARMFUL EMISSIONS FROM NEW JERSEY BUILDINGS

According to the American Council for an Energy-Efficient Economy (ACEEE), low-income households in the Mid-Atlantic region spend an average of 9.4 percent of income on energy bills — close to three times what middle- and high-income households pay. These energy burdens frequently weigh more heavily on communities of color. According to a 2020 report from the The American Council for an Energy-Efficient Economy (ACEEE), across the nation, Black households spend 43 percent more of income on energy costs than White households; Hispanic households spend 20 percent more and Native American households spend 45 percent more than white households. Current state programs, such as Comfort Partners, are designed to assess energy usage, weatherize homes and then install efficient appliances, yet many low-income households do not qualify for such efficiency retrofits because of issues such as asbestos, lead, leaky roofs or mold. New approaches are needed to address building updates in a holistic manner, starting with a healthy home and energy assessment, followed by a broader range of services. A holistic approach to building updates will improve access for low-income households and help reduce indoor pollution and make buildings more comfortable and more efficient. New Jersey recently funded a Whole House pilot project within the United States Department of Energy (DOE) to ensure energy-efficient and healthy indoor environments by blending funding sources and expertise to offer comprehensive redevelopment of housing in vulnerable communities. We expect this program and future programs like this will begin to address the problems associated with air quality and indoor health.

Reduce fossil fuels and energy bills. Currently, residential and commercial buildings produce about 30 percent of the state's greenhouse gas emissions, and represent the second largest source of emissions after transportation. These substantial greenhouse gas emissions are produced primarily by gas furnaces and water heaters, and to a much lesser extent, by oil and propane furnaces.

Weatherized homes are a key strategy for reducing greenhouse gas emissions in the state as New Jersey's housing stock is older and less energy efficient than the national average. Research shows that for energy inefficient – or leaky – homes in New Jersey, weatherization can substantially reduce heating and air



conditioning costs for homes using oil, propane or natural gas. Weatherization together with switching to electric appliances further reduces annual energy bills. As shown in the graphic, for an inefficient home that uses oil for space heating, weatherization reduces total energy bills by 50 percent and switching to electric appliances further reduces energy bills by 42 percent. The combination of weatherization and switching to electric appliances also reduces total energy bills for homes that currently rely on natural gas.

After an older building has been weatherized, highly efficient electric appliances – particularly cold climate air source heat pumps (CCASHPs) and heat pump water heaters (HPWHs) – can reduce energy usage and bills. The installation of electric appliances not only eliminates the combustion of fossil fuels from homes and businesses, a critical strategy in addressing climate change, but also improves local air quality. Furthermore, the emissions benefit from electric appliances increases over time as electricity becomes cleaner and eventually carbon free. A new gas furnace locks in GHG emissions over the lifetime of the appliance.

CCASHPs provide a number of advantages for all households, but particularly for low-income households. Consumers report improved comfort with heating, as the equipment is designed to maintain a constant temperature. Heat pumps also provide the most efficient air conditioning available at low operating costs.

Data from other states show that when market barriers are reduced, consumers frequently choose electric appliances. For example, when energy audits are conducted and consumers can follow expert recommendations for cost-effective weatherization at low costs; when HVAC installers are trained on the current generation of highly efficient electric appliances; and when retailers carry popular models and offer instant rebates, then electric appliances are often chosen over gas appliances.

PRIMARY CONCERNS:

- Energy costs are disproportionately high as a percentage of income for low-income households, especially in communities of color.
- Buildings in New Jersey have a high carbon footprint, both because the housing stock is older and less energy efficient and because buildings rely on fossil fuels for space and water heating.
- Electric appliances, like heat pumps, are highly effective in cold climates, but market barriers prevent these items from gaining market share.
- Fossil fuel appliances contribute to air pollution and GHG emissions and need to be phased out.
- Natural gas rates will increase as consumption declines and the cost of maintaining the gas system is borne by fewer customers. A proactive, planned transition from gas to electric appliances for low-income and moderate-income consumers will protect these households from increasing gas bills.
- Increasing energy codes is a cost-effective and foundational strategy for reducing energy usage and energy bills in New Jersey. Building energy codes dictate the minimum energy efficiency for new building construction, major renovations and additions in existing buildings. In this way, energy codes represent the floor, i.e., the least efficient building standards by law. Municipalities should have the option to opt in to a zero-net-energy stretch code that is more aggressive than base code to achieve higher energy savings.

POLICY RECOMMENDATIONS

- Ensure new residential and commercial buildings are 100 percent electric by 2030 and create a roadmap, with stakeholder input, to put New Jersey on the path to achieve goal and prioritize investments in affordable and multi-family projects.
- Reform NJ BPU Clean Energy Program to target conversion of building heating from fossil fuels to electricity, prioritizing conversion of heating oil and propane customers.
- Set goals to achieve high levels of energy efficiency and healthy homes for 80 percent of existing housing stock that serves low-income households by 2030, and 50 percent of all residential housing within the state. A holistic and integrated approach to assessment and program delivery will enable lower program costs and expanded resources. To achieve these goals will require coordination across agencies and may draw on multiple funding sources.
- Pass legislation that requires the New Jersey Board of Public Utilities (BPU) to reduce GHG emissions, consistent with New Jersey laws and require utilities to achieve annual GHG reduction targets in their energy efficiency programs. In addition, legislation will require BPU to comply with state environmental and public health goals when evaluating the development of new energy infrastructure. Ensure underserved communities receive at least 40 percent of the benefits from emissions reductions.
- Pass legislation to require BPU to adjust utility policies that do not align with building electrification and investment in a resilient, flexible grid, such as by making available advanced rate designs that reward – rather than penalize – customers for installing efficient, electric technologies that can reduce cost of service for all customers.
- Enact a New Jersey zero-net-energy stretch code that is more aggressive than base code to achieve higher energy savings for residential and commercial homes and buildings which municipalities may adopt voluntarily. Update the energy stretch code statewide along with energy base code updates to ensure a consistent above-code option. Implement a mandatory statewide zero-net-energy code in the state no later than January 1, 2028.
- Collect data on both the successes and failures of New Jersey's Whole House pilot and adjust program steps as needed to bring the Whole House approach to full scale in New Jersey's most vulnerable communities.

ADDRESS PROBLEMS ASSOCIATED WITH GAS STOVES, HOUSEHOLD AIR POLLUTION AND ASTHMA

According to the United States Environmental Protection Agency (EPA), Americans spend 90 percent of time indoors and 65 percent at home. Strikingly, concentrations of various pollutants in household air can often be higher than that of outdoor pollution. Multiple sources contribute to household air pollution including tobacco smoke, method of heating, poor ventilation, dampness, chemicals in cleaning products as well as some building materials and types of gas cooking stoves.

INDOOR AIR HEALTH AFFECTS ALL OF US

Cooking with gas increases household air pollution: Cooking with gas generates nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter and formaldehyde. Nitrogen dioxide levels are higher in homes with gas cooking stoves. Unlike other gas appliances, which have chimneys or outlets to vent these emissions, gas stoves often lack these features.

Health Impacts to Children: According to the U.S. Environmental Protection Agency (EPA), short-term exposure to high levels of NO_2 has a causal relationship with asthma and can make asthma symptoms worse. Children are particularly vulnerable to the health effects of air pollution because they are more active, have immature respiratory systems, and have higher lung to body weight ratios. Nitrogen dioxide increases the risk of respiratory illnesses like asthma in children and cooking with gas increases the risk of pediatric asthma by 42 percent. Children who have asthma have more severe symptoms in homes with higher NO_2 levels.

Gas Stoves Can Emit Elevated Indoor Nitrogen Dioxide (NO_2) Levels Often Exceeding Indoor Guidelines and Outdoor Standards

Source: https://rmi.org/insight/gas-stoves-pollution-health

Many households cook with gas: In the U.S., one in three households cooks with gas. While using exhaust fan ventilation can reduce NO_2 concentrations and associated respiratory illnesses, the majority of people do not regularly use ventilation even when available.

Equity: Low-income households are more likely to live in smaller homes, where concentrations of NO_2 from cooking with gas tend to be higher than in larger homes. Low-income households are more likely to suffer from asthma, chronic obstructive pulmonary disease (COPD) and heart disease where household air pollution levels are below EPA ambient standards. Energy efficiency programs, which reduce air flow into the home,

can help reduce energy costs for low-income households, but can increase the concentration of household air pollutants unless sources of pollution like the gas cooking stove are removed or adequate ventilation is installed and used.

Methane in natural gas is a potent greenhouse gas with a warming potential 86 times higher than carbon dioxide. Methane leaks into the air from fracking wells and along pipelines. Electrifying homes and using electric stoves will reduce consumption of natural gas.

PRIMARY CONCERNS:

- People spend most of their time at home where household air quality is often worse than outdoor air quality.
- Cooking with a gas stove increases NO_2 levels in the home.
- Nitrogen dioxide increases the risk of respiratory illnesses like asthma in children.
- Most people don't have or use adequate ventilation to clear air pollution like NO_2 from their homes.
- In smaller homes, cooking with gas can produce higher NO_2 levels that can exceed outdoor air quality standards.
- Low-income households are more likely to use gas cooking stoves for heating, which generates more air pollution than cooking alone.

POLICY RECOMMENDATIONS

- ➔ **Create awareness through state-sponsored programs to developers, contractors, retailers and directly to consumers about the health risks of cooking with gas stoves including that cooking with gas is associated with childhood asthma and that people with gas cooking stoves can reduce pollution by reducing use, ventilating and switching to electric stoves.**
- ➔ **Create awareness through state-sponsored programs to inform families and health care providers that cooking with gas is associated with childhood asthma.**
- ➔ **Enhance government agencies' inspection regulations concerning safe home, plumbing and home inspections and review and revise existing standards and procedures to reduce children's exposure to household air pollution generated by cooking with gas.**
- ➔ **Update building codes to require outdoor-vented gas stoves.**
- ➔ **Require installation of outdoor-vented electric cooking stoves for new, low-income housing funded by the state.**
- ➔ **Offer no-cost or subsidized options for programs retrofitting low-income housing to switch to electric stoves which include funding for electric panel upgrades, installation of outlets for electric stoves and shutting off gas lines.**
- ➔ **Offer state rebates, incentives and low-interest loans to homeowners and contractors installing electric appliances.**
- ➔ **Incentivize the sale and installation of energy-efficient and zero-emission new equipment, when replaced at the end of useful life in residential and commercial buildings.**

BETTER SERVE THE ENERGY-EFFICIENCY NEEDS OF LOW-INCOME HOUSEHOLDS

Low-income energy efficiency (LIEE) programs support households that spend a large portion of their income on utility bills. As mentioned previously, low-income households in the Mid-Atlantic region spend an average of 9.4 percent of income on energy bills – close to three times what middle- and high-income households pay. While some existing LIEE programs have a strong track record of delivering energy savings and non-energy benefits to both low-income households and utilities, there are obvious gaps in these programs that, if filled, would help utilities meet energy-savings goals while improving quality of life for low-income households.

OPPORTUNITIES FOR EXPANDED EFFORTS

More than 30 million low-income families may be eligible for federal weatherization assistance, yet the program is only able to weatherize 35,000 homes annually according to the Alliance to Save Energy. While low-income families are not excluded from programs offered to all residential customers, data show that participation is limited according to a 2016 study by the American Council for an Energy-Efficient Economy (ACEEE).

Barriers, such as the presence of safety issues such as mold or leaky roofs, often prevent low-income households from fully participating in these programs. Utilities have an obligation to make sure the ratepayer-funded programs – to which all paying customers contribute – reach a more representative segment of the population.

PRIMARY CONCERNS:

- Multiple programs with different guidelines, intake and missions.
- Impractical and unneeded documentation requirements for program participants.
- Serious structural issues of a large percentage of low-income residences.

POLICY RECOMMENDATIONS

- **Unify all LIEE programs in the state into a single source for energy efficiency.**
- **Remove all documentation requirements, except proof of ownership and identity, and eliminate the need for social security cards, W2s and other such documents. Use low-income census tracts or defined environmental justice communities for choosing homes and neighborhoods to weatherize, and review and standardize income tests for all energy-efficiency (EE) programs.**
- **Use funding from multiple programs to address what's needed to create homes that are lead-safe, healthy and energy efficient and address factors that inhibit the process such as for those homes that are "deferred" for structural reasons, such as roofing and/or other home health issues such as lead before energy efficiency steps are taken. By combining funds from non-EE programs, this new program can flex the funding to the measures needed by each unit.**

INNOVATIVE ADD-ONS

- **Promote community solar in low-income communities and implement "opt out" rather than "opt in" requirements within the budget established by the New Jersey Board of Public Utilities (BPU).**
- **Combine EE and lead work programs with low-income solar leasing programs which do not require credit checks or income verification.**

PHASE OUT FOSSIL FUEL INFRASTRUCTURE

THREAT TO ENVIRONMENT, SAFETY AND A CLEAN ENERGY FUTURE

New Jersey has been faced with numerous new fossil fuel infrastructure project proposals in recent years including gas and oil pipelines, compressor stations, gas-fired power plants and liquefied natural gas (LNG) terminals. Examples include the proposed PennEast gas pipeline, the Northeast Supply Enhancement (NESE) project, the Southern Reliability Link (SRL), Transco's proposed compressor station in West Milford and the LNG terminal proposed on the Delaware Bayshore.

Collectively, these projects represent a significant threat to critical natural resources, public health and safety as well as pose a block to the transition away from fossil fuels to 100 percent clean energy. These projects would shoulder ratepayers with billions of dollars in costs and result in stranded assets as the state shifts away from fossil fuels.

➔ What are Stranded Assets?

Stranded assets are assets, such as a piece of equipment, resource, or infrastructure, that once had value or produced income but no longer does, usually due to some kind of external shift. For example, the rise of clean energy may leave behind fossil fuel infrastructure as a stranded asset.

New Jersey has strong authority under existing laws and regulations to deny approvals for projects that do not meet the state's strict environmental standards. However, state and federal policies need to be strengthened to better protect against unneeded, polluting projects and existing facilities that are inconsistent with environmental justice and clean energy goals. Additionally, fossil fuel peaker plants, which are turned on to meet peak electricity demand and grid flexibility needs, disproportionately emit air pollutants. In New Jersey these plants are typically located near environmental justice communities such as Newark.

PRIMARY CONCERNS:

- The PennEast pipeline would cut through over 4,300 acres of preserved open space, numerous protected Category One streams (i.e., streams that are afforded heightened protections from pollution and development) and critical habitat for threatened and endangered species. PennEast is attempting to seize property through over forty state preserved lands. Gas experts have shown that the project is not needed and New Jersey's Ratepayer Advocate called it "unfair to ratepayers."
- The Northeast Supply Enhancement Project would emit harmful pollutants in an already ozone-compromised area from a compressor station in Franklin Township as well as threaten water quality and wildlife in Raritan Bay by dredging up one million tons of sediment laced with toxic contaminants including PCBs, mercury, and dioxins.
- New Jersey Natural Gas constructed the Southern Reliability Link through the protected Pinelands National Reserve. Problems with horizontal directional drilling (HDD) during construction resulted in seventeen spills, polluting of streams and damage to one home so severely that the homeowner was forced to evacuate.
- Delaware River Partners is proposing to construct a liquified natural gas (LNG) terminal export facility in Gibbstown, New Jersey, across the Delaware River from Philadelphia. The facility would be the first in the majestic Delaware River Basin, which provides drinking water to approximately 15 million people. The facility would be built atop the DuPont-Chemours-Repauno site, which produced toxic chemicals and explosives for over 100 years and has historically been one of the largest sources of polychlorinated biphenyls (PCB) pollution in the Delaware Estuary. The completed project would also unleash a torrent of trucks and trains through low-income communities in Pennsylvania and New Jersey, each transporting a full load of dangerous, methane-emitting LNG from an upland facility to mammoth ships waiting in port.

- Tennessee Gas Pipeline Company's proposal includes two compressor station modification projects in Susquehanna County, Pennsylvania and Wantage, New Jersey, and a new 19,000-horsepower facility in West Milford, New Jersey that would emit toxic pollutants harming local communities.
- Peaker plants disproportionately contribute to harmful air pollution in environmental justice communities.

POLICY RECOMMENDATIONS

- ➔ **Continue to defend against the seizure of state preserved lands by PennEast or other proposed energy projects.**
- ➔ **Require the New Jersey Department of Environmental Protection (DEP) to fully enforce New Jersey's strong authority under the Clean Water Act, Freshwater Wetlands regulations, Flood Hazard regulations and Coastal Zone Management regulations, and deny permits for projects that don't meet New Jersey's strict environmental standards.**
- ➔ **Demand the DEP strengthen existing regulations to eliminate the presumption that horizontal directional drilling (HDD) is a no-impact construction technique. Require individual permits and detailed geo-technical analyses for HDD installations. Encourage DEP to require that applicants avoid sensitive natural resources rather than assuming that HDD will prevent impacts to these resources, as gas industry studies have shown a 50 percent HDD failure rate.**
- ➔ **Support federal legislative efforts by Chairman Pallone, Congressman Malinowski, Congresswoman Watson Coleman and others to reform the Federal Energy Regulatory Commission's (FERC) flawed gas project certification policy. Reform FERC's gas certificate policies and practices to consider climate impacts, better evaluate public need, treat landowners fairly and prevent the use of eminent domain for projects that don't have final approval.**
- ➔ **Propose that BPU and DEP revise reviews of proposed fossil fuel projects to consider consistency with the Global Warming Response Act, Environmental Justice law, Energy Master Plan and gas capacity planning to prevent costly, unneeded projects that are inconsistent with New Jersey's climate, environmental justice, and clean energy goals.**
- ➔ **Take steps to reduce leakage of methane, a potent greenhouse gas, throughout the natural gas transmission and distribution system.**
- ➔ **Transition fossil fuel peaker power plants, often located in environmental justice communities, to clean renewables and battery storage.**

ALIGN GAS REGULATIONS AND CLIMATE GOALS

Reduction in the use of natural gas is critical to mitigate climate change and to reach New Jersey's 2050 climate and clean energy goals that reduce state GHG emissions 80 percent below 2006 levels, and achieve 100 percent clean energy. The New Jersey Energy Master Plan's Integrated Energy Plan concludes that in order to meet the state's climate goals, natural gas overall consumption must be reduced by approximately 75 percent between 2020 and 2050.

New Jersey is transitioning away from natural gas electric generation through the development of large-scale renewables like offshore wind and solar. In parallel with a cleaner electric system, building decarbonization must also advance through the beneficial electrification of homes and buildings and the shift from natural-gas home heating and cooking to electric.

However, despite New Jersey's strong climate and clean energy goals and policies, there is little reconciliation between gas system regulatory practices and goals. Without adequate early planning and transparency, there is a risk that New Jersey's climate transition will not only be delayed but will be significantly more costly and inequitable. Costs of stranded assets will continue to be borne by vulnerable customers as the affluent transition to electrification.

PRIMARY CONCERNS:

- Gas utilities and regulators continue to operate in a business-as-usual framework assuming static or increased natural gas usage without reconciliation with New Jersey's climate and clean energy objectives
- Continued investment in gas infrastructure that will leave ratepayers on the hook for decades based on an assumed useful life of 60 years, and that raises the risk of stranded assets and increased rates
- Increased rates drive more migration to electrification by those most able to afford it leaving the greatest impact on low-income ratepayers

POLICY RECOMMENDATIONS

➔ **Establish inclusive and transparent decision making**

- Encourage the Board of Public Utilities (BPU) to make the decision-making processes for gas utility activities more transparent and accessible to all stakeholders. These processes should include detailed evaluation of the impact of potential actions on disproportionately impacted communities as well as the environmental and energy justice implications of any approvals.

➔ **Require rigorous long-term planning**

- Encourage BPU to initiate a gas planning proceeding to revisit the way gas utilities are regulated and managed. Gas utilities must be required to engage in holistic and transparent long-term planning that includes a consideration of consistency with state climate and clean energy goals (80% emissions reduction by 2050) and evaluates a broad range of possible actions and solutions that advance a managed, phased and just transition from reliance on fossil gas and the gas distribution system to a clean energy system

➔ **Coordinate near-term decisions and long-term goals**

- Decisions about gas utility operations, infrastructure and rates must be transparent and consider cumulative impacts on customer cost and alignment with long-term system planning and climate goals. In particular, decisions about building, repairing or replacing infrastructure should consider the potential long-term need for that infrastructure given climate goals. Any investment with long-term assets should include evaluation of alternatives, including non-pipeline alternatives.

REDUCE VEHICLE MILES TRAVELED

Reducing greenhouse gas emissions is a critical issue facing our planet. In New Jersey, the transportation sector represents the single largest emitter of greenhouse gases (GHG), accounting for 42 percent of the state's total GHG emissions as of 2018, according to New Jersey's Global Warming Response Act 80x50 Report. More than two-fifths of GHG emissions are generated by moving people and things from one place to another.

PRIMARY CONCERNS:

- State-level discussions of GHG reduction have been dominated by vehicle electrification, but this solution alone will not allow us to reach our GHG reduction targets, nor does it address traffic congestion or generate the same ancillary benefits as VMT reduction.
- The Global Warming Response Act 80x50 Report focuses primarily on vehicle electrification ["decarbonizing" vehicles miles traveled (VMT)] and does not adequately address VMT reduction strategies and solutions.
- The Department of Transportation, the investment decisions of which are primary drivers of travel behavior, is not among the state agencies taking the lead on coordinating the state's climate-change response strategies.

DECARBONIZING TRAVEL VERSUS REDUCING TRAVEL

Total emissions from the movement of people and things can be thought of as the product of total vehicle miles traveled (VMT), and the amount of GHG emitted for each mile of movement (emissions per mile). Total emissions can thus be reduced by reducing either or both of these factors. New Jersey's Global Warming Response Act 80x50 Report, which currently represents the state's definitive statement as to how it intends to confront the challenge of reducing GHG emissions, focuses overwhelmingly on decarbonizing travel by reducing emissions per mile traveled via the electrification of the vehicle fleet. Solutions geared toward reducing the need to travel

in the first place, such as those involving the planning, development and preservation of land and investment in transportation infrastructure, are given much less attention.

Simply put, decarbonizing travel alone, i.e. vehicle electrification, will not get New Jersey to its greenhouse-gas reduction goals if VMT continues to rise. It is imperative that reducing vehicle miles traveled be treated with the same weight and urgency as decarbonizing vehicle miles traveled.

SUPPLY-SIDE SOLUTIONS VERSUS DEMAND-SIDE STRATEGIES

Supply-side solutions, such as electrifying the transportation system, have the benefit of being simplistic to frame. The challenge with demand-side strategies like VMT reduction is that they lack this simplicity and require broader vision, planning and coordination. However, the advantage of this approach is that GHG reductions can be accelerated in a fair and more equitable manner, while improving communities, local economies and individual health outcomes; and in many cases do it in a way that stretches a dollar of investment.

CO-BENEFITS OF VMT REDUCTION

Unlike merely decarbonizing the transportation sector, reducing VMT creates a host of other societal benefits. The most obvious is a

reduction in traffic congestion. Lower VMT leads to fewer vehicles on the road (and lower road construction and maintenance costs), while an electric vehicle takes up just as much space as a gasoline- or diesel-powered vehicle. Fewer vehicular trips would also lead to a reduced need to store vehicles, freeing up some surface parking lots to be redeveloped into productive use.

Reducing VMT is a quality-of-life issue. Less driving means less time behind the wheel and more time for discretionary activities.

Reducing VMT can also aid in making future land development patterns more pedestrian- and transit-friendly and generally encourage a less sedentary lifestyle for individuals. VMT reduction strategies can also advance social equity. By increasing the viability of walking and public transit as options for getting around, the kinds of land-use changes that lead to lower VMT will also make life easier for households that cannot afford to buy and maintain a vehicle. Electrifying the vehicle fleet would accomplish none of this.

POLICY RECOMMENDATIONS

- **Issue a governor's executive order articulating specific strategies for reducing VMT with clear and measurable objectives and with estimated GHG reduction outcomes. Assign ownership of these objectives to specific state departments to develop actions and timelines.**
- **Direct the Motor Vehicle Commission to begin collecting odometer readings as part of the vehicle inspection process, to enable the measurement of VMT at the level of the individual vehicle rather than by measuring vehicle counts at the road-segment level.**
- **Direct key state agencies – in particular the Department of Environmental Protection, the Economic Development Authority, and the Board of Public Utilities – to include VMT reduction measures in their strategies for addressing climate change. Develop a statewide strategy for reducing VMT.**
- **Engage with the Department of Transportation as a partner in developing strategies to reduce vehicular travel rather than enabling more of it. Change the culture at New Jersey Department of Transportation (NJDOT) to focus on moving people rather than vehicles.**
- **Consider replacing level of service (a measure of vehicular traffic flow estimated using Highway Capacity Manual delay-based methodology) with VMT as the metric by which the transportation impacts of new development are to be evaluated, as California has done.**

ELECTRIFY NEW JERSEY'S TRANSPORTATION SYSTEM

As stated previously, reducing greenhouse gas emissions is a critical issue facing our planet. In New Jersey, the transportation sector represents the single largest emitter of greenhouse gases (GHG), accounting for 42 percent of the state's total GHG emissions as of 2018, according to New Jersey's Global Warming Response Act 80x50 Report. More than two-fifths of GHG emissions are generated by moving people and things from one place to another.

With the enactment of a significant market leading Electric Vehicle (EV) law on January 17, 2020, New Jersey has begun carving out a leadership path toward electrification of the transportation system, bolstered by:

- Focus on Electric Vehicle (EV) in the Energy Master Plan;
- The Regional Greenhouse Gas Initiative (RGGI) Strategic Funding Plan;
- The Volkswagen (VW) settlement investment awards;
- New Jersey's signatory to the Northeast States for Coordinated Air Management (NESCAUM) Memorandum of Understanding, a multi-state effort to develop state action plans to deploy zero-emission medium and heavy-duty vehicles;
- New Jersey Department of Environmental Protection's proposed Advanced Clean Truck Rule; and
- Two approved utility filings at the New Jersey Board of Public Utilities (NJ BPU) that will help to build out charging infrastructure for the light duty fleet.

In particular, the Integrated Energy Plan that underpins the Energy Master Plan made it clear that electrifying transportation was a necessary, but not sufficient, least-cost pathway initiative to reach emission goals.

Part of the rationale for New Jersey's focus on electrifying the transportation system is because this one action captures several important high level priorities:

- Improving the health and well being of front line communities;
- Reducing toxic health and environmental emissions; and
- Reorienting New Jersey's economy as a green innovation engine that provides opportunity for all to participate.

If done thoughtfully, and with public input, this initiative has the potential to provide a significant boom to New Jersey's economy. Moreover, with the potential of significant investment coming from the federal government, it will be crucial to fully mine all the opportunities available.

The landscape is shifting quickly, as evidenced by the fact that New Jersey's market leading law is already out of date. While the EV law set goals for light-duty vehicles at 330,000 registered plug-in electric vehicles by 2025, California recently called for 100 percent of zero-emission vehicle sales by 2035. New Jersey law calls for 85 percent of zero-emission vehicles sold/leased by 2040. Further, the current administration joined a letter with other states calling on the federal government to set standards to ensure that all new passenger cars and light-duty trucks sold are zero-emission no later than 2035, as well as set standards for medium-duty and heavy-duty vehicles and supporting complementary policies that set a path toward 100 percent zero-emission sales by no later than 2045.

PRIMARY CONCERNS:

- The state has been supportive of electrification, but more needs to be done to build momentum and take advantage of potential federal funding opportunities
- The timetable for electrification needs to be accelerated and state agencies need to achieve system changes to reach these goals
- State government should take advantage of stakeholders to gain support, generate creative solutions and resolve community-level issues

POLICY RECOMMENDATIONS

- ➔ **Recognize that vehicle electrification will have impacts on the electric grid infrastructure and revisit BPU's authority. BPU should be empowered by statute and/or executive order to balance several priorities: reliability, affordability, and lowest possible emission energy products and services.**
- ➔ **Transition to 100 percent light-duty zero-emission vehicles sales by 2035 and a wholesale transition to zero-emission medium and heavy-duty vehicles where feasible by 2045.**
- ➔ **Focus on medium and heavy sectors that are feasible and also include micro-mobility solutions and shuttles between transit hubs that can improve access.**
- ➔ **Incentivize local, high paying jobs in electrification industries such as advanced manufacturing that target residents of low-income communities.**
- ➔ **Improve interconnection processes that help streamline charging stations and Distributed Energy Resources (DERs); establish rules for communication standards to ensure interoperability and open access for fleets.**
- ➔ **Launch initiatives to incorporate energy storage, other DERs and managed charging solutions with charging stations to maintain stable electrical rates and maximize benefits to all ratepayers.**
- ➔ **Encourage development of innovative business models that offer charging as a service (CaaS) to public and private fleets. Similar to Solar Power Purchase Agreements, these arrangements can result in savings to end use, eliminating upfront investment by entering into a long term contract for fueling, and perhaps vehicles including operation and maintenance.**
- ➔ **Adopt New Jersey Department of Environmental Protection's proposed Advanced Clean Truck rule**

CREATE A WHOLE-GOVERNMENT APPROACH TO MITIGATE CLIMATE CHANGE

According to an ongoing temperature analysis conducted by scientists at NASA's Goddard Institute for Space Studies (GISS), the average global temperature on Earth has increased by a little more than 1° Celsius (2° Fahrenheit) since 1880. A one-degree *global* change is significant because it takes a vast amount of heat to warm all the oceans, atmosphere, and land by that much. According to Climate.gov, the 2-degree Fahrenheit increase in global average surface temperature that has occurred since the pre-industrial era is driving regional and seasonal temperature extremes, reducing snow cover and sea ice, intensifying heavy rainfall, and changing habitat ranges for plants and animals—expanding some and shrinking others. In contrast, in the past a one- to two-degree drop was all it took to plunge the Earth into the Little Ice Age. A five-degree drop was enough to bury a large part of North America under a towering mass of ice 20,000 years ago according to GISS.

Since 1981, the rate of increase has more than doubled.

During the last 40 years, the global annual temperature has risen by 0.32 degrees Fahrenheit, per decade according to the National Oceanic and Atmospheric Administration (NOAA) Scientists around the world overwhelmingly agree that this warming is primarily caused by increased burning of fossil fuels.

This warming effect has a wide range of implications for humans, the environment and biodiversity. Through aggressive shifts in energy policy, it may be possible to mitigate the effects of climate change through a collective widespread centralized effort.

While climate change is a global issue that will require a huge amount of international cooperation, coordinated action at the state and local level is needed. The current administration has announced bold goals for climate change mitigation through executive orders and some new rulemaking related to vehicles, but the key to success will be robust implementation by the agencies that includes hard choices about where and how to invest state and taxpayer dollars. Also critical will be the alignment of state commissions and authorities including the Highlands Council, Pinelands Commission, State Planning Commission, NJ Transit, NJ Sports and Exposition Authority and NJ Economic Development Authority, among others.

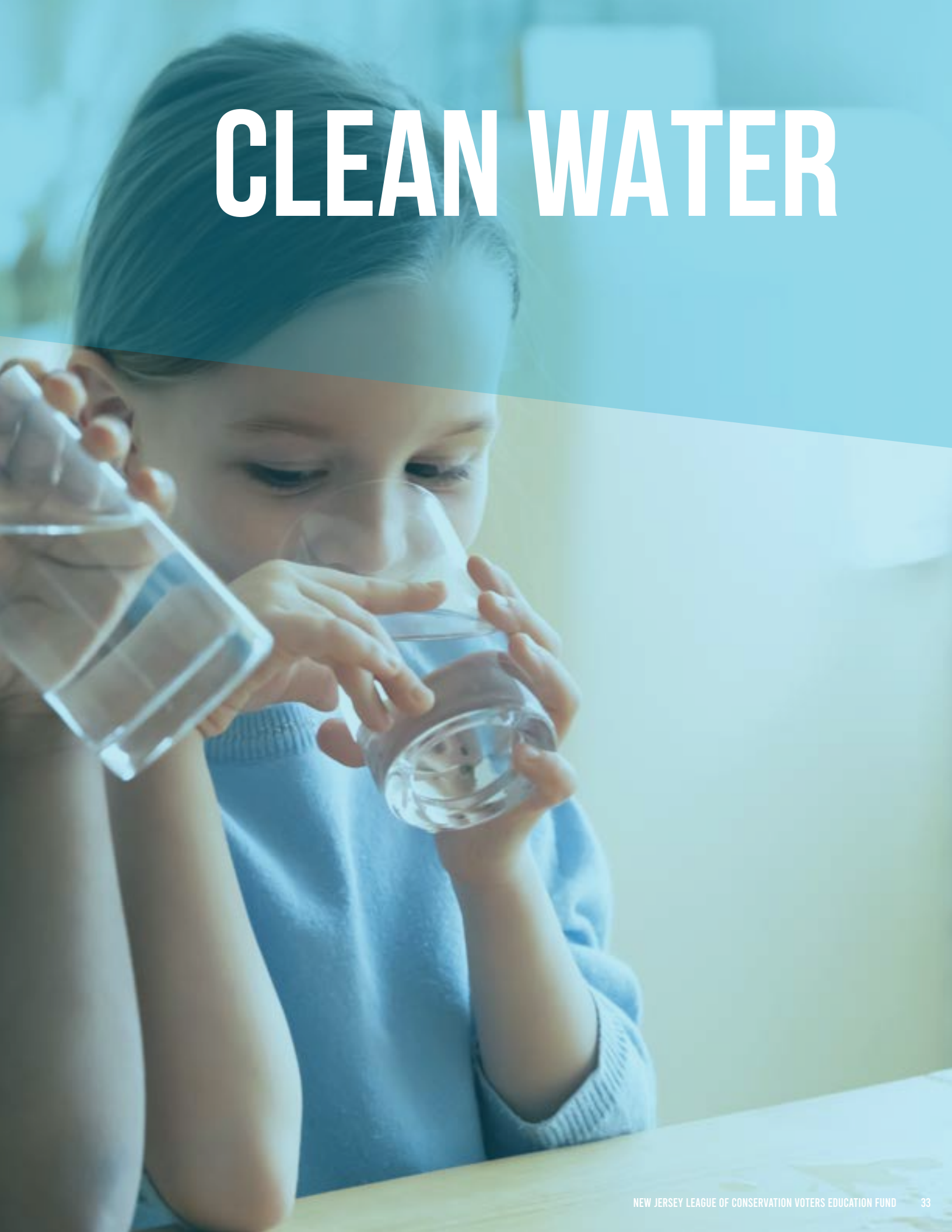
PRIMARY CONCERNS:

- In order to tackle this crisis, a whole-government approach is needed that provides clear guidance, rules and strategies for state and local decisions related to development, investments, infrastructure and planning
- Need for more public engagement in the development and implementation of climate change mitigation and adaptation policies to ensure all voices are at the table to ensure an equitable outcome
- Need for more integration of public health outcomes into climate change mitigation work

POLICY RECOMMENDATIONS

- **Align all revenues across various state programs meant for climate change mitigation, adaption and investment in the clean energy economy under a common strategy or rubric that includes an equity component and ensures monies are dedicated to communities most impacted by climate change (at least 40 percent).**
  - Require coordination of relevant agencies and bring in the Office of Clean Energy Equity to develop and implement programs through an equity lens
  - Be ready for smart and quick deployment of federal funds
- **Stop diversions of New Jersey Board of Public Utilities Clean Energy Fund and provide more transparency on how funds are allocated and spent**
- **Set 2030 emissions reduction goal for State of New Jersey in line with the recent announcement by the president (50-52 percent reduction in GHG pollution from 2005 levels in 2030)**
- **Launch NJEDA's Green Fund, proposed to support investments in clean energy technology, including targeting building emissions reductions and lowering the embodied carbon of products and materials used in the buildings sector**
- **Ensure a transparent and public process on the implementation of the governor's Executive Order 221 (Office of Climate Action and Green Economy).**
  - Sufficient appropriation of funding and allocation of staff to support its functions
  - Regular public meetings of the New Jersey Council on the Green Economy
  - Development of metrics, including how the Office will focus action and investment in environmental justice communities
  - Regular reporting on progress
  - Work directly with regional planning commissions to provide guidance and accountability. Move forward critical appointments to the Commissions to reinforce climate change priorities.
- **Move forward with the promise of NJ PACT (Protecting Against Climate Threats) and release overdue regulatory proposals to aggressively reduce emissions of carbon dioxide and short-lived climate pollutants and reform environmental land use rules to incorporate climate change considerations. Encourage state agencies and municipalities to utilize the *Sea-Level Rise Guidance for NJ* document and develop new guidelines for consideration of climate change in Environmental Impact Statements and DEP's grant, loan, contracting, planning and policy programs as outlined in the January 2020 announcement.**
- **Empower local governments to make land use and infrastructure decisions based on the best available climate science. Provide training or certification in climate change hazard mapping and application to local land use policies. Ensure that state regulations and policies allow for innovative climate change strategies at the local level (e.g., natural solutions along the entire coastline, green infrastructure, composting, etc.)**
- **Include the social cost of carbon cost benefit analysis in all new infrastructure and energy projects.**

CLEAN WATER



PROTECT DRINKING WATER

New Jersey's primary drinking water source is supplied from a reservoir system (or canal system and rivers) which supplies water to private companies or municipal water systems. Eighty-six percent of New Jersey residents receive their drinking water from this source. While only 14 percent of New Jersey residents receive their drinking water from underground sources in a private well system, wells are the most prevalent source of drinking water for most of the state's land area. Private wells rely on aquifers and recharge for the supply of drinking water.

While the sources of drinking water may be different, the threats to the quantity and quality of the water are the same and are negatively affected by land-use decisions and the resulting polluted runoff.

Water, in pre-development days, would purify through natural filtration by traveling through soil particles and organic matter then slowly flow into waterways over hours and days after a rain. Now that New Jersey's land area is covered with impervious surfaces, water rushes straight toward streams and rivers without being purified. Impervious surfaces change how rain recharges aquifers and reduces that recharge and/or carries with it various levels of pollutants picked up from streets, parking lots and lawns that can contaminate drinking water supplies. Not only does this cause flooding and increased pollution, but also erodes the streambanks and riparian areas along waterways. Also, this rush of water will continue to be exacerbated from the effects of climate change. New Jersey now receives more of its rainfall in heavy downpours versus longer, more gentle rains. The state also receives more rain annually.

PRIMARY CONCERNS:

- New Jersey DEP has not yet reversed the rollbacks that occurred during the prior administration that weakened critical clean water protections. Subsequently, arsenic levels have been increasing in drinking water supplies.
- Climate change will cause changes in levels and intensity of precipitation.
- New Jersey has an antiquated water supply and treatment infrastructure; the maintenance, repair, and replacement of which is not adequately funded.
- Per- and Polyfluoroalkyl substances are prevalent in New Jersey's environment.
- New Jersey one of the first states to regulate PFAS/PFOSs in drinking water and groundwater. These "forever chemicals" can accumulate and stay in the human body for long periods of time, leading to adverse health outcomes. However, a more regulatory holistic approach is needed to address these pollutants.
- The 2017 Water Supply Master Plan did not provide for long-term or midterm planning of New Jersey's water resources. It set out a three- to five-year planning horizon which is too short. Despite its flaws, the Water Supply Master Plan demonstrated deficits in NJ's water supply. Part of the reason for the deficit is because the state uses water from one watershed and treats and discharges that water in another watershed or out in the ocean. Thus, watersheds are out of balance and the Water Supply Master Plan needs updating.
- Protect the sources of water by addressing discharges to groundwater and surface water, providing for stronger protections for riparian zones, including stepping up the acquisition of riparian zone lands. These areas act as filters of pollution and provide protection for drinking water sources.
- Improvements necessary to the Private Well Test Act to encourage more frequent testing and treatment of contamination

POLICY RECOMMENDATIONS

➔ **Update the Water Supply Master Plan**

- Incorporate at least a 20-year planning period, as opposed to the 5 years found in the 2017 plan. Update the plan at least every five years. (While this may be done internally by NJ DEP, amending the Water Supply Management Act to codify this requirement would be useful.)
- Incorporate concrete recommendations and actions to address the findings in the plan.
- Review and analyze surplus and deficits on a HUC11 level (DEFINE) as opposed to the larger Watershed Management Area (WMA) levels in the 2017 plan. Smaller watershed units provide a more accurate picture of surplus or deficits that the WMA may obscure or minimize.
- Examine the practice of discharging consumptive use outside of the source HUC11.
- Address the impacts of climate change on water availability and provide recommendations in the plan.

➔ **Update Private Well Testing Act**

- Require landlords to treat drinking water from contaminated wells as opposed to merely reporting on the test results
- Provide low-cost testing to private residences to encourage testing of wells absent a change in ownership.
- Utilize the sale of homes and the test results for outreach and targeted testing of adjacent properties.

➔ **Regulate the PFOA class of chemicals as a class (as opposed to individual chemicals in drinking water standards) as well as surface water quality and groundwater standards.**

➔ **Adopt a One Water approach whereby all water is managed in an integrated, inclusive and sustainable manner to improve the overall, long-term benefits of all types of water resources.**

➔ **Provide clear legislative authority to state agencies to require more effective and cost-effective utility management, including requiring DEP to enforce the provisions of the Water Quality Accountability Act and to the Department of Community Affairs (DCA) to review water utility budgets to ensure they are adequate to implement asset management plans.**

IMPROVE DRINKING WATER AND WASTEWATER INFRASTRUCTURE AND MANAGEMENT

Clean drinking water is a human right.

Every day each of us depends on clean drinking water, wastewater treatment and stormwater management. These "invisible" essential services are foundational to the environment, public health and economic prosperity. But, despite the many well-run water infrastructure systems in New Jersey and across the country, some are inadequate and all face multiple challenges such as unresolved legacy issues concerning lead and combined sewers, new regulatory requirements for emerging contaminants, growing threats from climate change, algae-infested lakes and ponds, as well as aging. Low-income residents and residents of color are more likely to face the impacts of inadequate water infrastructure. Many low-income customers already find water and sewer bills unaffordable, which can impede rate increases and capital investment.

PRIMARY CONCERNS:

- **Fragmented:** New Jersey is home to more than 200 wastewater treatment plants, nearly 600 drinking water systems, and thousands of miles of water and sewer pipe. Many drinking water systems are tiny: the 314 smallest serve fewer than 3,000 customers.
- **Polluting:** New Jersey has an astounding 13,000 miles of rivers (over two-thirds of all of New Jersey's river miles), more than 26,000 acres of lakes, reservoirs and ponds, nearly 200 square miles of bays and estuaries, and almost 372 square miles of ocean and near coastal waters where polluted runoff from cities and towns made the water unsafe for fishing, swimming, boating, drinking, and/or other uses protected by state and federal law.
- **Wasteful:** It is estimated that 130 million gallons of treated, potable water are wasted across the state each day due to cracked water mains, leaks, and water loss. Research suggests that infrastructure repairs alone could save 50 million of those gallons per day — an amount equal to the daily water use of about 700,000 New Jersey residents, or a population 2.5 times the size of Newark — and pay for themselves through increased revenues and decreased costs.
- **Underfunded:** The EPA estimates that the state's drinking water, wastewater and stormwater systems need $25 billion of investment over the next 20 years.

According to the Jersey Water Works collaborative, there are three priority solutions for water infrastructure: ADEQUATE FUNDING, ROBUST ASSET MANAGEMENT AND STAKEHOLDER ENGAGEMENT.

POLICY RECOMMENDATIONS

- Provide new state and federal funding for water infrastructure especially in environmental justice communities. Prioritize lead pipe replacement, CSOs, harmful algal blooms and emerging contaminants. Fund upgrades that address climate change including for energy efficiency, renewable energy and climate resiliency.
- To prepare for expected federal capital funds, increase capacity of NJ Water Bank staff to review applications through temporary hires or consultants. Create 10-15 full-time employees to help under-resourced water systems successfully apply for funds and construct projects.
- Create and fund a statewide low-income customer assistance program. Authorize water all water utilities to create their own customer assistance programs.
- Ensure effective water systems by authorizing DEP to enforce the Water Quality Accountability Act and improve public reporting. Enact a similar law for wastewater systems.
- Mandate an appropriate balance of green and gray infrastructure in water quality regulatory or permitting mechanisms including the forthcoming Combined Sewer Outfall (CSO) permits from DEP.
- Replenish the water workforce and create pathways to job and career opportunities for local residents through training and apprenticeship programs and competitive wages.
- Empower residents to participate actively and influence decision-making regarding water, sewer and stormwater systems. Ensure members of utility boards and commissions are well trained and representative of the communities they serve.
- Provide incentives for small water systems to consolidate and/or share services.
- Charge a water advisory council with calculating the capital funding gap for water infrastructure and recommending ways to fill it including state budget line items.
- Accessible data on the state's enormous water infrastructure sector is needed to build public support for upgrades, and as of this year, residents can learn about their drinking water and wastewater systems on Jersey WaterCheck, along with statewide performance figures and trends.

What is Grey Infrastructure and Green Infrastructure?

Grey Infrastructure refers to structures such as pipes, treatment plants, storage basins or other constructed structures. Green Infrastructure refers to natural systems, such as wetlands, rain gardens, or other vegetation or permeable surfaces, to manage stormwater.

ELIMINATE THE RISK OF LEAD IN DRINKING WATER

Lead in pipes and plumbing continues to leach into drinking water, even though drinking water from treatment plants is virtually lead-free. Lead threatens human health, causing permanent brain damage in children who face lifelong learning and behavioral issues. Lower income children and children of color are at greatest risk. Although paint is the leading source of lead exposure, water is also prominent, especially for infants fed with formula made with tap water that contains lead.

The best estimates suggest there are 350,000 lead service lines (LSLs), the hose-sized pipes that connect water mains to homes, across New Jersey. As of August 2019, 104 water systems in rural, suburban and urban areas reported having LSLs for some portion of their customers. This number will grow as a more systematic review of the problem is completed. In addition, many homes, apartments, schools and child-care centers have internal plumbing containing lead.

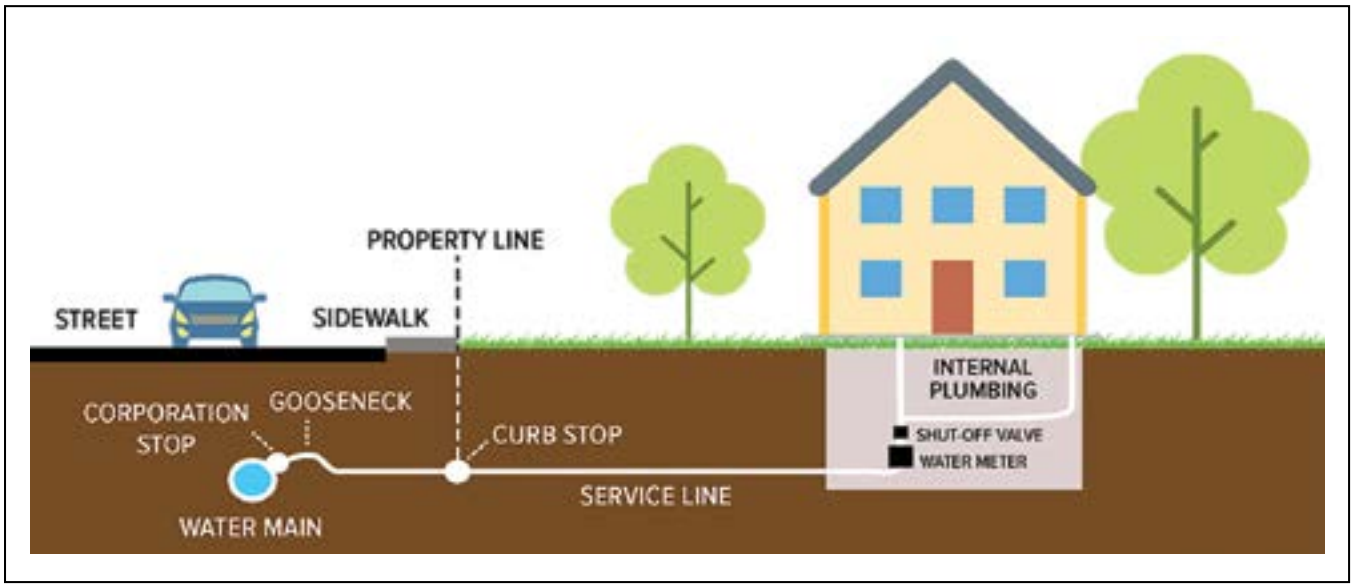
The best permanent solution is to remove LSLs. Legislation can require water utilities to run accelerated, efficient 10-year LSL replacement programs that offer no-cost, mandatory upgrades to property owners. The city of Newark has proven this approach works, replacing over 18,000 LSLs in about two years.

An investment of $2.3 billion is required to replace LSLs statewide. Most New Jersey water customers are served by utilities that can afford to replace LSLs over a 10-year period with modest rate increases. They must be authorized to use rate revenues for this purpose. State subsidies of at least $500 million are also needed to assist low-income communities.

HOMES WITH LEAD PLUMBING AND FIXTURES

Once LSLs are removed, state regulations and training must be strengthened to ensure more effective corrosion control at water treatment plants to minimize lead leaching. Proper use of in-home filters and/or flushing offers additional layers of protection that community education efforts can promote, along with gradual replacement of plumbing fixtures.

Awareness and transparency are critical. Short-term measures such as online maps showing



The primary source of lead in water is the lead service line (LSL), which carries drinking water from the water main into buildings. Typically, the LSL is partly owned by the water utility and partly located beneath private property. Lead leaches from these pipes and internal plumbing because of corrosive water. Water treatment facilities reduce lead leaching by adding orthophosphate to treated drinking water.

the number and location of LSLs, statewide LSL inventories, and disclosure of LSLs to homebuyers and renters are needed in the short term to get us to a lead-free water future in the long term.

PRIMARY CONCERNS:

- Out of 179,000 New Jersey children under the age of 17 screened for exposure in 2019, nearly 4,000 – or 2.2 percent – had elevated blood lead levels which can have lasting effects on development according to the New Jersey Department of Health's Annual Report on Childhood Lead Exposure in New Jersey. Water is a leading source of lead, especially for infants fed with formula made with lead-tainted water.
- New Jersey has an estimated 350,000 LSLs, which are responsible for 50 to 75 percent of lead in water and must be removed.
- Internal plumbing in older buildings, homes, schools and child care facilities also contains lead, which can be managed by water utilities that use corrosion control measures and residents who flush and filter water.
- Many young children spend a lot of time in childcare centers, which can also have lead in water.

POLICY RECOMMENDATIONS

- ➔ **Permanently replace lead service lines (LSL) in ten years through new laws that require utilities to inventory LSLs and replace the lines at no cost to property owners. Provide utilities with property access, and the ability to recover costs from rates. Provide at least $500 million to assist low-income communities.**
- ➔ **Enact legislation that requires disclosure of lead in water when a home is rented or sold.**
- ➔ **Adopt a new New Jersey Department of Environmental Protection Lead and Copper Rule that protects public health through improved water sampling, quick public notification and interim protections, corrosion control, and public education.**
- ➔ **Ensure safe drinking water in child care centers and schools. Enact legislation requiring replacement of LSLs and internal lead plumbing in all child care centers in five years.**
- ➔ **Direct $100 million in already approved bond proceeds through the New Jersey Department of Education to school districts with the most lead poisoning.**

ADDRESS UNREGULATED CONTAMINANTS IN DRINKING WATER

Over the past several decades, human health protection from chemical contaminants in drinking water has been accomplished by development of chemical-specific standards or a "one-at-a-time" approach. This approach alone will not address multiple contaminants in drinking water as there is little or no information on health effects, occurrence or best available treatments to remove classes of chemicals.

Federal and state governments cannot develop the toxicological data needed to establish a health-based Maximum Contaminant Level (MCL) for even a subset of the unregulated compounds detected throughout the country's waters for several reasons: the large numbers of compounds, the fact that many compounds are breakdown products manufactured unintentionally (thus not readily available as test material), and the time and expense associated with developing the animal-based toxicological data the studies require. States may regulate chemicals at more protective levels than the federal government or can set standards for chemicals that the federal government does not regulate. This makes sense because some contaminants are found in certain areas of the country and not in others. New Jersey has been a leader in setting drinking water standards for emerging chemicals of concern to the state. For example, in the 1990s, New Jersey identified a contaminant in the Toms River drinking water supply. It took over eight years and $5 million to review the appropriate science needed to establish a New Jersey chemical-specific drinking water standard for styrene-acrylonitrile trimer.

The process of obtaining and evaluating the information needed to develop a health-based regulatory standard for a given contaminant is costly and time consuming – it took over a decade to consider adopting drinking water standards for per- and polyfluoroalkyl substances (PFAS), a class of chemicals that has been detected throughout the country in recent years. When first detected, there were only two PFAS of concern. Today, there are over 4,700 individual chemical in the class according to the National Institutes of Health (NIH), yet the development of health-based standards for individual chemicals takes years. Additionally, the regulatory criteria to justify development of new chemical-specific standards are very stringent. Although this chemical-specific approach will continue to be useful for addressing some emerging contaminants, it does not represent a sustainable approach for addressing low-level contamination with multiple chemicals that are now known to occur in many rivers, groundwater, and finished drinking water in the United States. Today, it is PFAS. What will it be in a year or a decade?

➔ What is PFAS?

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.

Perhaps a focus on preventing contamination of water sources and reducing human and ecological exposures would better protect human health rather than a focus on determining exact toxicities of chemicals in whole-animal studies and removing just those chemicals from drinking water. Considering that the treatment necessary to remove some of these chemicals can be expensive or just

not feasible, an approach that prevents the chemical introduction into water sources would be more effective.

The federal Toxic Substances Control Act (TSCA) regulates the introduction of new and existing chemicals. A major limitation of the TSCA is that it does not adequately address chemicals already being used extensively by industry. TSCA does not address chemicals in food, drugs, cosmetics and pesticides. Implementation of all aspects of the TSCA for existing chemicals has been incomplete and difficult. The environmental impact of persistent chemicals such as PFAS is not included at all in the TSCA regulations, and the emerging contaminant policy is fragmented at best. To control chemicals at the manufacturing stage in the United States, more incentives for manufacturers to consider safer alternatives and more toxicity information on existing and new chemicals are needed.

POLICY RECOMMENDATIONS

- **Reinvigorate the New Jersey Department of Environmental Protection's Drinking Water Quality Institute and charge the Institute with discussing options for addressing contaminants in the state beyond the single-chemical approach.**
- **Investigate the use of chemical mixture screening by the federal or state government to assess toxicity.**
- **Explore use of water treatment-based standards to complement individual chemical-by-chemical standards. Fund large pilot projects to evaluate the effectiveness of large-scale contaminant removal by carbon (or other) treatment. In 2017, New Jersey conducted a pilot study at two water treatment plants and determined that carbon treatment removed a large percentage of unregulated contaminants from drinking water.**
- **Regulate new chemicals at the manufacturing stage. Revise federal Toxic Substances Control Act (TSCA) to require manufacturers to develop toxicity information on chemicals' effects before use.**

RESTORE AND ENHANCE NEW JERSEY'S WATERS

In 1977, New Jersey set out to restore, enhance, and maintain more than 18,000 miles of rivers and streams, over 50,000 acres of lakes, ponds and reservoirs plus 950,000 acres of wetlands, 260 square miles of estuaries and 127 miles of coastline. New Jersey relies on these natural resources for tourism, recreation, drinking water and agriculture as well as habitat for fish, wildlife and plants. While New Jersey has made strides in reaching the goals of restoring and enhancing our waterways, much more work lies ahead.

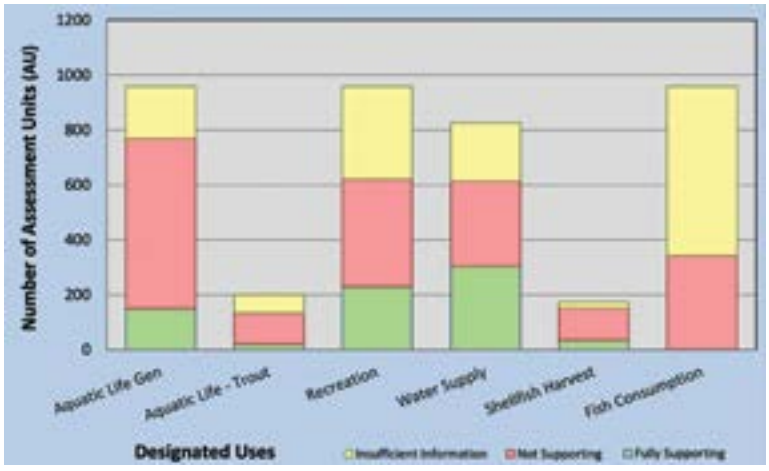
New Jersey has a multitude of statutes and regulations that regulate activities in and around waterways. These statutes include the Federal Water Pollution Control Act (Clean Water Act), New Jersey's Water Pollution Control Act, Flood Hazard Area Control Act, Freshwater Wetlands Protection Act, Wetlands Act of 1970, Water Quality Planning Act, among others.

The Flood Hazard Area Control Act and the Freshwater Wetlands Protection Act regulate activities in and around our waterways and wetlands. Activities are regulated through general permits, permits by rule, permits by certification and individual permits. One aspect of these regulations is the creation of buffers (riparian zones for waterways and transition areas for wetlands) between these environmental features and upland activities. The width of these buffers depends on the classification of the waterway or wetland. Buffers not only protect streams and wetlands from the effects of development but also provide protection to development from flooding, which will only increase with increased precipitation and storm intensity under climate change. The state's regulatory scheme allows too many ways to invade these buffers without demonstrating the activity will not negatively impact the regulated feature. And, New Jersey's rules do not consider the health of the waterway before allowing these impacts. The rules also do not require or encourage the restoration of disturbed or impacted buffers. Thus, more urban areas where historical development occurred right up to the edge of the waterway have not been restored to include natural shorelines.

Another method of protecting waterways is through classification. For waterways, streams are classified as Freshwater 1 (FW1), or Freshwater 2 (FW2). The FW2 waters are further classified as either - nontrout, trout maintenance, or trout production or Category One (c1). There are also Pinelands Waters and Highlands waters. Estuary waters are similarly classified as SE1, SE2, SE3, and SC. The classification of these waters then results in different water quality standards and designated uses. Also, for freshwater streams, the classification results in different buffer widths. Freshwater wetlands are also classified as ordinary value classifications, intermediate value classification, or extraordinary value classification wetlands. The various classifications result in different buffer widths and different levels of protection. In many instances, more urban waterways have fewer protections because of their classifications, resulting in less stringent water quality standards and smaller buffers.

For our impaired waters, the Clean Water Act requires the Department of Environmental Protection (DEP) to develop a Total Maximum Daily Load (TMDL) for a particular portion of the

Statewide Designated Use Assessment Results, 2016



Source: NJDEP

stream. A TMDL is in essence a pollution budget. In creating a TMDL, DEP determines how much of a pollutant(s) is allowable into a water and still have that waterway meet the appropriate water pollutant criteria. This pollutant amount is then allocated between the different sources of pollution: direct dischargers or point sources and nonpoint sources, dischargers with water pollution discharge permits, urban stormwater; agriculture, non-urban stormwater, etc. These budgets are then supposed to be implemented by the point source discharges. The nonpoint sources, as they are not directly regulated, are targeted by various grants and other voluntary actions. There many TMDLs currently in place, but necessarily fully acted upon.

PRIMARY CONCERNS:

- According to New Jersey's Integrated Water Quality Assessment Report, over 90 percent of the waters monitored by New Jersey do not meet all of the water quality standards applicable. A significant contributor to those impairments is land-use practices and the resulting stormwater pollution.
- In spite of the protections afforded to wetlands, we continue to lose wetlands to development. Wetlands not lost are also being degraded.
- Continued loss of forested areas, which provide numerous benefits including absorbing stormwater runoff and providing habitat for wildlife and temperature regulation and nutrients to waterways. Forests are also important for carbon sequestration.
- New Jersey's waterways continued to be impaired and NJ's regulatory program is geared to mitigating damage not avoiding it. Also, recreational uses are not directly considered when the state makes pollution discharge permitting decisions.
- Land Use regulatory decisions are not incorporating water quality data or TMDLs.
- Gaps remain in the protection of small headwater streams – the sources of all of the state's surface waters – to become parking lots and storm drain outlets.

POLICY RECOMMENDATIONS

- ➔ **Protect headwater streams with more protective policies through the Freshwater Wetland (FWW) and Flood Hazard Area Control Act (FHACA) rules to recognize and protect headwaters with riparian zones.**
- ➔ **Integrate surface water quality standards, water impairments, and TMDLs into the land use permitting process.**
- ➔ **Recognize that discharges to groundwater may result in direct discharges to surface water. The most protective discharge standard must be utilized in determining discharges.**
- ➔ **Revise FHACA and FWW rules to minimize the various permits (permit by rule, permit by certification and general permit) where encroachments into the buffers (riparian zone or transition area) are allowed. Require stricter analysis and review in environmental justice communities and waters with TMDLs.**
- ➔ **Ensure recreational waters are not degraded when permitting discharges.**
- ➔ **Protect the State's 5 National Wild and Scenic Rivers and only National Water trail, by granting them the highest level of protection, as Outstanding National Resource waters**
- ➔ **Require municipalities to implement the Waste Load Allocations in approved TMDLs.**
- ➔ **Ensure that regulations related to restoring shorelines or permitting living shorelines treat all of New Jersey's shores equally to open up opportunities to restore urban shorelines.**
- ➔ **Eliminate the Residential Site Improvement Standards control over stormwater management.**
- ➔ **Support the implementation of stormwater utilities at the local level to allow collection of fees based on the amount of stormwater runoff a property generates from its impervious cover for dedication to stormwater management.**

ELIMINATE COMBINED SEWER OVERFLOWS

Combined sewer systems are shared underground pipe networks that carry sewage from homes and businesses and stormwater from streets and land to a central treatment system before being discharged into a waterway. During heavy precipitation, those pipes have to handle the extra water as well. When pipes get too full, the sewage-contaminated, untreated water and debris overflows into waterways.

Combined sewer systems are remnants of the country's early infrastructure and are still found in older urban areas, including 21 New Jersey cities. These communities are also often already overburdened with pollution.

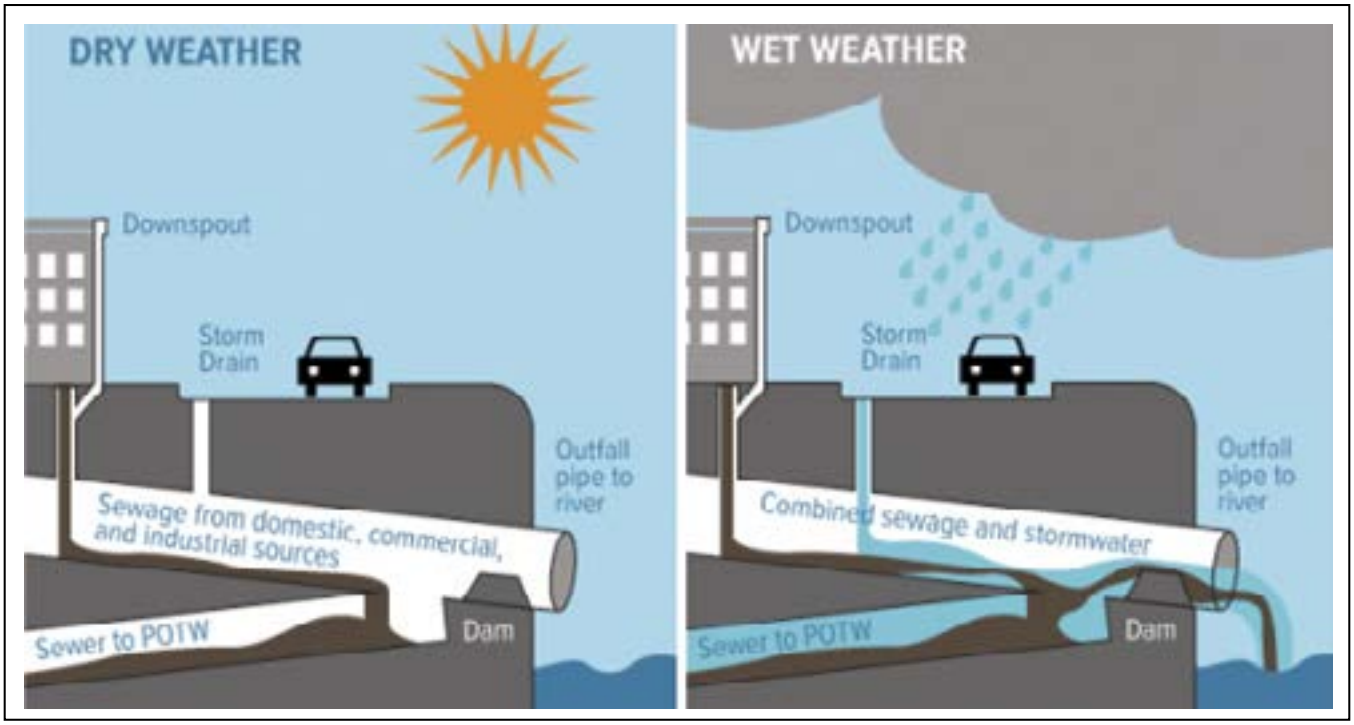
Combined sewer overflows (CSOs) can impact:

- **Health:** Exposure to raw sewage that has spilled into waterways from CSOs can cause illness and/or can back up into homes or streets as a result of clogged pipes.
- **Recreation:** Sewage overflows can make recreation, including swimming, kayaking and fishing on rivers and streams unsafe for at least 24 to 48 hours.
- **Environment:** Sewage overflows can cause beach closures, harm aquatic habitats, contaminate shellfish beds and dump significant amounts of trash into waterways.

CSO PLANS AND DEPARTMENT OF ENVIRONMENTAL PROTECTION CSO PERMITS

In October 2020, CSO communities submitted draft plans called Long Term Control Plans – or LTCPs – for reducing sewage overflows as required by New Jersey Department of Environmental Protection (DEP) permits. These plans specify the types of upgrades that will be built, including gray infrastructure, like underground tunnels and sewage plant expansions, and green infrastructure, including sponge-like parks and planted strips along streets. Together, the combined plans would cost $2.6 billion and take 20 to 40 years to complete.

Implementing these plans will cost billions of dollars over the coming decades and will have significant effects on residents and business



This is how a combined sewer system works when it's dry and when it's raining or snowing. Source: U.S. Environmental Protection Agency

owners for generations to come. The details will be finalized in 2021 or 2022. The New Jersey DEP is now reviewing the draft plans and the public comments and may require revisions. Next, the DEP will issue a second round of five-year CSO permits that will govern implementation of the final LTCPs, after another public input process.

Combined Sewer Outfall, Perth Amboy

PRIMARY CONCERNS:

- The plans will not be fully implemented for 20 to 40 years
- The burden of financing the plans falls primarily on residents and small businesses, many of whom will not be able to afford the rate increases needed to fund CSO solutions.
- In many places, green infrastructure will not be built until late in the process, even though many communities need the flood protection right away.
- The new permits may not have robust public participation nor ample requirements to address climate change.

POLICY RECOMMENDATIONS

➔ **Require DEP to:**

- Ensure equitable financing of these plans whereby costs are shared between sewage treatment utilities and municipalities to reduce impacts on ratepayers.
- Require CSO permit holders to set bold, clear and immediate targets for earlier implementation of green infrastructure projects.
- Use the most recent climate change data and projections in the selection, implementation, and evaluation of CSO plans.
- Adopt new DEP permits that require permittees to prioritize environmental justice neighborhoods for CSO mitigation.
- Adopt new DEP CSO permits that require the permit holders to continue public outreach on the projects that have been selected in the LTCP.

➔ **Also Require:**

- The State of New Jersey and federal government to help pay for a major share of CSO projects in order to minimize impacts on ratepayers.
- The State of New Jersey to provide matching grants to CSO permittees who conduct a stormwater utility feasibility study.

MANAGE STORMWATER SUSTAINABLY

Many of New Jersey's communities experience the challenges of stormwater runoff that results in flooding and combined sewer overflows. Stormwater runoff, rain or snowmelt that flows over impervious surfaces such as streets, sidewalks, parking lots and rooftops carries pollutants such as fertilizers, animal waste, trash, debris, salt and motor oil – often emptying into sewers and waterbodies. As a result of this runoff, 90 percent of the state's waters are impaired. These issues are exacerbated by increases in the frequency and intensity of rain events due to climate change. Furthermore, the areas with the most impervious cover are often low income and communities of color.

There are solutions that can help.

Green infrastructure (GI) can work in combination with, or in some cases even replace, grey infrastructure (conventional piped drainage system) to manage stormwater. Green infrastructure uses vegetation, soils and natural processes – adding green features to neighborhoods – to manage water and create healthier environments by reducing polluted runoff and flooding. Green infrastructure works by soaking up and/or storing water, and then slowly releasing it into the ground so it does not overwhelm the sewer system. Examples of GI include preserved natural areas, rain barrels, rain gardens, green roofs and permeable pavement. In addition to the many environmental benefits of GI, there are also benefits for society and the economy. Green infrastructure can create construction and maintenance jobs, increase property values, improve mental and physical health and aid in pedestrian safety when located along streets.

In order to increase the implementation of GI, and therefore improve stormwater management, revisions to regulations and increased funding are needed.

There are many opportunities:

- As of March 2021, the state's Stormwater Management Rules (NJAC 7:8) now require applicants of new developments to manage stormwater with GI first. This is a significant shift and an important step in the stormwater landscape, but further amendments are needed to improve water quality and reduce flooding.
- New Jersey's Municipal Separate Storm Sewer (MS4) permit provides an opportunity to regulate stormwater runoff on existing development; however, stronger and more specific regulations are needed.
- The transportation sector has an opportunity to improve stormwater management through the installation of green streets (GI installed within the public right-of-way). The New Jersey Department of Transportation can incentivize green streets in its design guidance and grant funding.
- With the passage of the 2019 Clean Stormwater and Flood Reduction Act, local governments are permitted to create stormwater utilities that collect fees based on the amount of stormwater runoff a property generates from its impervious cover. Funds generated from these fees are dedicated to stormwater management and cannot be diverted for other purposes. Without a stormwater utility, the costs of managing flooding and runoff are included in other local government costs — typically either property taxes or water or sewer fees. This often leads to under-investment in managing stormwater and can create inequities in who pays, since some property owners don't pay property taxes, and some properties, while generating runoff, don't pay a water or sewer bill. Stormwater utilities create and fund jobs.

With its many challenges, communities are hard-pressed to meet today's challenges let alone prepare for those of tomorrow. State government must incorporate climate change projections in planning efforts, regulations, and guidance.

PRIMARY CONCERNS:

- Stormwater management is a significant contributor to waterway impairments and current funding for today's stormwater management and that for the needs of the future is clearly not sufficient.
- Municipalities should not be limited in their ability to require stronger stormwater management.
- Caused largely by climate change, poor stormwater management and local septic maintenance, harmful algal blooms are becoming more frequent in lakes across the state.

POLICY RECOMMENDATIONS

- ➔ **Amend New Jersey DEP's Stormwater Management Rules (NJAC 7:8) to include the following: onsite retention standard; application of rule requirements to redevelopment projects in ways that do not disincentivize smart redevelopment while still improving onsite stormwater management; incorporation of climate change projection data and requirement for resilience planning; requirement of volume, as well as, peak rate reductions; application of water quality standard to all types of impervious surfaces including roofs and sidewalks.**
- ➔ **Strengthen New Jersey's Tier A and Tier B Municipal Separate Storm Sewer System (MS4) Permits to add clear, specific, measurable requirements; require permittees to create pollution reduction implementation plan for impaired waters with pollution budgets, Total Maximum Daily Loads (TMDLs), and New Jersey DEP to provide guidance to municipalities to develop said plans; encourage municipalities to address water quality-based requirements as part of a regional stormwater management plan; and require periodic monitoring of basin outfalls to insure approved designs are meeting the regulatory requirements.**
- ➔ **Pass legislation to permit stormwater utilities to offer customer-based assistance programs for low-income property owners to address affordability issues similar to customer assistance programs for other utilities.**
- ➔ **Provide matching grants to localities to hire consultants to review the feasibility of implementing stormwater utilities.**
- ➔ **Increase the allocation of federal pass-through programs, like 319h and 604b, that fund stormwater management projects.**
- ➔ **Help the transportation sector use green infrastructure as a way to manage road runoff by amending New Jersey DOT's Complete Streets policy to include green streets and encourage and provide technical assistance to communities to apply for New Jersey DOT local aid funds to implement green streets.**

INCREASE RESILIENCE TO FLOODING

The Jersey Shore has been a tourism magnet for more than one hundred years, generating more than $30 billion in annual revenue. In 2012, Superstorm Sandy caused extensive damage in some shore communities from floodwaters. Houses were washed away or so severely flooded they became structurally unsound; thousands of people were displaced, some permanently; and critical infrastructure, such as power substations, rail stations and wastewater treatment plants were seriously damaged and knocked out of commission. Although this was the most severe storm to hit New Jersey in many decades, similar storms are likely to occur more frequently due to climate change. Rebuilding in place without additional resiliency measures merely sets the state up for more damage the next time a Sandy-level storm hits.

Hurricanes and superstorms are not the only threat. The effects of climate change bring about intense snowstorms and rainstorms that can cause significant and repetitive inland river flooding.

Climate change not only affects the severity of weather events; it increases the frequency of nuisance flooding, which is exacerbated by increasing levels of impervious cover. This means that more properties (and by extension, the municipal tax base) and residents are at risk throughout the state.

Further, communities of color, low-income communities and aging populations are most vulnerable to flooding. Studies show a correlation between redlined communities (a historical, federal housing practice that discriminates against neighborhoods of color) and communities that flood most often. Low-income communities and aging populations are less likely to be able to afford to retreat from flood-prone areas.

Flooding also causes issues for the health of New Jersey's waters and aquatic life. Heavy rainfall and flash flooding cause uncontrolled runoff of stormwater containing a surplus of nutrients, chemicals, sediments and bacteria. These pollutants, collected in high-velocity runoff, enter New Jersey's waterways and degrade water quality, and make water bodies unsafe for fishing and swimming.

All of the aforementioned negative results of flooding have an impact on the state's economy from closed lakes and shores to property damage of Main Street businesses to water and transportation infrastructure failure. All told, New Jersey's economy is worsened by flooding.

Faced with increased flooding and worsening water conditions, local communities need better tools and resources to prepare for a healthy, safe and resilient future. Adapting and protecting New Jersey's most vulnerable areas so they are more resilient to extreme weather and climate change will take time, resources and planning at the local, county, state and federal levels.

PRIMARY CONCERNS:

- Communities of color and low-income communities are disproportionately at risk of flooding. Oftentimes, properties facing risks are not shown on Federal Emergency Management Agency (FEMA) maps. Residents of flood-prone areas often suffer more mold in their homes, which can worsen respiratory conditions.
- Too many structures are located in flood-prone areas and rebuilding in high-risk locations is unsustainable.
- Insufficient funds are allocated for preparing for the next major weather event.
- Most master plans, at all levels of government, do not include forward-looking climate data such as projected sea-level rise.
- Many communities, especially low-income and small coastal communities, do not have sufficient resources to plan and implement resiliency measures adequately.

POLICY RECOMMENDATIONS

- Pass legislation that integrates climate change resiliency into the state hazard mitigation plan to combat the severity of flooding in a changing world, prioritizing natural solutions and green infrastructure projects in vulnerable communities.
- Redefine the tidal and fluvial flood hazard areas and create "Inundation Risk Zones" with enough flexibility to avoid exacerbating the financial and social hardships faced by low-income communities and communities of color.
- Explore mechanisms that allow municipalities to deny development and redevelopment in high-risk flood areas. For example, enable towns to refrain from rebuilding public infrastructure, such as roads, after repetitive damage and destruction.
- Adopt a statewide sea level rise standard. Incorporate sea level rise and flood elevation standards into all state-funded infrastructure projects.
- Increase the funding for Green Acres and Blue Acres programs and encourage the use of flood reduction practices, such as green infrastructure, tree plantings and flood parks, on Green Acres and Blue Acres properties. Prioritize funding in environmental justice communities. Continue to educate the public about the benefits of the Blue Acres program that removes properties from flood-prone areas and returns the property to its natural state to absorb floodwaters more effectively.
- Require and sufficiently fund the inclusion of forward-looking climate data and robust analysis of risk and vulnerability in all plans, at all levels, from municipal master plans to the state plan.
- Develop measurable climate change adaptation metrics and targets to provide direction and accountability.
- Establish a regional taxing and planning entity for the state's vulnerable coastal area, similar to the highly successful Meadowlands Commission, so that plans and investments specific to the region can be developed and coordinated in order to protect people and property and capitalize on the Shore as a remarkable cultural and tourism asset.

What are Green Acres and Blue Acres?

The Green Acres Program was created in 1961 to meet New Jersey's growing recreation and conservation needs. The Blue Acres Program, a part of New Jersey's Green Acres Program, helps acquire flood prone properties from willing sellers. The program removes structures and restore floodplains to a natural state.

PROTECT THE DELAWARE RIVER WATERSHED

The Delaware River Watershed provides drinking water to more than thirteen million people in the region, including several million living in New Jersey. It is unique in providing drinking water to two of the five largest metropolitan centers in the country: New York City and Philadelphia. Two major drinking water sources for New Jersey are also partially located in the watershed: the Highlands (in the north) and the Kirkwood-Cohansey Aquifer in the Pinelands National Reserve (in the south).

The watershed supports more than $25 billion in annual economic activity, including recreation, ecotourism, hunting and fishing, water supply support and ports. Additionally, the watershed provides an estimated $21 billion in ecosystem services to the region, including water filtration, and carbon sequestration, as well as habitats such as forests and wetlands.

As the longest undammed river east of the Mississippi, the Delaware River provides habitat for more 200 resident and migratory fish species, hosts significant recreational fishers, and is an important source of oyster and blue crabs, and hosts the largest population of American horseshoe crabs. The watershed is also home to the Delaware Water Gap (one of the country's most visited national parks), more than 400 miles of National Wild and Scenic Rivers, six National Wildlife Refuges, and one of the largest systems in the National Estuary Program. Recently, the U.S. Geological Survey's Water Census identified the Delaware River Watershed as one of three areas of national focus.

➔ What is a watershed?

A watershed is an area of land that drains all streams and rainfall to a common outlet, such as a river, bay or lake.

PRIMARY CONCERNS:

- Water quality and quantity issues resulting from increased development in the Delaware River watershed
  - Increased pollution runoff from stormwater and agricultural sources within the watershed
  - Higher demand for water from residents and industry leading to greater withdraws
- Flooding issues that are becoming more prevalent and economically costly with increased development in and around the floodplain

POLICY RECOMMENDATIONS

- ➔ **Fund and incentivize land preservation projects within the watershed**
- ➔ **Support policies that encourage the protection of the Highlands and Pinelands regions, and uphold the integrity of the Highlands Council and Pinelands Commission**
- ➔ **Fully fund New Jersey's state share of $893,000 for the Delaware River Basin Commission (DRBC), which manages, protects and improves the basin's water resources**

RESTORE RARITAN BAY

The Raritan Bay is an untapped New Jersey resource; its economic and recreational potential limited by poor water quality. Since the 1970s – thanks to the Clean Water Act and the work of dedicated advocates – Raritan Bay has been taking baby steps toward improved health. However, there are still algae blooms, combined sewer discharges, polluted runoffs, and there is trash floating in the water. Additionally, skin-to-water contact poses health risks.

In the late 1800s, Raritan Bay hosted a booming commercial shellfish industry. Today, only hard-shell clams are harvested from the bay and they require expensive depuration due to poor water quality.

People think of the Jersey Shore as ending at Sandy Hook, but, in fact, it extends to Perth Amboy. Thus, Raritan Bay is the back yard for millions of people, providing recreational activities such as fishing, boating, kayaking, crabbing, swimming and bird watching. Additional reading about the area's harbors and estuaries can be found at http://www.harborestuary.org/.

PRIMARY CONCERNS:

- Overall water quality in the bay
- Insufficient restrictions on new pollution
- Combined Sewer Overflows (CSOs) discharge raw sewage into the water during times of heavy precipitation
- Lack of regular quality testing
- Unsafe conditions for recreational use

POLICY RECOMMENDATIONS

- **Replace CSOs that discharge raw sewage directly into the water**
- **Request that the Environmental Protection Agency designate the Raritan Bay as a No Discharge Zone (NDZ) to prevent vessels from discharging sewage**
- **Preserve land along the shoreline of and the tributaries to the Raritan Bay; and restore existing natural areas to reduce flooding and filter water before it enters the bay and its tributaries**
- **Improve stormwater management with a goal of zero run-off into Raritan Bay**
- **Revive oyster-related research and restoration to act as a natural water filter**
- **Designate beaches along the Raritan Bayshore as bathing beaches and perform regular, protective water quality testing and timely notification of water quality that creates health risks**
- **Develop a consistent and meaningful sampling program for Raritan Bay to track trends over time, isolate pollution sources and understand the health of the bay**

PROMOTE A HEALTHY COAST

The ocean and coast are dynamic environments that produce ecological and societal benefits. The defining characteristic of many of these land forms – beaches, dunes and tidal wetlands – is that they are in motion and change in shape, relative position and elevation.

This dynamic environment exists within a range of limits which, when undisturbed or altered, provide a multitude of benefits, some local and some global in scale. However, society continues to intercede in these processes by its use of coastal and ocean resources – overburdening the capacity of the ocean to absorb heat and carbon. Attempts to hold beaches in place for development, and the polluting of estuaries with excess nutrients from stormwater and altered landscapes degrades the environment to such a degree that ocean and coastal resource benefits are lost or diminished to New Jerseyans and the coast's ecology.

The good news is that there is interest in protecting, conserving and enhancing coastal resources by the state. The Jersey Shore touches many people's lives, and is a tremendous part of the state's economy. Coastal tourism and recreational use of the state's beaches and waters generate nearly $35 billion in revenue every year. New Jersey's coast is utilized by thousands of residents and tourists each day.

The ocean supports recreational and commercial fishing, and an international commerce corridor to the ports of New York, New Jersey and Philadelphia. Increasingly, the ocean is being eyed as a platform for renewable energy generation, and the role of beaches, dunes and wetlands in mitigating storm hazards are being recognized. Tidal wetlands provide a multitude of simultaneous services (such as improving water quality and providing habitat to fish, shellfish, and wildlife that are the ecological basis of the bays and waters which support recreational and commercial fishing) as well as ecotourism. Tidal wetlands also reduce greenhouse gases through carbon sequestration; provide wave attenuation and reduce risk of flooding and erosion which are increasing impacts of climate change. New Jersey coasts and estuaries

are vital to our states' economy and supply key habitat for over 75 percent of the state's commercial fish catch and up to 90 percent of the recreational fish catch. By 2025, 75 percent of Americans will live within 50 miles of a coast, and New Jersey is a likely destination.

PRIMARY CONCERNS:

- Numerous threats generated primarily by poor development policies and controls along the coast are now exacerbated by stressors associated with climate change. Without significant changes in policy, there will be increasing costs to the public for hazard mitigation and response.
- Sea level rise is inundating coastal wetlands, drowning them in place. The lack of sediment accumulating on the marsh "platform" keeps them from growing at a pace which maintains their intertidal nature. While not extensively studied, some estimates put annual losses at almost 6000 acres per year.
- Sea level rise and increased shoreline development put more people and property at risk from storm hazards.
- Conflicts over public access and displacement of traditional intergenerational homes with

high-end redevelopment creates economic barriers to reasonable and affordable access to the coast for some New Jerseyans.

- Overdevelopment of coastal watersheds and the continued failure to manage polluted runoff effectively have impaired the waters of coastal bays and estuaries. Failing sewage treatment facilities and septics and ongoing Combined Sewer Overflows (CSOs) contribute to bacterial contamination and the regular closing of waters to swimming and shellfish harvest.
- Front-line communities along New Jersey's urban coast have unique challenges to adaptation for climate change impacts, with many opportunities only associated with market driven redevelopment. In the interim, these communities remain vulnerable to rising seas.
- As climate related impacts increase, state decision makers have increasingly looked to the ocean for responses: increased sand mining to place on beaches to mitigate storm impacts, and increased development of ocean spaces for wind energy production and transmission. These mitigation responses carry poorly understood implications for fish, fish habitats and traditional ocean uses.

POLICY RECOMMENDATIONS

- ➔ **Reassert control over managing growth along the coastal edge. Now is the time to create opportunities for new climate-friendly economies. New economic opportunities can be built on the resources and experiences that have brought most New Jerseyans to the Shore: open space, clean air and ocean recreation. There are and will be opportunities to create new coastal parks and open spaces, both proactively and in response to inevitable storm damage and a need for mitigation of risk.**
- ➔ **Increase policy and funding support for nature-based solutions to address impacts from polluted runoff, storms and climate change. New Jersey has already begun to explore these approaches through the use of Regional Greenhouse Gas Initiative (RGGI) funding for forest and tidal marsh stewardship, examination of new approaches to sediment management within coastal and estuarine systems, living shorelines and habitat restoration, and landscape recovery through the Blue Acres program.**
- ➔ **Create stronger coastal management policies and state regulations to protect coastal lands and related watersheds, including the Coastal Area Facility Review Act (CAFRA), Waterfront Development Act, Water Quality Management Planning Act, Pinelands Comprehensive Management Plan and Tidal Wetlands Act. Consideration should also be given to turning over control of CAFRA areas in the overlap zone of the Pinelands National Reserve to the Pinelands Commission for decision-making for more effective oversight.**

OPEN SPACE AND LAND USE

PRESERVE HABITAT, WILDLIFE AND NATURAL AREAS

Despite its small size and dense population, New Jersey hosts an impressive array of wildlife, habitat and unique ecosystems. Spanning five geologic provinces, New Jersey's landscapes range from the Appalachian Ridge and Valley in the northwest to the Outer Coastal Plain in the south. There is a broad diversity of animal, fish and plant species. Numerous plant and animal species reach either their northern or southernmost limits in New Jersey, because the state spans both northern and southern ecosystems. New Jersey is also one of the most important pathways in the world for an abundance of migrating birds.

Scenic and natural beauty is apparent in all reaches of the state, including urban areas, and the state's ecological treasures are appreciated and enjoyed by residents and nonresidents alike, bringing significant revenue from outdoor recreation including hunting, fishing and wildlife watching. These treasures include the deep forests of the Highlands and the vast sandy aquifer of the Pinelands National Reserve, which is recognized as an International Biosphere Reserve. New Jersey is also home to extensive salt marshes, free-flowing river systems, freshwater wetlands with forested swamps and the Atlantic coast barrier island dunes and bays.

Data shows that of New Jersey's roughly five million acres, more than two million remain in their natural state as forests, wetlands, beaches and grasslands. Some of these landscapes would benefit from restoration. New Jersey is home to about 3,000 known native plant species, 415 species of breeding land and freshwater birds, mammals, fish, amphibians, and reptiles, 500 species of migratory birds, marine mammals and marine fish and tens of thousands of invertebrate species. One and a half million shorebirds and as many as 80,000 raptors make migratory stopovers in New Jersey each year. Of the terrestrial and freshwater vertebrate species, approximately 30 percent of New Jersey's plants and animals are considered rare (species of conservation concern) because of declines in their populations, and 16 percent are listed as state threatened or endangered.

In addition to nonprofit conservation organizations that preserve natural lands, various government agencies are charged with managing our wildlife and wild places. New Jersey is home to five national wildlife refuges: Great Swamp, Forsythe, Cape May, Supawna Meadows, and Walkill; and 2 National Recreation Areas (Gateway and Delaware Water Gap). There are more than 170 state-owned wildlife management areas, state parks and state forests that contain wildlands, as well as hundreds of tracts of forests, meadows and wetlands owned and managed by counties and municipalities. The New Jersey Natural Lands Trust owns or manages more than 29,000 acres across the state, and manages its properties to "conserve elements of natural diversity, such as habitat for rare plant and animal species and rare ecological communities." Within the lands held by the different divisions of the state Department of Environmental Protection, there are designated "natural areas." Today, the natural areas system consists of 43 designated natural areas encompassing almost 40,000 acres, and extends from the Dryden Kuser Natural Area in High Point State Park to Cape May Point Natural Area on the tip of Cape May Peninsula.

The natural areas system and the Natural Lands Trust have seen declining staffing resources as well as a largely dormant governance, resulting in less preserved natural areas and less oversight and management of these critical ecosystems. The science of ecological restoration must eventually guide habitat rejuvenation of degraded landscapes, to counter ecological stressors like forest fragmentation, pollution, overabundant deer and climate change.

Habitat connectivity is also a critical component of this strategy. Through the use of the science-based landscape map, the New Jersey Conservation Blueprint, and the Connecting Habitat Across New Jersey (CHANJ) program, land can be evaluated based upon the likelihood of presence of species

with a goal toward connecting landscapes to create corridors for wildlife. This also creates transparency and predictability in planning and development in the protection of vital wildlife. Finally, the management of wildlife is critically underfunded. Relying heavily on federal funds from the State and Tribal Wildlife Grant program, the New Jersey Department of Environmental Protection's (NJDEP) Endangered and Non-Game Species Program manages New Jersey's many wildlife and bird species with limited staffing and support.

PRIMARY CONCERNS:

- Continued loss of natural lands that sustain a rich diversity of flora and fauna and a clean water supply, which are essential to residents' quality of life and the tourism industry
- Lack of funding for wildlife management including research, monitoring and restoration
- Declining populations of rare plant and animal species from a variety of human stressors including development, lack of comprehensive management of public lands, an overabundant deer population, advancement of invasive species and pathogens, rising sea level, storm surges and shoreline erosion
- Damage from illegal off-road vehicle traffic on public lands, which is increasing, to the detriment of important habitats

POLICY RECOMMENDATIONS

- **Increase preservation and stewardship of natural lands through the state Green Acres program, focusing on restoring and enhancing connectivity between large preserves**
- **Increase resources for the New Jersey Department of Environmental Protection (DEP) Natural Heritage program to support identification, research and protection of rare plants**
- **Increase funding for the endangered and non-game species program**
- **Revitalize and significantly expand lands in New Jersey's Natural Areas System; revitalize and expand the Natural Lands Trust Board of Trustees**
- **Institute landscape-scale planning for state lands that considers and protects the range of natural resource values, and continue to expand coordination among state agencies**
- **Increase connectivity by utilizing the Conservation Blueprint and CHANJ, which was developed by the NJ DEP Endangered and Non-Game Species Program**
- **Increase enforcement against illegal off-road vehicles on public lands**
- **Explore the potential to generate revenues for carbon sequestration and forest regeneration on state lands through enrollment in voluntary carbon markets. Ensure that carbon gains are verifiable and do not facilitate continued pollution in environmental justice communities.**

EXPLORE NATURAL SOLUTIONS TO THE CLIMATE CRISIS

New Jersey's Global Warming Response Act (GRWA) requires the state to reduce economy-wide greenhouse gas emissions 80 percent from 2006 levels by 2050. New Jersey's Global Warming Response Act 80x50 Report produced in 2020 by New Jersey Department of Environmental Protection (DEP) in conjunction with other state agencies identifies carbon sequestration in the land sector as one of seven sectors where emissions reductions will be necessary to meet the GRWA 2050 target.

➔ What is Carbon Sequestration?

Carbon sequestration is the process of capturing, securing and storing carbon dioxide from the atmosphere. The idea is to stabilize carbon in solid and dissolved forms so that it doesn't cause the atmosphere to warm.

New Jersey's land sector sequestered 8 percent of the state's net emissions in 2018, but continued development threatens forests, agricultural lands, wetlands and forests (over 360,000 acres were lost to development between 1986 and 2015). Rising sea levels threaten coastal wetlands and salt marshes. Conversely, the New Jersey Department of Environmental Protection (DEP) estimates that protection and conservation of New Jersey's natural carbon sinks could increase carbon stored in various land types by up to 33 percent by 2050.

➔ What are Carbon Sinks?

Forests are typically carbon sinks, places that absorb more carbon than they release. They continually take carbon out of the atmosphere through the process of photosynthesis. The ocean is another example of a carbon sink, absorbing a large amount of carbon dioxide from the atmosphere.

The GWRA 80x50 Report identifies five potential pathways for maintaining and enhancing carbon sequestration, with potential additional carbon storage of two to three million metric tons (MMTs) of carbon dioxide equivalent (CO2e) per year:

1. Reforestation
2. Avoided conversion of natural lands
3. Salt marsh and seagrass restoration and enhancement
4. Conservation management of agricultural lands
5. Proactive forest management

In New Jersey, reforestation represents the largest opportunity for carbon gains, but multiple natural solutions will be needed to defend and enhance carbon while providing important co-benefits such as clean water, flood control and wildlife habitat. The U.S. Climate Alliance estimates that the majority of New Jersey's carbon gain may be achieved at a cost well under $60/Metric Tons CO2e (USCA, 2018).

➔ What are Urban Heat Islands?

Urban heat islands occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels, and heat-related illness and mortality.

PRIMARY CONCERNS:

- Overabundant deer are the greatest threat to New Jersey's forests, causing rapidly diminished native species reproduction in virtually all species of native forest trees, shrubs and herbaceous species. As deer eliminate native seedlings, saplings and shrubs, the food web is being weakened, resulting in greatly diminished biological diversity and wildlife value. Newly-published research clearly shows that highly degraded forests that lack regeneration have a lower value for sequestering carbon, and less benefit for native species of conservation concern.
- Lack of implementation of practices that improve soil health on New Jersey's agricultural lands
- Loss of wetlands-releasing stored carbon into the atmosphere. Wetland plants regularly remove CO2 from the atmosphere and sequester it in the form of soil carbon, where it can remain for centuries.

POLICY RECOMMENDATIONS

➔ **Manage deer impacts on forest ecosystems for forest health and carbon sequestration**

Deer overabundance must be addressed with significant policy changes and new approaches, including aggressive development of deer reduction and ecological restoration methods for our forests, otherwise, reforestation efforts for carbon sequestration won't be successful.

➔ **Defend and enhance carbon stored in forests**

- Ensure that forest stewardship plans address all components of forest ecology including soils, native species, carbon sequestration, wetland communities, water resource protection and compatible recreational values.
- Capitalize on the carbon benefits of allowing intact forests that weren't cleared for agriculture during the 1930s or before, including those in the Highlands, to continue to mature.
- Replant and restore degraded post-agricultural forests suffering vast mortality due to emerald ash borer and other pathogens and alien species invasion.
- Prevent conversion of forested lands to development in all areas of the state using open space acquisition, local ordinances and other tools.
- Defend carbon in the Pine Barrens from being lost through catastrophic wildfires, using modern ecological prescribed burning and forestry techniques that maintain the ecological interactions required for species conservation in this fire-evolved and fire-dependent ecosystem.
- Restore Atlantic White Cedar swamp forests that sequester vast amounts of carbon in interior portions of the state's coastal plain, away from the threats posed by sea-level rise.
- Implement reforestation projects with proper deer management, including urban and community forests that create benefits to help reduce heat island impacts of New Jersey cities.
- Explore the potential to generate revenues for carbon sequestration and forest regeneration on state lands through enrollment in voluntary carbon markets. Ensure that carbon gains are verifiable and don't facilitate continued pollution in environmental justice communities.

continued ➔

POLICY RECOMMENDATIONS

➔ **Adopt climate-friendly agricultural practices**

Create additional incentives and technical assistance to help farmers implement practices that improve soil health and increase organic matter such as:

- Decreased tillage
- Add compost to the soil instead of or in addition to synthetic fertilizers.
- Implement meaningful soil protection standards for preserved farmland at the State Agriculture Development Committee (SADC).
- Promote the use of untreated and organic seed to increase the health of pollinators, which are required for food supply. Pollinators are negatively impacted by neonicotinoid treated seeds, synthetic chemicals and weather changes created by climate change, and we must do everything we can to ensure their health.
- Convert marginal agricultural lands to forests.
- Promote the transition of more farmland to less chemically-dependent and/or organic production.
- Adopt no-till and reduced-tillage practices.
- Plant cover crops that sequester carbon and reduce erosion.
- Incorporate agro-forestry and regenerative agriculture practices.
- Implement manure management practices to decrease emissions.

➔ **Protect Wetlands**

Increase involvement of the Department of Environmental Protection and the legislature in an effort to:

- Increase conservation and restoration of coastal wetlands, which are threatened by climate impacts such as rising sea levels, increased storm surges and development pressure.
- Implement salt marsh restoration and preservation techniques in coastal areas by increasing marsh platform elevations and protecting marsh fringes to prevent the loss of thousands of acres of tidal marsh, one of the best habitats at sequestering carbon.
- Research and develop techniques to transform drowned coastal forests lost to sea level rise into useful, carbon-sequestering habitats.
- Focus on coastal wetlands which have a natural adaptive capacity to migrate in response to changes in sea level and salinity environments. Set aside sufficient “migration zones” inland from the marsh edge to protect this opportunity to sustain tidal wetlands. In some cases, existing impediments to marsh migration can be removed to facilitate the process.

ESTABLISH A CIVILIAN CLIMATE CORPS IN NEW JERSEY

Shortly after his inauguration in 1933, President Franklin Roosevelt created the Civilian Conservation Corps (CCC) to "conserve our natural resources, create future national wealth and prove of moral and spiritual value not only to those of you who are taking part, but to the rest of the country as well." Roosevelt's "Tree Army" ultimately employed over three million young men who planted three billion trees, created more than seven hundred state and local parks, and constructed trails across the country during its nine years of existence. The CCC wasn't perfect – segregation and discrimination permeated the program. But if used as a model with equity at its core a New Jersey program can achieve the same success by creating living-wage jobs in restoration, recreation and resilience.

By establishing a twenty-first century Civilian Climate Corps, leaders in Washington, D.C. and New Jersey can put young people to work rebuilding New Jersey's ecosystem. To scale up quickly, the state can build on an existing AmeriCorps program where young workers implement shovel-ready state, local and federal plans. Within the Delaware River watershed, in particular, there is at least $55 million worth of shovel-ready projects to be implemented. An existing vehicle, the Delaware River Basin Restoration Program, can also support natural infrastructure projects and job creation.

PRIMARY CONCERNS:

- Rapid loss of open space and habitat is pushing thousands of American wildlife species toward extinction and threatening the clean air, clean water and food supplies that every person in the country needs to survive
- Scientists warn that human degradation of nature may increase the risks of infectious diseases.
- The rapid loss of natural areas in recent decades has left many communities – especially communities of color and low-income communities—with too few parks and recreational areas, exacerbating climate change impacts.

POLICY RECOMMENDATIONS

- ➔ **Create living wage jobs for the young and unemployed.**
- ➔ **Focus on job creation in underserved communities.**
- ➔ **Identify natural infrastructure projects to address climate change impacts.**
- ➔ **Expand existing workforce development programs such as New Jersey AmeriCorps and county youth conservation corps through the federal Americorps program.**
- ➔ **Convert volunteer programs into jobs programs.**

CREATE AND INVEST IN MORE URBAN PARKS

Local parks and urban green spaces improve physical and psychological health, strengthen communities, provide environmental and economic benefits to area residents and make neighborhoods and cities more attractive places to live and work. New Jersey is the most densely populated state, with density estimates over 1,200 people per square mile. Many urban areas have densities over 10,000 people per square mile. This density demands our attention on the abundance, location, and maintenance of state parks.

American adults and children rarely engage in the recommended levels of physical activity needed for a healthy lifestyle. A sedentary lifestyle contributes to obesity and related diseases such as high blood pressure, diabetes, congestive heart failure and stroke. The epidemic of inactivity is partially due to car-based development patterns as well as inadequate access to parks and open space. Studies show that when people live near parks they exercise more. Physical activity also relieves symptoms of depression and anxiety, and enhances overall psychological well-being. Communities of color and low-income communities face a disproportionate level of the effects of physical inactivity as they are more likely to have less access to parks.

Local parks and green spaces provide benefits beyond physical activity. Community gardens and urban farms can provide access to healthy food and allow residents to make social connections within communities – relieving isolation and providing a connection to others. Many of the mental health benefits of parks come from access to natural areas, including trees and water. Nature provides a natural calming – a respite from stress filled lives. Additionally, living adjacent to natural areas tends to boost property values. In order for as many people as possible to experience these benefits, the state should strive for every resident in urban New Jersey to live within a 10-minute walk of a park or green space.

REDEVELOPING AND MAINTAINING EXISTING PARKS

Many of New Jersey's cities, including some of the older most densely populated cities technically have parks and playgrounds located near residents. However, the quality of those parks or the types of facilities do not always serve the population. In addition, programming support and funding for appropriate maintenance is often lacking.

While increasing the number and acreage of parks in New Jersey's cities is desirable, it is also critical to evaluate and invest in existing parks to ensure that they are maintained and serve residents needs.

Investment in parks, especially in environmental justice communities, provides immediate and long-term benefits. Parks aid in job creation and help support climate resiliency at local and regional levels, improving the health of area residents.

RECLAIMING ABANDONED AND POLLUTED SITES

Abandoned or contaminated properties are a detriment to our urban communities. These sites, often located in older urban areas and along waterways or old rail lines are prime opportunities for new parks, which can connect people to the environment and increase the livability and economic vitality of a neighborhood.

In New Jersey's dense urban areas where many uses of land, such as multi-story residential and commercial buildings and transportation corridors are layered on top of each other in order to maximize its economic value – parks provide a unique opportunity to improve neighborhoods. Cleaning up formerly contaminated sites for parkland or other green gathering spaces can become the centerpiece of a revived neighborhood. Parks serve many purposes such as connecting formerly redlined neighborhoods, repairing and improving the environment and creating public places for artful

expression and community-building. Moreover, parks provide an environmental infrastructure with grounds and trees that improve air quality, create shade canopy --reducing heat island effect and storm water runoff.

Strategic park placement can repair environmental damage and add much-needed open space to urban neighborhoods without current adequate parkland, thereby providing families with a space that contributes to health, happiness and well-being.

OPENING SCHOOLYARDS FOR PUBLIC USE

Open schoolyards is another way to address the open space and recreation needs of urban neighborhoods. Schoolyards have the opportunity to provide a community gathering space in the evenings, on weekends and over the summer when school is not in session. Clearly schools need to remain safe and secure for its students during a school day, however, school districts and cities can seek ways to create support for open schoolyards when school is not in session.

New, open schoolyards could become a more attractive location for investment, repair and rebuilding as new playgrounds can serve everyone in the community – from toddlers not yet in school to elderly residents who could gather around game tables or a school's community garden.

CREATING FRIENDS GROUPS

The state should encourage the development and support a network of non-profit or community-based "friends" groups who can address equity issues where resources are most needed and become effective advocates for the care, maintenance and management of local parks – and park matters – from design to stewardship to programming and management. The processes associated with these activities can be designed to support community involvement.

ESTABLISHING SAFE ROUTES TO PARKS

Not only should parks be created and well-maintained; but establishing a Safe Routes to Parks initiative is also key. Neighborhood public safety issues including unsafe public infrastructure such as lack of sidewalks or pedestrian crosswalks must be addressed to encourage use and to welcome area residents.

PRIMARY CONCERNS:

- Many residents of New Jersey lack adequate access to a well-designed, well-funded, well-maintained, well-programmed park, playground or green space within a 10-minute walk from their home or place of work.
- Loss of parks from diversions of public parkland for private and commercial purposes, including at least ten in 2021.
- There is a disparity of access to parks and disparity of quality of parks across the state.
- Insufficient parks and greenspaces are often most acute in urban neighborhoods where the least land is available to address the situation and where economic injustice has occurred often resulting in abandoned, contaminated industrial land and/or abandoned or unused rail corridors or vacant lots.
- Existing brownfields and blighted urban properties are a drain on community and city resources.
- Communities can be activated and strengthened by their involvement in the creation and care of local parks and green spaces.
- Numerous existing parks suffer from insufficient maintenance and programming.

POLICY RECOMMENDATIONS

- ➔ **Ensure urban families in New Jersey have access to well-designed, well-funded, well-maintained, well-programmed parks, playgrounds, or green spaces within a 10-minute walk from home or workplace.**
- ➔ **Prioritize funding for park development and redevelopment in urban areas that have been historically impacted by pollution and contamination and where access is below average standards.**

continued ➔

POLICY RECOMMENDATIONS

- Prioritize use of funds from Natural Resource Damages settlements to expand park and urban green space and restoration projects near affected neighborhoods and waterways using community input.
- Continue to support the spending of Green Acres dollars in urban areas and strengthen the Green Acres rules to make it harder to divert all publicly preserved land for private commercial uses.
- Leverage the recent federal recommitment and support for funding for the Land and Water Conservation Fund as well as other federal park funding mechanisms.
- Establish more New Jersey state parks in urban areas. While local and county parks play an important role in our urban areas, state parks are funded by all taxpayers in the state, yet residents of urban areas may have barriers to travel long distances to state parks. For example, the recently acquired open space and restored waterfront near Camden is a prime example of a potential state park.
- Continue and increase funding for the state's Hazardous Discharge Site Remediation Fund for brownfield cleanup including its use for brownfield to greenfield park development projects.
- Leverage the Long Term Control Plan goals for wastewater treatment plants and their need to develop green infrastructure projects. Parks and schoolgrounds are ideal locations for such projects which would also help provide funding for those projects to be developed.
- Ensure that while stormwater utilities are proposed and established across the state that at the same time funds are also made available to also create or upgrade parks and playgrounds that deliver multiple environmental benefits, including green infrastructure.
- Increase access to shoreline in urban communities through the redevelopment of historic waterside industrial areas and also using the state's Public Trust Doctrine to increase public access to shores and tidal waterways
- Establish state support for open schoolyards and assist school districts to find ways to address concerns about public safety and maintenance in order to support this effective way to increase close-to-home access to park and recreational resources for many residents of New Jerseys' urban neighborhoods.
- Establish a Safe Routes to Parks program, similar to Safe Routes to Schools, where neighborhoods are reviewed as a whole and parks are accessible and welcoming.
- Create safe, dedicated bicycle trails/lanes/systems that can help connect neighborhoods to work, school and play areas.
- Create food parks, urban agricultural spaces where local growers can work with the community to grow healthy foods.
- Create statewide support system for "friends" groups in all communities across the state - and provide financial support and technical assistance for existing groups.
- Create green jobs and career pathways in this industry, as well as food park entrepreneurial opportunities.

END WAREHOUSE SPRAWL

GOODS MOVEMENT: A KEY NEW JERSEY INDUSTRY

The need for warehouse space is growing in New Jersey due to a combination of global and local forces. The Port of New York and New Jersey's major operations in Newark, Elizabeth and Bayonne generates a need for large sorting, storage and distribution facilities to handle the volume of goods arriving at the port from other countries. Meanwhile, the growth of e-commerce has resulted in a need for a new generation of smaller, more locally-focused warehouses. While larger facilities value proximity to the port, small warehouses value proximity to customers.

The Port of New York and New Jersey is a major driver of the state's economy. Industries devoted to the movement and storage of goods provide jobs to nearly one out of every eight employed New Jersey residents according to a report by NJ Future, the highest proportion among the 50 states. Additionally, traffic at the port is growing, due to increasing United States trade with South Asia (the preferred shipping route from South Asia traverses the Atlantic and ends in East Coast ports like Newark and Elizabeth). In fact, the Port of New York and New Jersey is now the second busiest in the country. All told, this economic activity has an impact on local communities, through increased air pollution and truck traffic.

Alongside shifting patterns of international trade, the growth in online shopping has further increased demand for warehousing across the country. The gradual decline of brick-and-mortar retail has helped catalyze the growth of the industrial real estate market for at least the last decade. For example, Amazon is now New Jersey's largest employer and has opened facilities of various sizes across the state.

WAREHOUSE SPRAWL

The pattern of warehouse development is changing. Previously, former industrial or manufacturing sites in northern New Jersey were targeted, but now warehouse development is moving west, along I-78 and into Pennsylvania's Lehigh Valley, consuming farmland at an alarming rate. Sprawl has begun to proliferate south along the New Jersey Turnpike, generating enough new truck traffic to prompt an expensive widening of the New Jersey Turnpike southward into Burlington County. Higher land values may be the only thing that has prevented a similar loss of prime farmland along I-78 in Warren and Hunterdon counties. However, recent warehouse development proposals in western and central New Jersey indicate that the protection afforded by land-value differentials may prove short-lived.

Complicating matters further, local officials may be attracted to warehouse development, since it produces property tax revenue without demanding much in terms of government services. But leaving the fate of one of New Jersey's most important industries, as well as its associated land-use decisions, solely in the hands of myriad local governments and their fiscal self-interest does not guarantee a regionally optimal solution. By adopting a regional perspective, communities can make sure that port-oriented storage and distribution functions are not consuming outlying lands that are better used for farming, recreation or other non-industrial uses. Additionally, communities can ensure that redevelopment opportunities near the port that are ideal for warehousing are not instead allocated to other land uses that lack the same location constraints.

From a commerce standpoint, locating large warehousing and distribution facilities as close to the port as possible is a desirable outcome. But, from a local perspective, these location decisions concentrate the negative effects of goods movement, such as truck traffic and subsequent noise and air pollution, in communities adjacent to the port. Many of these communities are home to significant low-income populations of color, which have historically borne the worst health and quality-of-life impacts of New Jersey's industrial past. To help rectify these environmental injustices, the state's push to electrify vehicles should prioritize heavy- and medium-duty trucks and port equipment before devoting attention to personal vehicles and charging infrastructure. Now that warehouse development has come to other people's backyards, considerations to placement, operation and external impacts need to be applied equitably across the region.

PRIMARY CONCERNS:

- Loss of prime farmland and other open space
- Truck traffic and associated pollution, noise and congestion
- Induced demand for new and larger road infrastructure
- Fiscal incentives for local officials to zone for warehousing
- Lack of regional perspective

POLICY RECOMMENDATIONS

- ➔ **Involve regional governments, port officials and shippers in land-use planning, to identify redevelopment locations that are particularly well suited to the needs of the goods movement industry.**
- ➔ **Provide municipal officials with the legal and land use tools to rezone and avoid as-of-right warehouse development in inappropriate locations.**
- ➔ **Provide guidance for municipal officials regarding the identification of appropriate locations for warehouses in town, including former commercial sites located on major roadways.**
- ➔ **Encourage warehousing to continue using redevelopment sites in appropriate locations. For port-dependent functions, sites near the port should get high priority and facilities located in environmental justice communities should move to become zero emissions zones; for smaller, more customer-focused distribution facilities, obsolete shopping centers or office parks could make for ideal locations.**
- ➔ **Prioritize and incentivize the clean-up and re-use of brownfield sites in optimal warehousing locations. Consider a fee on warehouses located outside of these areas that is dedicated to air pollution reduction programs in environmental justice areas.**
- ➔ **Use the State Planning Commission and the Office of Planning and Advocacy to review and, if necessary, approve/reject large projects of regional significance for compatibility with existing infrastructure and land uses. This concept is included in the state Senate bill S3688.**
- ➔ **Build up rather than out: "High Cube" warehouses offer land-saving benefits similar to those of higher-density housing by increasing the amount of activity per acre. Require warehouses to be solar- and green-roof ready.**
- ➔ **Enable more goods to be shipped by rail. Trains emit far fewer pollutants and greenhouse gases per ton-mile than trucks.**
- ➔ **Prioritize heavy- and medium-duty trucks and port equipment for vehicle electrification in order to mitigate effects on port-adjacent communities.**

PROMOTE ROBUST LAND PRESERVATION

New Jersey is a national leader in the preservation of open space, farmland and historic sites. The state's preservation programs and wetland protection policies implemented over the last five decades have resulted in the public ownership or purchase of development rights for more than a third of New Jersey's land area, protecting over 1.5 million acres according to the New Jersey Department of Environmental Protection. However, even with this success, New Jersey will likely be the first state to reach full build-out in the next 25 years or less, resulting in no more buildable vacant land.

NEW GOALS

The current federal administration has set a goal of preserving 30 percent of the nation's lands, waters and ocean by 2030, embracing similar recommendations made by scientists and conservation leaders. Some scientists recommend an even higher bar to save biodiversity. In 2019 the Center for American Progress called for protection of 30 percent of U.S. land and oceans by 2030 (the 30x30 goal), and 50 percent by 2050 (the 50x50 goal). New Jersey has already met the 30x30 goal and must move to achieve as close to 50x50 as possible in order to preserve a quality way of life for residents.

Meeting this goal in New Jersey is achievable and essential. Protected and open lands safeguard water quality and supply; mitigate air pollution and sustain soil health; preserve and defend biodiversity, rare flora and fauna, wildlife habitat, historic and scenic resources; and provide public recreation opportunities. Everything possible must be done to mitigate the worst impacts of the climate crisis through natural solutions and emissions reductions to ensure a healthier quality of life for all.

PARKS, FARMLAND, OPEN SPACE AND NATURAL AREAS

During the prolonged and challenging pandemic, New Jerseyans have turned to parks and open spaces in record numbers to find refuge in the beauty of nature and the benefits of outdoor recreation. Unfortunately, many residents do not have adequate access to parks and natural areas, especially in urban areas of the state. Additional park maintenance funding is a necessity, as parks are being neglected at the state level. Adequate resources need to be made available to state workers to steward New Jersey's public resources.

Studies show that for every $1 invested in open space preservation, $10 is returned in the form of ecosystem services (such as water purification, waste treatment and flood mitigation), natural goods (such as fish and farm products), and outdoor recreation. Restoration of historic sites creates more jobs than by new construction, and can often revitalize urban neighborhoods, allowing for the preservation and in some cases, repurpose, of valuable historic places. Residences adjacent to parks and preserved open spaces have real estate values 15 to 20 percent higher than those a block or more away.

New Jerseyans have consistently supported state funding for open space, farmland and historic preservation at the ballot. In 2014, after supporting every land preservation bond measure since 1961, nearly ⅔ of New Jerseyans voted to constitutionally dedicate a percentage of the Corporate Business Tax (CBT) for open space, farmland and historic preservation and stewardship. This dedication provides regular and reliable state funding, which is critical to leverage millions in additional funding from federal, county, municipal, nonprofit and corporate entities. Because of the CBT dedication, over $1 billion over 10 years is projected to be earmarked for land preservation and stewardship programs.

STATE PRESERVATION PROGRAMS

- **Green Acres:** Established in 1961, the Program has helped preserve over 677,000 acres of land, and provide more than 1,100 park development projects in all 21 counties
- **Farmland Preservation:** Established in 1983, has preserved more than 237,000 acres
- **New Jersey Historic Trust:** Since 1990, more than $156 million has been invested in historic site projects
- **Blue Acres:** Established in 1995, Blue Acres has facilitated the purchase of hundreds of flood-prone properties to help families move to safer locations and decrease repeated home flooding

PRIMARY CONCERNS:

- The climate and biodiversity crises mandate that we preserve 30 percent of our land by 2030 and reach to increase that to 50 percent by 2050 to save biodiversity and ensure a healthy quality of life for all residents
- Lack of adequate access to parks and natural areas, especially in urban areas of the state
- Need for additional park maintenance funding and staff to maintain and operate state parks

POLICY RECOMMENDATIONS

- ➔ **Permanently protect additional lands in the Highlands and Pinelands regions, which provide clean drinking water to more than 75 percent of the state**
- ➔ **Prioritize urban park creation, preservation and restoration using state funding sources including the Corporate Business Tax (CBT) and other funding sources including New Jersey's Natural Resource Damages settlements and the federal Land and Water Conservation Fund (LWCF)**
- ➔ **Increase park maintenance funding to steward public resources**
- ➔ **Rapidly spend additional Blue Acres program funding to purchase flood-prone properties and return these lands to their natural state**
- ➔ **Preserve approximately 315,000 acres of additional farmland to ensure a sustainable agricultural industry**
- ➔ **Protect New Jersey's cultural heritage, which will require more than $700 million in additional funding**
- ➔ **Ensure no reductions in CBT preservation funding**
- ➔ **Encourage county and local governments to continue open space funding programs**
- ➔ **Encourage the state to fund preservation using federal funding including the Agricultural Conservation Easement Program and other NRCS programs**
- ➔ **Fully fund the Payment in Lieu of Taxes (PILOT) program to compensate municipalities that host state preserved lands**
- ➔ **Identify additional sources of funding to address critical unmet land preservation needs**
- ➔ **Utilize the Conservation Blueprint as a tool to identify priority lands for protection**

PRIORITIZE INVESTMENT AND STEWARDSHIP IN OPEN SPACE

New Jersey's open space provides a variety of environmental and economic benefits including protection of water resources, preservation of biodiversity and wildlife habitats, creation of greenways, enhancement of urban centers and support of recreational opportunities. Proper stewardship is essential for keeping these areas functional and in pristine condition.

Preserved parks and open spaces require funding for stewardship of natural resources, and some parks need revitalization, improved facilities and public access. As more land is preserved, it is imperative that additional stewardship funding be made available. More than ever before, New Jerseyans rely heavily upon neighborhood playgrounds, city and state parks, forests and wildlife management areas as well as the statewide trail system for healthy outdoor recreation. Proper stewardship of these resources will benefit present and future generations.

SOUND STEWARDSHIP INCLUDES:

- Well-funded state, county, and municipal park districts
- Parks that serve the needs of area residents
- Parks that protect natural and historic resources
- Habitat protection and restoration balanced with public recreation opportunities
- Sustainable forest stewardship and restoration, including deer and invasive species management
- Support for local organizations that steward and advocate for parks
- Encouragement for alternative ways of creating and supporting parks – either through public-private partnerships or non-profit entities that advocate for parks
- Utilization of school playgrounds as open public amenities during non-school hours

POLICY RECOMMENDATIONS

- **Increase budgetary support for New Jersey DEP and allocate more money to staffing at DEP, particularly in the divisions of Parks and Forestry and Fish and Wildlife**
- **Increase funding for stewardship-related expenditures, such as planning, monitoring, research and restoration**
- **Institute long-term landscape planning for stewardship at all publicly owned parks, wildlife management areas, natural areas, and forests that includes aggressive deer management**
- **Ensure that forest stewardship plans address all components of forest ecology including soils, native species, carbon sequestration, wetland communities, water resource protection and compatible recreational values**
- **Establish and fully fund implementation of State Forest Action Plan and State Wildlife Action Plan, and meet federal matching requirements for State Wildlife Grants to steward wildlife**
- **Address critical backlog of capital park improvements at the state, county and local levels through planning and increased funding**
- **Adopt a comprehensive, science-based plan for controlling motor vehicle use on state lands to protect natural areas and the rights of non-motorized recreational users. Set higher monetary penalties that are strictly enforced to help achieve these goals and increase overall enforcement of laws**
- **Inventory, map, record, monitor and enforce conservation easements to ensure natural resources are permanently protected**
- **Support the availability and expansion of natural and restored areas in New Jersey's more urban parks**

DEVELOP NEW TRAILS AND MAINTAIN EXISTING TRAILS

New Jersey is the most densely populated state in the country, which makes public access to open spaces absolutely vital. Trails provide this critical access to residents and visitors, and recent trends show that the number of people seeking to use these trails is dramatically on the rise. The challenges of connecting people with nature, and in particular, ensuring safe and equitable access to people of color, must be addressed.

In addition, providing secure, well-maintained trails is essential to accommodate high volumes of visitors to more populated parks and outdoor areas.

Stories of overused natural areas are increasingly common. At the Dunnfield Creek trailhead along I-80, Trail Stewards counted over 7,000 hikers in a single day. The Appalachian Trail boardwalk in Vernon Township has been a longtime challenge for locals, with hundreds of cars parked illegally along high-speed roads and residential areas. Even small hiker parking lots cause problems as parking overflow blocks neighborhood cars in driveways. These visitor numbers and parking problems often distract from the more subtle damage caused by unprecedented use – trampled vegetation, accelerated erosion, litter, confusing unapproved "social trails," and constant search and rescue calls to rescue lost hikers. With this skyrocketing use and impact, it is critical that support for trails grow to accommodate the demand.

Part of the lack of support stems from poor public understanding of how trails are maintained and built. Many assume that trails are natural pathways kept open by foot traffic. Others believe that cadres of dedicated park personnel patrol trails to cut back vegetation, mount trail markings, and pick up trash. Neither of these common misconceptions is true, which thereby contributes to the challenges in securing the resources needed to properly steward trails across the state.

The construction and maintenance of trails in New Jersey is undertaken as a partnership between land managers and partner nonprofits, with volunteers contributing thousands of hours annually - the equivalent of many full-time paid staff. Any model of sustainable trail infrastructure must have nonprofit partners at its core, recognizing that they multiply the value of every dollar by leveraging volunteers in the execution of important projects. Beyond providing funding mechanisms for partners, this means designing protocol such as liability agreements, permit applications, and reporting requirements which encourage volunteer and partner involvement rather than serving as obstacles.

If the environmental integrity, recreational value, and safety of these trails is to be maintained into the future, a commensurate rise in investment in New Jersey parks is critical.

PRIMARY CONCERNS:

- Funding requests made to the New Jersey DEP's Recreational Trails Program show increasing funding demand and interest in trails
- Considering the increased public attention to the link between health and parks, the demand for recreation facilities in New Jersey will likely continue
- Illegal Off-road Vehicle (ORV) use on trails creates safety issues for park users and impacts wildlife habitat and other important ecological features
- Trails are in need of routine maintenance to ensure safety and accessibility. The last comprehensive trails plan for the state was completed in 2009 by the New Jersey DEP.
- Delays and expense in obtaining approvals to repair trail infrastructure

POLICY RECOMMENDATIONS

- Fund public land managers to handle trail infrastructure such as parking lots, kiosks, restrooms, staffing and enforcement.
- Network trails to provide easier access to and from more locations both as a mode of transportation and recreation and reduce stress on existing parking areas, using federal infrastructure funding.
- Extend trail plans into urban areas and older suburbs to address racial equity, diversity and inclusion, bringing parks and greenways closer to where people live.
- Design trails for people of all ages and races and improve and ensure accessibility to trails for those with mobility challenges.
- Fund nonprofit partners to address trail monitoring, maintenance, repair, improvement, construction, relocation and general upkeep.
- Organize collaborative leadership among the NJ Trails Council, NJ DOT and NJ DEP to build effective partnerships to increase and speed up investments in trails and greenways.
- Urge the governor to support the Trails Summit in September ’21 and highlight the tremendous mental and physical health benefits as well as tourism and economic benefits.
- Organize aggressive collaboration with local police to enforce ORV laws is needed.
- Review permit processes with local Park Superintendents and on-the-ground trail building partners to identify where regulations are causing gridlock, resulting in environmental degradation and threats to visitor safety.

NURTURE THE OUTDOOR RECREATION ECONOMY

According to a 2019 report from the Outdoor Industry Association, outdoor recreation accounts for almost $12 billion in economic gains and employs about 132,000 people in New Jersey.

New Jersey residents are outdoor enthusiasts with even more participation now than earlier years. According to a 2021 special report from the Outdoor Industry Association, new outdoor participants were more likely to be female, younger, living in an urban area and slightly more ethnically diverse than existing participants. Their primary motivation for seeking outdoor activities was to spend time with loved ones safely, exercise and reduce screen-time fatigue. Walking, running, biking and hiking were popular new activities cited by new participants who shared that opportunities with low barriers to entry and available and accessible within ten miles of their homes was a significant factor in selecting outdoor recreation.

There are sixteen states that have outdoor recreation units, task forces or policy advisors. Vermont and Maryland (both established in 2017) have active organizations dedicated to promoting and supporting outdoor recreation. In Vermont, the Vermont Outdoor Recreation Economic Collaborative provides annual reports to the governor on status and recommendations to increase residents' connection to nature and attraction of high-quality employers and sustainable workforce in all economic sectors supported by the outdoor recreation economy. The Collaborative is an invaluable partner to the government agencies that maintain the parks and open spaces in the state.

PRIMARY CONCERNS:

- There is no coordinated state-wide program to encourage and coordinate outdoor recreation.
- Economic health requires fully maintained parks and facilities to attract tourists.
- Recreational and commercial fishing and hunting permits are insufficient to fund maintenance of parks and wildlife management areas.
- Public transportation is needed to popular attractions to reduce parking overflow and provide access to all people.

POLICY RECOMMENDATIONS

- ➔ **Create an Outdoor Recreation Council in New Jersey.**
- ➔ **Launch a recreation hub marketing campaign: Coordinate a public awareness effort that organizes New Jersey's outdoor products, services, and places geographically to re-direct participation or visitation to under-utilized recreation areas or higher priority destinations. A re-branding could drive patronage of nearby businesses, spread out visitation, incentivize small groups and encourage local shopping while reinforcing public health, quality of life and outdoor community building.**
- ➔ **Secure innovative financing for outdoor recreation economy businesses: Continue to tailor grants, loans and sources of capital to the needs of small businesses and startups, especially for opportunities that are unique to outdoor recreation like investments in infrastructure and facilities.**
- ➔ **Establish a statewide platform for outdoor workforce development: Build an outdoor jobs portal that facilitates the ongoing hiring and training of outdoor professionals and seasonal workers.**

PRESERVE FARMLAND

Since its inception, New Jersey's Farmland Preservation Program has protected more than 237,000 acres of farmland across the state which, among myriad benefits, helps New Jersey respond to the growing demand for locally grown farm products. To sustain New Jersey's agricultural industry long term, the New Jersey State Agricultural Development Committee has set a goal to preserve a total of 550,000 acres of farmland. However, farmland in New Jersey is currently under siege. In addition to ongoing conversion of farmland to residential and commercial development including warehouse placement, New Jersey farmland is increasingly threatened by poorly-sited solar development and other sprawl.

Preserved farmland can play a significant role in stopping sprawl and protecting the rural, historic and scenic character of the landscape. Promoting sustainable agriculture that works in harmony with natural systems benefits New Jersey residents by providing locally grown, healthy food choices and a cleaner environment.

PRIMARY CONCERNS:

- **Stopping sprawl from warehouse and energy infrastructure development**

  The online shopping boom has led to an increase of warehouse development on farmland in New Jersey. In addition, energy infrastructure proposals, including solar projects, are being targeted for farmland. These types of development uses compete with preservation programs. Alternative siting requirements must be implemented to uphold the state's long-standing commitment and goal of preserving more land and open space as outlined in New Jersey Future's report "Warehouse Sprawl: Plan Now or Suffer the Consequences."

- **Protecting Natural Resources and Combating Climate Change**

  Farms can help protect the state's water supply and wildlife habitat, particularly if measures are taken to decrease the use of synthetic chemicals and neonicotinoid pesticides and treated seeds. neonicotinoids (neonics) are a group of insecticides used widely on farmland and in urban and suburban landscapes, and have been proven to be highly toxic to insects, including the pollinators and bees we depend upon for our food supply. Birds, insects and other wildlife have and continue to experience dangerous declines in many regions of the world. Research clearly shows ecosystem collapse throughout the food chain due to neonics in lakes, stream corridors, forests and meadows in proximity to agricultural areas, and in heavily suburbanized areas. Many European countries have already taken steps to ban neonicotinoids.

  Implementing practices such as cover cropping, decreased tilling and adding compost not only helps in retaining rainwater onsite and increasing soil health, but additionally combats climate change by increasing soil carbon sequestration. Given the increase in demand for locally grown food, protecting high-quality soil also ensures that preserved farmland in New Jersey continues to produce healthy food crops. Limiting the amount of building and other impervious coverage that can damage soil is an important step to meeting that objective.

- **Protecting the Integrity of Preserved Farmland**

  For over fifteen years, there have been multiple proposals to allow commercial non-agricultural businesses, including venues for large weddings, fairs and concerts on preserved farmland. The number of large events held on preserved farms should be limited and require municipal approvals as well as building and other limitations set by the State Agricultural Development Committee (SADC). Holding many large events creates a commercial use of farmland and removes the original focus of this taxpayer funded agricultural program. Such events undermine the original intent of the program and often create traffic problems in rural areas which require additional parking areas and other infrastructure that can negatively impact the soils and the natural resources the program was meant to protect.

- **Federal Conservation Resources**

  The Natural Resources Conservation Service (NRCS) in the U.S. Department of Agriculture offers a variety of conservation programs that protect land and promote more sustainable

farming and land stewardship, including protecting grasslands, transitioning land to organic production, and installing riparian and wetlands buffers. The federal Agriculture Conservation Easement Program (ACEP) provides critical preservation resources and these funds have preserved thousands of acres of farmland in New Jersey, often in partnership with nonprofit organizations.

- **Access to Farmland**

  Access to land is one of the primary needs of a thriving, sustainable agriculture system, but the high cost of land in New Jersey poses an enormous challenge to minority as well as young and beginning farmers. There are very few people of color who own farmland in our state, a problem the Northeast Organic Farming Association of New Jersey is working to address, but additional assistance is needed from the New Jersey Department of Agriculture. Additionally, consideration should be given to provide access to farmland for indigenous tribes for sustenance farming and education of their children and families in traditional ways of their ancestors. The State Agriculture Development Committee hosts the LandLink program, which connects farmers with landowners interested in leasing or selling farmland.

POLICY RECOMMENDATIONS

- **Strengthen soil protections to discourage deep soil cuts, stockpiling, compaction and other harmful practices on preserved farmland, while supporting soil carbon sequestration.**
- **Uphold policies that limit non-agricultural commercial development on preserved farms and limit buildings and other impervious surfaces to ensure minimal impact on farming activities and soil health.**
- **Encourage agricultural production and assist with marketing for new products including organic grains.**
- **Continue to robustly and consistently fund farmland preservation through federal, state and local programs, with a focus on access and ownership of land for minority, young and beginning farmers, and indigenous tribes.**
- **Phase out the use of neonicotinoids in all forms, as DDT was over fifty years ago.**
- **Grow and promote New Jersey's LandLink program to include minority farmers as well as young and beginning farmers with landowners interested in selling or leasing land for agriculture.**
- **Prohibit the location of warehouses, energy infrastructure – including renewables – and non-farming related commercialization on New Jersey's prime farmlands to ensure lands remain viable and healthy for food production.**
- **Promote sustainable agriculture practices using funding from NRCS conservation programs and additional incentives that work in harmony with natural systems.**

SAFEGUARD THE DELAWARE BAY WATERSHED

The 1,200 square mile Delaware Bay watershed is recognized for its highly productive farmland, rich biological diversity and maritime heritage. The watershed is composed of the southwestern coast of New Jersey covering an area roughly from Woodbury in Gloucester County to Cape May Point.

The region is a complex patchwork of tidal rivers, salt marshes, forests, farms, towns and small cities. The character of the region changes dramatically from north to south. The northernmost reach is dominated by densely populated suburbs of Philadelphia and Wilmington, Delaware. Moving south, the landscape gives way to New Jersey's largest and most productive farm belt, covering nearly five hundred square miles in southern Gloucester County, most of Salem County and the western part of Cumberland County. Further along, the cities of Bridgeton, Vineland and Millville are among the region's fastest growing.

Nearby, Cumberland County's coastline supports commercial crabbing, oystering and fishing. The southernmost part of the watershed overlaps with one hundred fifty miles of the Pinelands National Reserve. The Delaware Bayshore is recognized for its importance to migratory waterfowl, songbirds and shorebirds. The watershed is also home to four National Wild and Scenic Rivers.

Protection of the diverse cultural and environmental characteristics of the Delaware Bay region is possible with sustainable planning and land preservation initiatives that work to protect water quality and habitats, a necessary task in this economically disadvantaged region. It is critical to balance local governments' need for economic development with appropriate preservation and land use choices that prioritize protection of drinking source water, wildlife habitat and other essential natural resources in the region. Land preservation and restoration will also defend the region against sea level rise.

Although much of the region is rural, the need to maintain municipal revenue has led to resistance to permanently protecting land. As a result, many lands are not protected, which increases the chances that irresponsible development will occur, putting the region's ecological features at risk.

Even more troubling, publicly preserved lands, such as those in Millville City, face the threat of private development by municipal governments seeking ratables. Preservation of land and parks can benefit the local economy and draw those seeking outdoor recreation opportunities.

PRIMARY CONCERNS:

- Threats to water quality including combined sewer overflows and polluted stormwater runoff
- Improper use and diversion of public preserved lands for development
- Degraded and loss of habitat for wildlife including vulnerable shorebirds, horseshoe crabs and fish species
- Impacts to local outdoor recreational economies through the development of open space

POLICY RECOMMENDATIONS

- **Restore the Payment In Lieu of Taxes (PILOT) program to help municipalities address the loss of ratables**
- **Prevent any diversions of public lands for private development and uphold restrictions on the use of preserved lands to ensure the integrity of preservation programs**
- **Preserve additional open space and farmland to complement economic development and protect water quality and wildlife habitat for shorebirds, including the endangered red knot**
- **Prioritize meeting with land preservation groups to discuss how better to preserve lands while also ensuring a vibrant economy**
- **Encourage sustainable shellfish aquaculture through the coordinated activities of the Delaware Bay Aquaculture Development Zone and ongoing stakeholder groups that bring industry and conservation organizations together to resolve issues of concern**

BUILT ENVIRONMENT

CREATE COMPACT, WALKABLE COMMUNITIES

For the latter half of the twentieth century, New Jersey's dominant development pattern was car-centric suburbia, with homes, stores and offices confined to different quadrants of town, requiring residents to get in the car for just about every trip purpose. This pattern persisted into the first half of the 2000s. By the end of the decade, demographic and economic trends steered development back into already-developed places. Redevelopment became the new normal, with built-out cities, towns and older suburbs suddenly absorbing the majority of the state's population growth. Thanks mainly to the residential preferences of younger generations, compact, walkable communities are now the locus of residential demand.

UNMET DEMAND FOR IN-TOWN LIVING

This shift happened slowly, and then suddenly, putting upward pressure on housing prices in many cities and walkable suburban downtowns as well as pressures on existing outdated infrastructure. Some cities and towns, mainly those that were abandoned *en masse* in the great suburban wave and have struggled through the intervening decades, are experiencing a renaissance. Others are enforcing zoning codes that prescribe mostly single-family detached housing, limiting opportunities for the construction of smaller and more affordable housing types that might make the town accessible to a wider range of households.

Despite the obstacles, it is imperative that the need for affordable housing and job growth, be addressed in older, walkable centers in order to retain younger residents in the live-work-shop-play environments they prefer.

In-town living hosts a number of other societal benefits for all age groups, and benefits the economy and ecology as a whole.

MULTIPLE BENEFITS

Studies show that people who live in mixed-use "in-town" communities tend to drive less, especially if public transit is available. This results in cleaner air, fewer greenhouse gas emissions and less time behind the wheel. Residents also tend to walk more, which helps ward off health problems that are symptoms of a sedentary lifestyle. And for those who can no longer drive, living in a walkable or transit-friendly town where destinations are nearby means that the loss of a driver's license doesn't negatively affect quality of life.

Compact development helps to conserve land. Infrastructure – roads, sidewalks, pipes, power lines – serve more people per linear foot than in a low-density environment thereby reducing per-capita costs for building and maintenance. This results in a good long-term strategy for keeping property taxes down.

ENHANCING CENTERS AND CREATING NEW ONES

Strategies for meeting the demand for in-town living will differ depending on the kind of development that is already in place. For older towns with "good bones" (i.e. a fine-grained street grid with small blocks, a variety of housing options), the secret is finding opportunities for redevelopment and infill such as repurposing old buildings, building on surface parking lots, and sometimes demolishing outdated land uses and reusing the land. In car-dependent suburbs without clear downtowns or main streets, new future centers of activity can be identified and planned out. Using large redevelopment parcels (such as defunct shopping centers), or existing single-use developments can be good candidates for main street centers if properly designed and integrated into the surrounding community and if a clear path for future expansion and connectivity is outlined.

PRIMARY CONCERNS:

- Aging infrastructure in many older centers that limits the absorption of new population and business growth.
- Lack of coordinated state support to invest in walkable communities versus maintaining suburban sprawl infrastructure investment patterns, such as highway and road capacity expansion.
- Unsafe streets for pedestrians and bicyclists of all ages.
- Insufficient allowable density that enables a strong mix of uses and enough built-in residential demand.
- Insufficient mix of housing options in walkable, mixed-use centers, at prices that are affordable to a wide range of household incomes.

- Lack of investment in future and existing transit system to foster more transit-oriented development.
- Overabundance of car-centric communities that will require significant planning and investment to retrofit into walkable places.

POLICY RECOMMENDATIONS

- Provide economic development and land use planning assistance to municipalities that want to improve an existing downtown.
- Increase allowable densities and incentivize a mix of uses in downtowns, centers, main streets and transit station areas.
- Devote more land to people and less to cars. Incentivize shared parking and reduce or eliminate minimum parking requirements in appropriate locations.
- Support the implementation of form-based codes, which regulate the height and bulk of buildings but not their use. This would allow residential and non-polluting commercial uses to locate in the same neighborhood. The corner store shouldn't be illegal.
- Initiate a Main Street program at New Jersey DOT that focuses on re-thinking and investing in state and county roads that serve as main streets to make towns more pedestrian and business friendly.
- Make walking safer. Initiate and fund a Vision Zero program in centers around New Jersey to reduce vehicles hitting pedestrians to zero. Some examples of investments include crosswalks, traffic signal pedestrian phase timing, street width, curb cuts and street furniture (benches, lighting).
- Provide affordable financing, including grant funding, to upgrade municipal infrastructure, so that older centers are able to accommodate new residents and businesses
- Increase the diversity of housing choices in walkable towns. Implement zoning reform similar to what Oregon and some individual cities elsewhere in the country have done, in which towns are no longer permitted to create residential zones in which only single-family detached homes are allowed; or like California, which removed restrictions on accessory dwelling units (like above-garage apartments or in-law suites)
- Support the regionalization of school districts, to lessen municipal resistance to zoning for more housing.
- Outlaw cul de sacs and new residential development in places served by public water and sewer systems that do not support grid patterns and design for walkability. Provide incentives for redevelopment in car-oriented suburbs, to seek ways to increase overall street network connectivity by creating new through-streets and connections to surrounding development.
- Change the culture at New Jersey DOT to focus on moving people and supporting economic development rather than moving vehicles.
- Expand New Jersey DOT's Transit Village program to make it more proactive, so that the state is actively promoting transit-oriented development in as many places as possible.
- Expand the charge of New Jersey Transit's real estate division to plan and partner with communities to repurpose state assets and foster more transit-oriented development.
- Invest in transit improvements in already-developed areas to meet current demand and expand capacity to meet future demand.
- Focus on pedestrian accessibility at transit stations. Make sure sidewalks are continuous and well maintained, and that safe routes to nearby destinations are easy to find.
- Create or maintain incentives for economic development and job growth in transit hubs. Locating jobs near transit is an effective way to take cars off the road and reduce the state's carbon footprint.

ENCOURAGE INCLUSIVE REDEVELOPMENT

Home to approximately nine million people on only 8,721 square miles, New Jersey is a highly developed state with the highest population density in the country, with little land left for development or preservation. (To put this in perspective, New Jersey's population is greater than half the countries in Europe, and nearly one-third of the size of a country like Canada.)

According to the New Jersey DEP's 2015 land use estimates roughly 86 percent of New Jersey's land is either developed (33 percent) or preserved/constrained (53 percent), leaving only 14 percent as developable. For comparison, 41 percent of New Jersey's land was developable in 1986, illustrating the extent of new development that occurred over the three decades that followed.

The state continues to encourage new development and growth. The best way to accommodate this growth and development pressure is through redevelopment. Not only is this a more efficient way to grow, it also relieves pressure to convert farmland and other open spaces into development.

➔ What is Redevelopment?

Re-using sites that have been previously developed and that have the necessary infrastructure and proximity to other developments

New Jersey continues to be one of the top five most diverse states in the country based on statewide demographic data according to WorldPopulationReview.com. At the community level, however, New Jersey can do better. According to the U.S. Census Bureau's 2019 estimates, approximately, 55 percent of New Jersey's residents are White, 21 percent are Hispanic, 15 percent are Black and 10 percent are Asian. At the same time, approximately one-fifth of New Jersey municipalities are 90 percent white and 75 percent of residents in about half of the state's municipalities are White. A mix more representative of the various groups and rich cultures within the state would be ideal, and redevelopment can help start the process.

BENEFITS AND CHALLENGES OF INCLUSIVE REDEVELOPMENT

The two major environmental benefits from redevelopment are (1) reduced air pollution (more people commute by walking, cycling and public transit) and (2) decreased development pressure on open spaces which is necessary for protecting the state's water quality and habits as well as the sequestering of carbon to aid in cleaner air. The benefits are even greater when brownfields are redeveloped, as cleaning up these contaminated sites results in reduced soil and water pollution.

Redevelopment does not begin at a city's borders. A major component of redevelopment includes a major investment in infrastructure as well. Redevelopment becomes an opportunity to rebuild infrastructure for the next century.

All told, communities that succeed in fostering good redevelopment will spur other towns to do the same as increased demand boosts real estate values and brings new growth to cities. Keeping a balance will no doubt require ongoing management to ensure that the vibrant, walkable places that are being created will produce opportunities for residents with a mix of incomes, including the elderly and the disabled, and, ultimately a more equitable society.

PRIMARY CONCERNS:

- Current policies support outdated growth and development patterns, which threaten open space and do not encourage the redevelopment of existing properties.
- Redevelopment is more complicated and expensive than green field development.
- Single-family and antiquated zoning prevents forward-looking appropriate redevelopment from being planned and implemented.
- Weak real estate markets and overburdened communities have many barriers to being able to redevelop and revitalize their communities.
- Lower income communities and communities of color rarely have an appropriate seat at the table when redevelopment projects are being planned and developed.
- Redevelopment without public input and guidance will likely continue New Jersey's historic/outdated patterns of growth.

POLICY RECOMMENDATIONS

- **Align state department policies and investment decisions to make it easier and more cost effective to redevelop existing properties compared to developing on undisturbed green fields.**
- **Re-use existing buildings, especially historic buildings, with incentivizes, including improving and expanding the state historic preservation tax credit.**
- **Ensure that residential and commercial redevelopment is incentivized together to create compact, walkable, mixed-use places for all people, even those without cars.**
- **Provide incentives for redevelopment projects, especially those in car-oriented suburbs, to seek ways to increase overall street network connectivity by creating new through-streets and connections to surrounding development.**
- **Invest in transit in already-developed areas to meet current demand and expand capacity to meet future demand.**
- **Minimize investment in new road miles, especially in low-density areas, and direct those scarce resources to redevelopment areas where the most people would benefit.**
- **Provide affordable financing, including grant funding, to upgrade municipal infrastructure and invest in new energy and broadband assets.**
- **Give priority funding and treatment to redevelopment projects which are inherently more complicated and expensive. Do not treat redevelopment projects and green field projects equally when prioritizing funding or developing land-use rules.**
- **Provide additional support and subsidies for redevelopment in weak economic markets. Create new, and enhance existing, programs to reduce barriers and incentivize redevelopment in these communities.**
- **Develop a redevelopment inclusion toolkit for municipalities that can be used in both gentrifying communities and in already wealthy exclusionary communities and pass laws to support implementation. Elements of the toolkit will include:**
  - Removing a percentage of housing units from the market and making them permanently affordable to lower income residents.
  - Instituting an inclusionary housing ordinance that results in a percentage of all new residential units being permanently affordable to lower income residents.
  - Reducing the cost structure of a percentage of commercial and retail spaces to ensure that small mom-and-pop and start-up businesses can exist.
  - Developing public space guidelines to ensure all people have access to appropriate public spaces and facilities.
- **Require Community Benefits Agreements in more instances. Expand the traditional scope of these agreements to include physical and quality of life benefits and ensure that community members are party to the agreements.**
- **Pilot a Community Design Advocates program that pays community leaders in overburdened communities to coordinate input from community members and then ensure that the input is incorporated into the design and development of redevelopment projects. This can be combined with Community Benefits Agreements.**

CONNECT COMMUNITIES THROUGH BOULEVARDING

In the mid twentieth century, federal and state highway policies led to widening of existing urban arterials and the development of freeways. The construction of many new roadways was sized to accommodate cars at the expense of urban living. When these super roads passed through cities, they often were elevated, sometimes built below grade, and sometimes passed right through cities at ground level. This caused enormous damage to existing neighborhoods, sometimes completely erasing communities and displacing city residents. Most affected were people of color and low-income families with little political power to fight these proposals. The cultural, financial and emotional toll this took on communities is immeasurable and lasts to this day.

Now, more than half a century later, these structures are reaching the ends of their useful lives. Many urban freeways cut off key parts of what made cities attractive, such as access to waterfronts – and/or separated once cohesive neighborhoods as well as walkability between neighborhoods. New roadways also consumed land that is much more valuable as urban real estate.

Today, rather than spend tax dollars to rebuild these highways, many cities are turning to the concept of boulevarding – a departure from the mid-century highway standards and a return to human-scale design. Boulevarding creates additional uses for roads that are built around pedestrian and ecological needs of a community and may factor in the use of **road diets**, which reduces the girth of urban arterials across the state.

➔ What are Road Diets?

A road diet calls for restriping a stretch of road to remove at least one lane and turning that pavement over for other purposes.

A REVIEW OF LAND-USE PATTERNS

The land use patterns arising in response to the suburban New Jersey lifestyle has brought about the proliferation of freeways and urban arterials. Owning a vehicle is a necessity for travel out of these areas. Over time, the proliferation of single occupancy vehicles for access to cities has increased throughout the state, adding to the congestion. As a result, walking along these roadways is difficult, unpleasant and dangerous given the speed of vehicles and the absence of pedestrian infrastructure as well as the overall vehicle-centric nature of the landscape. Drivers, businesses and residents along these roadways are exposed to noise, concentrated traffic congestion and dangerous pollutants from vehicle emissions; and pedestrians face the added risk of injury and/or death from encounters with motor vehicles.

Moving toward a boulevard model and a "re-ownership of roads" would allow roadways to provide access while slowing down traffic – making life safer for pedestrians to access neighborhood amenities. Boulevarding would provide drivers with access to other roadways as well, spreading out existing transportation emissions while improving transit, bicycle and pedestrian pathways in and around cities.

This is not a new concept in New Jersey. In fact, different options for these freeways may be available within the next four years. Route 29 in Trenton has been a prime candidate for boulevarding for over a decade. New Jersey DOT has also previously expressed concern about the traffic congestion Route 29 causes, the high rate of car crashes, and the potential for flood damage from the adjacent Delaware River. By routing a new boulevard more inland and repurposing the existing roadway, New Jersey DOT would accomplish the dual goals of transportation resiliency and improved connectivity with Trenton's neighborhoods. This would also open up the waterfront for development, completing the secondary goal of developing safe pedestrian access to the Delaware River and daylighting the Assunpink Creek.

➔ What is Daylighting?

Daylighting rivers or streams is the process of removing obstructions which are covering the waterway and restoring them to their previous condition. A portion of the Assunpink Creek in downtown Trenton was reopened by removing a concrete culvert that was covering the waterway.

Route 29, Trenton Photo Credit: Wikipedia User Famartin

Moving toward a boulevard model also generates construction jobs and increasing opportunities for small business and union labor. Available land opening up means new opportunities for residents who have stayed in these areas of cities such as Trenton, New Jersey, and Yonkers, New York, as well potential for redevelopment to attract people and businesses back to these areas. In Rochester, New York, the conversion of the "Inner Loop" to a boulevard has created an environment prime for redevelopment. This will allow existing community members to determine what they want their neighborhoods to look like as well provide the potential for economic development for the city.

PRIMARY CONCERNS:

- Freeways and wide urban arterials concentrate air pollution locally and in nearby neighborhoods.
- Freeways create segregated communities within cities, especially across racial lines, and increased car reliance.
- Massive arterial highways take up vital land in cities that could be used for business, residential or green space.

POLICY RECOMMENDATIONS

- ➔ **Leverage federal funds from the American Rescue Plan to conduct community outreach, study and design. Reconstruct freeways as boulevards.**
- ➔ **Conduct air quality monitoring research along these roadways to quantify changes to emissions levels, particularly NOx and SOx, to ensure emissions reductions for nearby communities.**
- ➔ **Ask New Jersey Department of Transportation, New Jersey Economic Development Authority, New Jersey J Department of Environmental Protection and the Office of State Planning to lead the way by creating templates and pursuing pilots for boulevarding redevelopment plans. This should emphasize centering local community business, minority- and women-owned enterprise, and community amenities in future plans.**

ADAPT TO WORSENING CLIMATE IMPACTS

The impacts of climate change are worsening and are increasingly affecting New Jersey's communities. Sea levels are on the rise and are increasing faster in New Jersey than other states. It is estimated by the Rutgers Climate Resource Center that – depending on the level of carbon emissions – sea levels in the state could rise as much as two feet by 2050 and over six feet by 2100, permanently flooding portions of New Jersey's communities, making certain areas uninhabitable, and threatening the State's $30 billion shore tourism industry.

What's more, New Jersey is warming faster than other northeastern states. Average temperatures in New Jersey have risen around 3.5 degrees Fahrenheit since the late 1800s. By 2050, the rise in temperature is forecast to be as much as 5.7 degrees in New Jersey according to New Jersey DEP's Scientific Report on Climate Change.

Warmer overall temperatures cause longer, more frequent and more widespread heatwaves, which could result in a 55 percent increase in summer heat-related deaths according to the New Jersey DEP Scientific Report on Climate Change. Annual precipitation is also expected to increase in New Jersey between 4 percent and 11 percent by 2050 according to New Jersey DEP – threatening to flood communities and overwhelm the state's aging infrastructure.

Bearing a disproportionate share of the burden are our frontline communities of color, those with limited wealth, and those living with the legacy of environmental injustice. There is moral responsibility to attempt to right the wrongs endured by frontline communities by having an intentional focus on empowerment in the face of these existential threats.

Put plainly, worsening climate scenarios present a growing and existential threat to the well-being and way of life of New Jersey's communities and its infrastructure. Adapting to climate change will require a change in policies, behaviors and long-established practices.

The state has taken steps to begin to bring about these changes. Building off of executive orders Nos. 89 and 100, the current administration has discussed proposed changes to permitting statewide. In April 2021 a Climate Change Resilience Strategy was prepared which includes over one-hundred recommendations focused on adaptation and resilience. Additionally, in 2021 the Municipal Land Use Law (MLUL) was updated to require municipalities to assess all climate vulnerabilities as part of the land use element of the Master Plan.

New Jersey must build on this progress, carry onward and work quickly to advance these and additional measures, positioning the state as a leader in adaptation planning and implementation. With the motivation and resources directed at COVID-19 recovery, now is the time to seize on the opportunity to invest heavily and wisely in changing economic and institutional systems to be more equitable, collectively prosperous and environmentally sound.

PRIMARY CONCERNS:

- Adaptation is very expensive, yet we have little-to-no permanent, dedicated streams of funding for planning or implementation
- Current policies at the federal, state and local levels still favor living in high flood-risk locations
- Many community members and elected officials favor short-term flood protection measures over long-term transitions out of flood zones
- Many communities lack the capacity to adequately plan for and implement adaptation practices
- Legal authority for municipalities to implement regulatory and other adaptation programs is uncertain
- Adapting to heavy precipitation and extreme heat impacts are far less of a focus than coastal flooding
- Black, Indigenous and People of Color (BIPOC) communities and those with less wealth are disproportionately affected by climate impacts and have disproportionate cumulative impacts

POLICY RECOMMENDATIONS

- ➔ **Institute an ongoing, dedicated stream of state funding for adaptation projects (bond, insurance surcharge, etc.), with minimum dedication to front-line communities**
- ➔ **Position the state to capitalize on adaptation funding through the federal Building Resilient Infrastructure and Communities (BRIC) program**
- ➔ **Work closely with municipalities and stakeholders to transition to the regulatory reforms presented as part of New Jersey Protecting Against Climate Threats (PACT), and to advance the sweeping recommendations laid out in the Climate Change Resilience Strategy**
- ➔ **Enable municipalities to vacate food-prone areas and regulate these areas to higher standards**
- ➔ **Continue funding and educating the public about the benefits of the Blue Acres program that removes properties from flood-prone areas and returns the property to its natural state to better absorb floodwaters**
- ➔ **Provide resilient design standards for coastal communities on where and how it is appropriate to build and rebuild and guidance on how to implement projects**
- ➔ **Strengthen the state hazard-mitigation plan by requiring greater integration and coordination with county plans that will help direct funding appropriately and reduce improper land use**

CONSTRUCT GREEN AND RESILIENT BUILDINGS THAT WORK WITH NATURE

A critical component of the built environment is the vast expanse of buildings that provide us with places to live, work, shop and socialize. In total, New Jersey's buildings account for 62 percent of the state's total end-use energy consumption and 31 percent of statewide greenhouse gas emissions, a significant contributor and an opportune sector for which solutions are required according to the 2019 New Jersey Energy Master Plan and Rocky Mountain Institute. Buildings also contribute to the urban heat island effect that occurs in highly urbanized areas, and add to the generation of stormwater runoff, which overwhelms wastewater infrastructure and pollutes waterways. As the effects of climate change – that include more extreme temperatures and more frequent and intense storms - continue to worsen, buildings can either exacerbate the problem or become a bigger part of the solution.

In New Jersey, municipalities play the biggest role in encouraging green building design, since they have the authority to make local land use decisions. In 2008, the State's Municipal Land Use Law (MLUL) was amended to allow for a Green Building and Environmental Sustainability Element as a permitted Master Plan Element.

> *The MLUL characterizes this Master Plan Element in Bill A1559, 2008 as one that "shall provide for, encourage, and promote the efficient use of natural resources and the installation and usage of renewable energy systems; consider the impact of buildings on the local, regional and global environment; allow ecosystems to function naturally; conserve and reuse water; treat stormwater on-site; and optimize climatic conditions through site orientation and design." This master planning tool, along with the work of environmental councils in hundreds of municipalities, has led to the establishment of green and increasingly resilient design practices in New Jersey towns.*

MORE CAN BE DONE BY THE STATE

One area where the state has jurisdiction over what kind of building is built is through the New Jersey Uniform Construction Code, which gives New Jersey the authority to set base requirements and other optional measures. Currently, green buildings and resilient design are encouraged at the state level through some incentive programs as well as through requirements for certain state funding. In order to provide owners and builders who participate in such state programs with guidance, the New Jersey legislature authorized the creation of the New Jersey Green Building Manual. The manual is a voluntary, web-based educational tool that "provides economic and environmental best practices across the spectrum of green building categories, including energy emissions, water, waste, transportation and human health. Its most recent update in 2019 introduces a "resiliency lens" with an emphasis on infrastructure that offers benefits for both energy efficiency and resiliency.

Given the municipal planning tools and a regularly updated manual that provides guidance on best practices, New Jersey has the potential to be a national leader in green and resilient buildings. The state should seize the opportunity to use its authority and resources to promote green and resilient buildings that mimic nature's services to conserve energy, reduce urban heat island, absorb stormwater and ensure resiliency against all climate impacts.

PRIMARY CONCERNS:

- Buildings account for around 31 percent of statewide greenhouse gas emissions
- Urban heat island effect and stormwater runoff are worsening as a result of climate change and are exacerbated by typical building design
- Municipalities have the authority to advance green and resilient design, but lack the resources and technical expertise to ensure they are implemented

POLICY RECOMMENDATIONS

- Strengthen building codes to reduce energy consumption and encourage efficiency in new buildings through the Uniform Construction Code and through local requirements (such as building performance standards).
- Implement and monitor New Jersey's building benchmarking law and consider how the data may be used to drive policies that make for greener, more resilient buildings.
- Centralize governance around green and resilient building practices, incentives and technical support through interdepartmental collaboration, including but not limited to New Jersey Board of Public Utilities, New Jersey Economic Development Authority and New Jersey Department of Environmental Protection, but with a clear lead agency that serves as the primary point of contact.
- Establish a robust state incentive program for green and resilient practices of new building construction and rehabilitation or retrofit of existing buildings at all stages of development — from pre-design to operation and maintenance, and evaluation.
- Ensure that state-funded projects and buildings set the highest mark for green and resilient design practices, including the requirement of such practices as a condition of receiving state support for development.

CREATE LEAD-FREE HEALTHY HOMES

It is a horrible truth: Lead poisoning at an early age can rob children of their potential in life. No child should begin life burdened by lead. Between the years 2000 and 2019 over 237,000 children in New Jersey were identified with elevated blood lead levels.

Most children with lead poisoning are exposed in their homes from lead paint that becomes dust when it is dislodged from windows, doors, walls and other interior and exterior surfaces. Lead *dust* spreads to floors, toys, counters, and window ledges, eventually making it to the mouths, lungs and brains of vulnerable children. Lead is a dangerous neurotoxin that affects a child's learning, memory and even behavior, as it damages the part of the brain that controls impulse. It may also be found in drinking water and soil where children play. (For more information and policy recommendations on drinking water see Reducing Lead in Drinking Water paper.)

Lead poisoned children are six times more likely to be involved in the criminal justice system and seven times more likely to drop out of school. According to studies by researchers at Princeton University, lead exposure explains 37 to 76 percent of racial disparities in educational test scores.

New Jersey is a leader among states in many aspects of its response to lead hazards. New Jersey requires universal screening of all children at both ages one and two, and its threshold for public intervention is consistent with the Center for Disease Control and Prevention (CDC). State resources are available to nearly every county in the state to remove lead hazards and locally based nonprofits receive state funds to assess and make homes lead safe before a child can be poisoned. New Jersey and other public entities blended resources to develop a national model for replacing old lead service lines.

But there is more to be done.

POLICY RECOMMENDATIONS

➔ **Housing:**

- Deliver integrated lead (paint, water and soil), health, safety and weatherization improvements per home within a single Whole House program.
- Encourage the governor signing and the administration implementing Senate Bill 1147/ Assembly Bill 1372 to require landlords to obtain lead-safe certificates before units are rented units in New Jersey. Additionally, advance similar legislation to ensure that landlords disclose the presence of a lead service line to new tenants.
- Require Section 8 rent-subsidized units be inspected for lead hazards prior to occupancy.
- Require that home sellers provide a lead risk assessment to buyers, like what is now required for radon.
- Streamline application process for housing improvement by allowing New Jersey Department of Community Affairs applicants to be approved based on home address within a state approved geographic designation.
- Allocate resources to support proactive housing inspections of 5 percent of housing in high-risk areas of lead exposure.

➔ **Health**

- Train community health workers who work with families in the principles of healthy homes. Require health workers to conduct a healthy homes assessment in client homes and make referrals to lead services as needed.
- Pursue Medicaid reimbursement for lead abatement services (allowable under Medicaid – New Jersey has yet to apply for the funds).
- Invigorate lead poisoning education campaign so the public knows to demand lead-safe housing – paint, water and soil.
- Improve New Jersey Annual Lead Surveillance Report by adding geo-coded maps of lead surveillance data by census tracts easily referenced by political leaders, school officials and the public.

SUPPORT AND PROTECT URBAN AGRICULTURE

Urban agriculture, urban farming or urban gardening is the practice of cultivating, processing and distributing food in or around urban areas. Urban agriculture is also the term used for animal husbandry, aquaculture, urban beekeeping and horticulture. These activities occur in peri-urban areas as well. Peri-urban agriculture may have different characteristics.

Policy that supports the creation, protection and long-term sustainability of urban agriculture helps create career pathways for students graduating with degrees in botany and agriculture to business administration and public health. These degrees are held or are being pursued by college students throughout New Jersey that have interned for Newark Science and Sustainability, Inc.

Strong policy would also stimulate a local economy and give rise to a new generation of ecopreneurs. An ecopreneur is someone who either creates or sells sustainable products and services, along with spreading awareness about the environment. The products/services could include growing and selling organic foods, recycling efforts, or generating green-conscious construction.

PRIMARY CONCERNS:

- **Land Access/Land Tenure:** Cities such as Newark and Jersey City have implemented an Adopt-A-Lot Program as a means to provide temporary land access for gardening and/or urban farming. However, these are not designed for long-term use. It is intended to deter illegal dumping while residents occupy city-owned land until the property is sold. To restrict long-term use, an annual lease is issued to those wanting to adopt a vacant lot.
- **Water Access:** Participation in the adopt-a-lot program doesn't provide access to water — a major resource that's not easily accessible for gardeners/urban farmers.
- **Healthy Food Access:** There are currently 353,883 children receiving NJ SNAP (formerly food stamps). Also, according to a New Jersey Childhood Obesity Study by the Rutgers Center for Health Policy, roughly 44.2 percent of New Jersey's urban children 3 to 18 are overweight or obese. Causes include poor nutrition education, and food deserts, a predominant issue in minority and low-income urban neighborhoods.

➔ What are Food Deserts?

Food deserts are regions where people have limited access to healthful and affordable food. This may be due to having a low income or having to travel farther to find healthful food options.

POLICY RECOMMENDATIONS

- ➔ **Increase municipal support for community gardens: In 2018, Montclair unanimously passed a resolution declaring their support for the creation, protection and long-term sustainability of community gardens. However, this is only one municipality. More municipalities across New Jersey should adopt a resolution or policy(ies) to support the creation, protection, and long-term sustainability of community gardens.**
- ➔ **Support New Jersey representation on the new U.S. Department of Agriculture (USDA) advisory committee on urban agriculture, part of a broader effort to focus on the needs of urban farmers. The committee will advise the Secretary of Agriculture on policies and outreach relating to urban, indoor, and other emerging agricultural production practices as well as identify any barriers to urban agriculture.**
- ➔ **Implement the September 2019 New Jersey Department of Environmental Protection's Environmental Justice Advisory Council report on Urban Agriculture. The work of several "urban agriculture practitioners," the white paper "addresses factors that may impact the development of urban agriculture within the State of New Jersey, perceived barriers and recommendations for addressing each barrier."**

PROMOTE SCHOOLYARDS

There are thousands of public schools across the state of New Jersey. Nearly every one includes a schoolyard. Yet, across the state, few of these schoolyards are open to the public for use during non-school hours. And many are designed without the kinds of green space and play features that a school or a neighborhood deserve. Instead, the majority of schoolyards are expanses of asphalt. So, not only do thousands of playgrounds not provide quality play and recreation spaces for children, nor outdoor education space to help teachers teach, these spaces also miss an opportunity to provide mental, physical and aesthetic benefits to local neighborhoods.

SCHOOLYARDS SHOULD BE A GREEN, HEALTHY PLACE FOR ALL TO ENJOY

Both during and after school, schoolyards should provide a place that is green and healthy. Play equipment, sports fields and games for students should be available to maximize the benefits of recess and gym class. Trees and gardens that reduce the heat island effect along with rain gardens and other green infrastructure tools can help manage stormwater runoff on site rather than allowing storm events to impact the neighborhood with flooding or contribute to combined sewer overflow issues. Outdoor classrooms would allow lessons to be taught outside.

One of the important facts to keep in mind is that a green, healthy schoolyard is good for the students, teachers, neighborhood and city and state overall. Land owned by the state's school districts adds up to significant acreage. In communities where green space is scarce or where opportunities for green infrastructure are limited to help with reducing flood risks, school yards can make a significant difference.

SERVING MANY NEEDS AND PROVIDING MANY BENEFITS

First and foremost, the schoolyard is an outdoor education space. The space should enhance the learning environment, improve educational outcomes and support reduction of the achievement gap. This can be accomplished through outdoor classrooms, education gardens, arts and teacher materials and the necessary training to maximize outdoor education experience.

Green healthy schoolyards:

- **Improve social determinants of health.** As attractive places for relaxation and recreation green schoolyards reduce climate related health impacts, such as lower heat island effects and help to lower impact of flooding events. In addition, studies show that students who get a chance to play during the day, do better at school, have lower disciplinary problems, and are more physically active which can translate into better health over time.
- **Address climate resilience by helping to improve clean air and clean water.** When designed to be resilient to climate change, green schoolyards can improve the environmental literacy of the students, staff and community members.
- **When equitably designed and when access to the public is allowed, can double as a park** as most schoolyards are within a 10 minute walk in many neighborhoods where other options are not available because new greenspace is unlikely to be found or too expensive to purchase and redevelop into a meaningful space.

OPEN HOURS AND MAINTENANCE

Student safety is a primary concern. Therefore, it is appropriate for schools to close and secure the school campus during the school day. However the school, school district and community can work together to find ways to keep playgrounds open outside of school hours during the evening, on weekends and in the summer. Playgrounds should be monitored to ensure safety and adherence to rules and maintained on a regular basis by the school as well as the community.

An open schoolyard could be designed to include elements for the larger community including – a play area for pre-K children, adult fitness equipment, areas for senior citizens to meet and gather or come and watch their grandchildren. Green schoolyards can also be places for community gardens or summer markets.

PRIMARY CONCERNS:

- The state has lots of land owned by school districts in schoolyards that do not best serve their students.
- Many schoolyards are not open to the public to provide recreation or other benefits to the neighborhood around them beyond school hours.
- Paved schoolyards contribute to environmental issues in urban areas.
- There are huge disparities as to where bad schoolyard design and lack of access is most acute – the worst is likely to be in urban areas or areas of less economic means or higher populations of black or Hispanic residents.
- Student safety is a high concern in existing asphalt schoolyards.
- Responsibility for the cost of converting a paved schoolyard to a green healthy schoolyard.
- Responsibility for the cost of cleaning and maintaining an open schoolyard should not be born solely by the school staff alone.

POLICY RECOMMENDATIONS

- ➔ **Enact state policies and regulations that encourage or require green schoolyards as part of school development or redevelopment.**
- ➔ **Identify state funding to help local school districts pay for green schoolyards.**
- ➔ **Assist local school districts and municipalities tap into Federal funding that is becoming available for projects.**
- ➔ **Focus funding on communities experiencing social or environmental injustice.**
- ➔ **Create model programs for municipalities to work with their local school districts on policies, shared agreements, and identifying responsibilities and sources of funding to build, maintain, and manage green schoolyards.**
- ➔ **Include friends of schoolyards in the statewide effort supporting park friend groups. Involving the community not only improves the space itself, it also improves community cohesion between the school and the neighborhood.**

CLEAN ENERGY

ADVANCE CLEAN AND AFFORDABLE WELL-SITED SOLAR ENERGY

New Jersey currently ranks seventh nationwide in installed solar photovoltaic (PV) capacity, with 3.3 GW installed as of early 2020. The state's Energy Master Plan (EMP) envisions continued growth in New Jersey solar as part of the least-cost pathway to achieve both 100 percent clean energy by 2050 and the Global Warming Response Act targets. The analysis underlying the EMP provided the insight that New Jersey as a small, densely populated state, with relatively expensive solar and other renewable energy resources, will benefit from relying on a mix of some in-state renewable development coupled with substantial imports of clean energy resources from the region. Further, the EMP process itself requires a periodic revisit of the preferred mix of offshore wind, in-state solar and regional wind and solar resources in light of ongoing shifts in relative resource costs and technical advances.

The high costs of solar in New Jersey are a natural barrier to achieving substantial carbon reductions solely through the deployment of in-state solar. Today, the average incentive payments for new solar PV projects in New Jersey cost about ten to fifteen times more than incentives for comparable regional renewable energy projects. This means that the state must pursue a judicious mix of low-cost regional clean energy resources that maximizes GHG emission reductions; and in-state solar, which can achieve additional community and economic benefits. The Clean Energy Act requires the state to use competition in the procurement of in-state solar as a way to help drive continuing cost reductions in these resources, which would support greater deployment.

These competitive processes are currently being designed and implemented by the Board of Public Utilities (BPU) through a Solar Energy Successor Incentive Program and a Community Solar Pilot Program, which prioritizes solar projects that offer lower electric bills to low- and moderate-income communities. The Community Solar projects have been developed in line with sound siting criteria that prioritize projects on brownfields, landfills, parking lots and rooftops. The first year of the program approved projects totaling 75 MW and the second year will include an additional 150 MW of solar PV projects.

Behind-the-meter solar in New Jersey currently costs considerably more than traditional electricity delivered to customer. Because of this, the solar industry in New Jersey depends on state-mandated solar incentives in order to profitably install behind-the-meter solar at prices that result in monetary savings for customers. Without incentives, solar would not generate savings on electric bills and would significantly shrink the size of the behind-the-meter solar market.

The cost of the solar incentives is recovered in the electricity rates paid by all customers, regardless of solar usage. Community Solar programs provide an opportunity for low- and moderate Income (LMI) customers to participate and achieve savings on electric bills by addressing barriers to access for renewable energy found in some areas of the state. This can include living in multi-family buildings, limited budgets for paying up-front costs, space constraints on constructing larger renewable energy projects, and renting rather than owning a residence.

Local solar generation also provides important benefits – including cleaner air, reduced health costs and local jobs – that need to be considered in developing the overall budget for New Jersey solar development that is paid by all electric consumers.

PRIMARY CONCERNS:

- New Jersey needs a suite of policies that will continue to ensure growth in New Jersey solar, along with continued reductions in its cost, while also ensuring that ratepayer expenditures on clean energy resources result in maximum reduction in CO2 from all state and regional power plants. Further, solar projects in New Jersey must be sited in a manner that don't conflict with the state's long-standing commitment to open space and farmland preservation or result in clearing of forests that sequester carbon or provide myriad other benefits.
- In New Jersey, several extremely large utility-scale solar PV projects have been proposed on more than 1,400 acres of prime farmland prioritized for preservation. While there may be some role for large in-state solar development, sound siting criteria are needed to prevent such projects on New Jersey farmland or on currently forested sites as this type of PV placement directly conflicts with both farmland preservation and carbon reduction goals.
- Community solar extends solar subsidies, and the opportunity to reduce electric bills, regardless of income level, geographic location or housing stock.

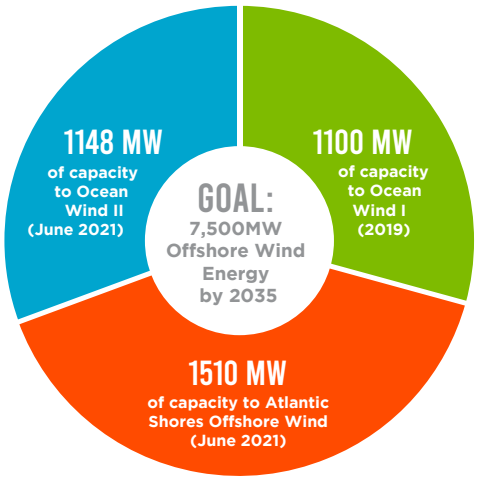
POLICY RECOMMENDATIONS

- ➔ **Develop the amount of New Jersey solar based on actual costs discovered over time using competitive processes as part of an overall clean energy budget that is designed to maximize GHG emission reductions and achieve cost-effective local benefits through a mix of regional and in-state clean energy resources. The Community Solar Program should remain a priority program within the total clean energy budget, and at least half of community solar generation should serve low-income households.**
- ➔ **Ensure that any BPU solar incentive programs prioritize projects on rooftops, brownfields, landfills, parking lots or marginal lands, and that incentives are not provided for solar projects on prime farmland prioritized for preservation or that would clear forests. Amend utility-scale solar legislation (S2605) to include sound siting restrictions that prevent solar projects from being cited on prime or statewide important soils within Agricultural Development Areas, or clearing forests.**
- ➔ **Continue the Community Solar Program through BPU to provide equitable access to solar and increase the share of the total solar budget spent on projects that serve low-and moderate-income (LMI) customers. Additionally, ensure the Board and Electric Distribution Companies work together to create Utility Consolidated Billing that provides community solar customers with a single bill that contains traditional utility costs as well as the subscription and bill credit associated with community solar projects. Such a system will lower the barriers for customers to participate in community solar by making it easier to understand and easier for customers with poor credit to participate.**

PROMOTE RESPONSIBLY DEVELOPED OFFSHORE WIND

New Jersey residents are experiencing, firsthand, a fundamental altering of the natural world caused by the climate crisis. Homes, communities and wildlife are all being threatened by historic floods and extreme weather, and natural systems and habitats are being lost. Simply put, climate change requires bold and urgent action.

New Jersey has approved three offshore wind projects:



These projects will bring the state's total planned capacity to over 3,700 MW; moving closer to the administration's goal of 7,500 MW of offshore wind by 2035

The first project selected, as well as the solicitation request for the second round of projects, have laid out environmental protection requirements and guidance. The second solicitation required project developers to contribute $10,000 per MW to fund research initiatives and wildlife and fishery monitoring in the region – for a total of $26 million.

New Jersey is one of the states at the epicenter of the burgeoning offshore wind industry on the east coast of the United States. The geography of the state positions New Jersey to become one of the major hubs for this industry. With this opportunity comes a responsibility to ensure offshore wind is developed with high environmental and natural resource protection standards. The coast of New Jersey has been an economic driver for the region for generations, through recreational and commercial fishing and tourism. Offshore wind development and construction offers the promise of significant economic activity and jobs, which must be shared equitably across New Jersey's communities.

Offshore wind development presents an unparalleled opportunity to collect research data about the ocean and wildlife inhabitants. Never before have resources been available to track wildlife movements up and down the eastern seaboard ten or more miles from the shoreline. Having physical structures in the water creates a huge opportunity to expand scientific research and monitoring of coastal ecosystems. Therefore, monitoring equipment must be a component of every project, pre-, during- and post-construction.

PRIMARY CONCERNS:

- A renewed interest in offshore wind development has jump started regulatory activities, and stakeholder engagement needs to meet that pace
- Protection of species of concern and New Jersey's commercial and recreation fishing industries through good planning and siting of turbines, cables and on-shore landings.
- Need for additional baseline data natural resources
- Finding a balance between the clear need for renewable energy to address climate change and protections for the ocean

POLICY RECOMMENDATIONS

- **Continue the regular adaptive solicitation and review process to create a pipeline of projects to meet New Jersey's aggressive clean energy goals.**
  - Regularly review and update solicitations to incorporate best practices to address potential wildlife impacts or other environmental concerns and new knowledge gained from previous solicitations, current projects in various stages of development, and other states.
  - Require strong environmental and natural resource protections that focus on avoidance as a precondition of any approved project.
  - Use the best available data to avoid sensitive habitats to the maximum extent possible in both state and federal waters.
  - Look holistically at all aspects of offshore wind development, including port, inland and near-shore activities when reviewing potential impacts to the environment and marine life
- **Bring together stakeholders throughout the project development stage to ensure all concerns are addressed promptly to avoid delay or derailment of the construction of offshore wind.**
- **Consider regional approaches and comprehensive planning to promote a robust industry both in New Jersey and our surrounding states that strongly limits environmental and ratepayer impacts.**
- **Require monitoring and open source data, as much as possible, before, during, and after construction to expand scientific knowledge of ocean ecosystems and use that data for future projects.**

CREATE A TWENTY-FIRST CENTURY ELECTRIC DISTRIBUTION SYSTEM

In 1882 New Jersey and New York shared the distinction of having built the country's first modern commercial electric power distribution system to service individual customers. While that is a fact to be proud of, the downside is that there have been no significant technological upgrades to the system since then. Updates are way past due. What's more, most distribution lines in the United States (and most likely New Jersey) were built over sixty years ago. Updates to the distribution system are key to energy conservation and cost savings as well as the future prevention of and response to outages as the state moves toward a clean energy future.

As New Jersey brings more clean distributed energy resources (DERs) and demand-side response opportunities online – i.e., solar, energy efficiency, electric vehicles with flexibility to manage charging, battery storage – the state will require an electric distribution system that can leverage the benefits these technologies provide. Therefore, New Jersey will have to transform from a traditional one-way system (that merely provides electricity to customers) to a bi-directional system that uses smart, state-of-the-art technologies to provide customers and utilities with more information in real-time.

The new clean DER technologies being deployed fundamentally change the way customers and utilities interact with the grid. Consumers become more aware of their usage patterns and utilities have better insight to vulnerabilities and opportunities in the system.

PRIMARY CONCERNS:

- **The current grid is not prepared to handle new clean energy DERs**

  Today's grid is built to deliver electricity in one direction; from power plants to customers. However, a modernized grid will have to accommodate the bi-directional flow of energy from new technologies like solar, battery storage, electric vehicles (EVs) and smart appliances that can be controlled remotely. Currently, the distribution grid needs to evaluate DER installation on a case-by-case basis to determine whether a particular circuit can handle additional load. This leads to situations where new DERs cannot be interconnected to the distribution system without costly upgrades to the system.

- **If the grid is not modernized, customers will face higher costs**

  Without modernization of the distribution grid, consumers will fact higher costs, there will be less resilience, and a slower adoption rate of clean energy technologies will ensue. One of the most compelling benefits for DER, especially in a

	OUTDATED GRID	MODERN GRID
FLOW OF ENERGY	One way, with energy flowing from power plants to homes and businesses.	Multiple ways, allowing people to make, move and sell their own energy.
CUSTOMER CONTROL	Next to none, other than manually turning lights and appliances on and off.	Customers can preset and control – via smartphones or tablets – how and when their homes or businesses use energy or they can contract with a third party.
AUTOMATION	Utility employees physically check meters monthly to measure usage. Utilities may only know of an outage if a customer reports it.	Sensors continuously track usage and can detect and resolve problems quickly.

Contrast between an outdated grid and a modern grid. Source: EDF

state like New Jersey which has already suffered the consequences of Superstorm Sandy, is the ability to shut down local portions of the grid rather than large geographic sections. With more extreme weather events likely due to the effects of climate change, it is to the benefit of state to effectively incorporate DER. Otherwise, outages will occur over larger geographic areas.

In addition to better resiliency, a 'smarter' grid informs consumers of energy use. When combined with time varying rates, the grid will (discussed below) inform customers of the least expensive times to charge cars and run dishwashers. This is especially important for low income and communities of color. A recent report found that Black households spend 43 percent more of their income on energy costs than White households, and Hispanic households spend 20 percent more. Providing better access to local, clean sources of energy combined with information on individual households energy usage and costs has the opportunity to significantly reduce the unjust energy burden that New Jersey's environmental justice communities experience.

Implementing grid modernization in New Jersey not only will achieve the benefits already outlined – energy cost savings, energy conservation, resiliency – but also has the opportunity to create well paying local jobs throughout the state. The process of grid modernization will make certain jobs obsolete – such as meter reading, but with job training or other mechanisms, new jobs can be created such as installing smart meter and sensors.

POLICY RECOMMENDATIONS

➔ **Set Standards for Advanced Metering Infrastructure (AMI)**

AMI is one of the best tools New Jersey has to modernize its grid. AMI refers to electric meters that can communicate wirelessly with the distribution network in real-time to provide customers and utilities information on electricity usage, outages, and more granular information on what sections of the grid are stressed. New Jersey is currently deploying AMI, but has not yet set future-facing policies for what AMI needs to be able to do.

➔ **Implement Demand Response Programs**

The New Jersey Board of Public Utilities (NJ BPU) should direct utilities to implement demand response programs immediately, as required by the Clean Energy Act of 2018. Demand response works by paying large energy users to curtail usage on peak days to produce "megawatts," and has been used in other states for decades as a low-cost way to reduce strain on the grid and limit the burning of fossil fuels for power. The Clean Energy Act requires the creation of a demand response program. However, those programs are currently delayed until 2023-2024. New Jersey BPU can take action now by directing utilities to amend their energy efficiency filings to include a demand response component by 2022.

➔ **Design Rates That Maximize Benefits for Customers to Use DERs**

The Board of Public Utilities and electric utilities should work together to design time varying rates (TVRs) that incentivize customers to consume energy off-peak when the grid is less stressed. TVR, which includes peak time rebates, critical peak pricing, and time-of-use rates, means electricity would be more expensive during the time of day when there is more demand on the grid, and lower when there is less demand on the grid.

One example of TVR is the Baltimore Gas and Electric (BGE) "Smart Energy Rewards" program. That program, which is open to any customer with AMI, provides customers with a bill credit for reducing usage between 1 p.m. to 7 p.m. on "Energy Savings Days." BGE simply notifies customers via text or email of an Energy Savings Day. Customers can then earn bill credits by reducing air conditioning (AC) usage, delaying the use of large appliances or simply turning off the lights. Not only do programs like this provide benefits to the customers who participate, they benefit the entire grid by reducing the need for additional power as well as place less stress on the distribution system.

SUPPORT CLIMATE EDUCATION IN NEW JERSEY SCHOOLS

There is a broad consensus among climate scientists that the human activities contributing to increases in greenhouse gas emissions are the dominant cause of climate change. To meaningfully act upon the changing climate and changed world, young people require education about its causes, consequences, anticipated future impacts and possible solutions. New Jersey is the first state to incorporate climate change education into the learning standards for K-12 students. Further, climate change education is expected to be infused not only into the science curriculum but into the arts and humanities.

Climate change education, climate literacy, and the many climate-related pathways to future jobs and careers are not at all well developed in the United States. Indeed, the persistent debate around climate has tended to inhibit widespread climate education and training. This has meant that a majority of young people are not being provided with an effective education that will permit students to:

- Fully understand and observe the many aspects of climate change and what needs to be done about it; and
- Acquire the knowledge and skills needed for transformational career, community living and consumerism opportunities.

PRIMARY CONCERNS:

- While this mandate is needed and desirable, there is no funding and no support for educators who are expected to be the practitioners and delivery system. In essence, the requirement is an unfunded mandate for educators.
- In a national survey of middle school and high school science teachers by the National Center for Science Education and Pennsylvania State University in 2016, less than half reported having taken a course in college that devoted even a single class session to the topic of climate change. Teachers in other disciplines are even less prepared.

POLICY RECOMMENDATIONS

- ➔ **Create a diverse Climate Education Commission mandated to produce a report in a timely manner that identifies, assesses and makes policy and funding recommendations regarding how the state can advance a comprehensive 2050 climate education plan with near-term targets for 2025 and 2030. Include recommendations on a range of key issues, such as identifying one entity to coordinate this work (i.e. create an Office of Clean Energy Education & Community Engagement within the New Jersey Board of Public Utilities).**
- ➔ **Fund and establish a statewide climate education resource center including a grant program to support teacher professional development to equip teachers to meet the increased demands of the new standards. Consider utilizing the New Jersey Commission on Environmental Education to support this initiative.**

SUPPORT CAREER TECHNICAL EDUCATION AND CLIMATE CHANGE EDUCATION

Career Technical Education (CTE) (formerly known as vocational education) in New Jersey is offered through county vocational and technical schools. These are schools of choice for students who want to participate in an academic program and at the same time learn a trade while in high school. The CTE standards 9.3 that appear on the New Jersey Department of Education (DOE) were created by the National Association of State Directors of CTE Consortium/National Vocational Technical Education Foundation, Silver Spring, Maryland. The CTE standards reflect industry needs and best practices of the region, outline a student's path to licensure before graduation, and prepare that student for college after high school graduation if the student chooses that path. New Jersey's vocational-technical schools follow the CTE 9.3, and these standards should mirror the economy of the Northeast region of the United States in light of New Jersey's plan to transition to a green economy by 2030.

Investing and supporting CTE programs can also dramatically increase the likelihood of high school graduation. In one recent study of vocational and technical high schools in Massachusetts, poor students are 32 percentage points more likely to graduate if they attend these schools. It is the state's responsibility to form a technical workforce with skills that will guarantee an equal opportunity for success and advancement in a green economy.

A review of the 9.3 standards found New Jersey has not incorporated the study of sustainability, energy, environmental impact/climate change topics in the following trades: agriculture, food and natural resources; arts, A/V technology and communications; business management and administration; education and training; finance cluster; government and public administration; human services; and information technology and public safety. The CTE educators should receive training on how to embed the new standards into the existing standards, goals, objectives, curriculum, and lesson plans so that upon high school graduation, the graduates of such clusters/programs can receive certifications to reflect skills in a green economy trade.

PRIMARY CONCERNS:

Environmental stewardship, environmental justice and climate change standards are not embedded in the CTE standards and that vocational-technical high school curriculums lacks such critical concepts to reflect best practices. Since New Jersey's economy is moving to a green economy with the input and consultation of environmental organizations and the industries of the state, it is imperative the CTE standards are reviewed and updated.

- Failing to update the CTE 9.3 standards compromises the licenses and certificates the students obtain upon high school graduation.
- Failing to update the CTE 9.3 standards compromises students' abilities to obtain, maintain, and be promoted in a green economy workforce.

POLICY RECOMMENDATIONS

- **Update standards to include climate change/green economy/energy through a mandate from the Perkins Act or through an allocation of funds through the State of New Jersey. Funding would cover consultant expenses and CTE educators' professional development.**
- **Develop newly revised New Jersey CTE customized standards with environmental and climate justice perspectives. The education committees of the legislature, the New Jersey Department of Education, New Jersey Office of the Secretary of Higher Education, and the CTE educators, supervisors and teachers can work together in this effort.**
- **Develop a state assessment that certifies vocational-technical school graduates to complete green economy/sustainability best practices for future employment. Leading the effort would be New Jersey DOE, New Jersey Office of the Secretary of Higher Education, and the education committees of the legislator along with CTE educators.**

TRANSPORTATION

REIMAGINE ROADWAYS: FUTURE USES AND MECHANICS

New Jersey has earned its designation as a corridor state. Its geography connects the Mid-Atlantic to the Northeast and westward to interior states. Its crisscrossing roadways, tunnels and bridges move vehicles around the state and beyond. Maintenance of these massive pieces of infrastructure is of the utmost importance. However, the state consistently lacks the resources and dedicated funding needed to keep roads safe and operational. The American Society of Civil Engineers rates 37 percent of New Jersey's roadways in poor condition, with a grade of C- for safety and condition, and has noted 6,786 structurally deficient bridges in the state. Instead of focusing on a fix-it-first policy, where the New Jersey Department of Transportation (DOT) focuses on important maintenance, New Jersey continues to pursue costly road widening projects.

Decades of research shows the incredible environmental cost of single occupancy vehicle transportation. Along with the proven concept of induced demand – when highways expand and increase the number of lanes, more traffic fills those lanes instead of alleviating congestion – further growth is encouraged in undeveloped areas rather than in existing centers and corridors.

New Jersey has found itself in an endless cycle of increasing vehicle use and roadway expansion across formerly undisturbed areas.

Additionally, expanded roadways reduce available land and opportunities for recreation, stormwater management, carbon sinks and cleaner air. Highways in New Jersey and throughout the country have accelerated the inequities for communities of color by cutting off neighborhoods and concentrating mobile air emissions from vehicles. Moving forward, highway planning must ameliorate these inequities rather than exacerbate them. There are significant ways to change the ways New Jerseyans, and those passing through, use these roadways and how best the state can improve the way roads are maintained in order to improve the health of surrounding communities, reduce crashes, provide economic benefit to vehicle owners through reduced maintenance costs, and diversify the way New Jerseyans are able to move around the state.

Changing the way New Jersey molds its transportation infrastructure requires proactive planning to ensure availability of accessible, equitable and efficient public transportation, as well as improved ways of moving freight and other heavy-duty vehicles. Single occupancy vehicles are unlikely to phase out in the near future, so electric vehicle priority on roadways – as well as improved electric vehicle supply equipment (EVSE) availability through New Jersey – are strategies to reduce emissions near large roadways and overall in the state. This emissions reduction goal not only enhances New Jersey's contribution to climate change but, just as important, reduces health-harming emissions for residents living in proximity to large highways.

PRIMARY CONCERNS:

- New Jersey does not currently follow a strong "fix-it-first" roadway maintenance mandate
- There is a need for increased transparency in the way NJ DOT manages planning, including a lack of community input on level of service analysis.
- Future expansion of warehouses and other suburban/rural development will change and increase traffic congestion throughout the state, leading to perception that more roadways are a solution. This will likely create new overburdened communities while exacerbating existing air quality hazards
- Need to review labor component in future planning needs to ensure union labor expertise is utilized for new development
- DOT level of service analysis does not provide alternative ways to address capacity that does not default to widening a roadway

POLICY RECOMMENDATIONS

- ➔ **Follow the fix-it-first mandate to keep existing infrastructure safe and reduce overall maintenance costs as structures continue to age**
- ➔ **Enact policies to mitigate the environmental harm from existing roads and bridge, such as using low carbon concrete, green infrastructure practices (e.g. porous pavement) that manages stormwater runoff to prevent flooding and accounts for impact on wildlife**
- ➔ **Implement alternative roadway uses to eliminate the perceived need for additional lanes: identify shuttle and HOV lanes, electric vehicle access and amenities, bicycle/pedestrian paths along highways and bridges**
- ➔ **Redefine metrics for the need for road widening versus implementing other traffic mitigation techniques first**
- ➔ **Develop land use guidelines for equitable and sustainable development before warehouses and other large buildings continue to site in New Jersey**

INNOVATE PUBLIC TRANSPORTATION

Public transportation has traditionally meant mass transport via buses, trains and ferries. The current landscape may offer individuals in high density areas other options as well, including rental bicycles, e-bikes and scooters. Mobility innovations continue to show how roadways can create various options that circumvent the use of cars. This new industry of "shared mobility" helps transit riders overcome the "first mile, last mile" challenge – easing the burden of getting to and from local transit networks to final destinations. Shared mobility can expand the potential catchment area for transit users where additional bus or rail service may not be feasible.

Newark, NJ launched its first-ever shared bike and e-scooter pilot program
Photo Credit: Tom Weidmann

➔ What is a Catchment Area and Why is it Important?

A catchment area is the geographic area for which a facility – such as subway, train or bus station – attracts clients or customers.

Innovations in shared mobility and microtransit can expand the size of catchment areas to encourage more people to use public transport services in the future, creating equity for all commuters and thus reducing the use of motorized vehicles that congest roads, highways and parking areas.

Similarly, low- and mid-density areas are candidates for innovative transportation options as well. Microtransit is one such concept that complements fixed-route transportation services by allowing users to schedule or hail rides in a shared vehicle within a geographic region. Microtransit vehicles connect to high-frequency bus service, major points of interest, or generally curb-to-curb service within the coverage area. These services may be operated by a public transportation authority, allowing for the same trained, professional service from bus operators – creating new employment opportunities within a transportation authority. This concept may be suitable for suburban and rural areas to reduce single-car trips and parking burdens when riders converge in a denser area, as well as reducing transit deserts, (i.e., places where there are no transit options). By allowing for established connectivity with established transit lines, microtransit services also may help mitigate transit deserts and, as such, reduce the number of cars needed or lack of mobility options for residents.

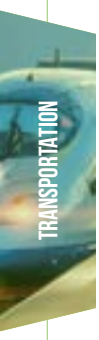
Given this evolving approach to public transit and the many options available to New Jersey communities, there are some ways to make these programs profitable while improving usage. For instance, New Jersey has a law (NJAC 16-41C) that inhibits municipalities' ability to use bike-share infrastructure for advertising purposes. Ad space is at a premium in many of New Jersey's cities and would offset many programmatic costs of bike share. There are plenty of inadvertent hurdles such as advertising restrictions that New Jersey may easily resolve to allow for pilots and full implementation of some of these mobility solutions.

PRIMARY CONCERNS:

- Shared mobility pilots are getting stuck in the pilot phase.
- New Jersey needs better innovation and integration with transportation authorities.
- Shared e-mobility, micromobility and microtransit have a ways to go on equity, including ensuring affordability and finding options for lower income families such as cash options.

POLICY RECOMMENDATIONS

- ➔ **Direct New Jersey Department of Transportation (DOT) to ensure funds are available for municipalities to provide shared mobility options, including "innovation funds" that allow municipalities to try implementing various transportation options (i.e., bike share, scooter share, car sharing, electric van sharing, etc.)**
- ➔ **Pursue option for New Jersey Transit-operated microtransit options for rural and suburban populations underserved by existing transit**
- ➔ **Include electric bicycle rebates in policy development around long-term incentives for electric vehicles at a state level**
- ➔ **Institute a Bicycle Commuter Benefit for state employees, including metrics on adoption and ways to expand the program**
- ➔ **Resolve New Jersey Administration Code (NJAC) legal issue to allow for bicycle-share advertising opportunities**



SOLIDIFY THE FUTURE OF NEW JERSEY TRANSIT

New Jersey Transit (NJ Transit) is the third largest transportation authority in the country, providing almost 270 million passenger trips per year. Despite its crucial role moving commuters around the state – as well as providing connections to the New York and Philadelphia metro regions – NJ Transit has faced historic funding raids, ongoing funding transfers and historic infrastructure losses after Hurricane Sandy. This volatility has hamstrung NJ Transit's ability to meaningfully plan ahead or stay on par with peer agencies' system evolutions such as electrifying bus fleets, connecting to bicycle and pedestrian infrastructure, or updating bus routes to reflect geographic and demographic changes.

DEDICATED SOURCE OF REVENUE

NJ Transit lacks dedicated funding sources for the agency's annual operating budget, leaving this critical funding at the mercy of the annual political budget process and priorities of any given administration. NJ Transit is one of the few agencies that lacks dedicated operating funding. Potential sources have been studied and debated, but the current framework leaves several viable sources untapped.

Since 1990, NJ Transit has been transferring money from its capital to its operating budget. To date, the total amount exceeds $10 billion. While this is a permissible use of these funds, NJ Transit's overreliance on capital-to-operating transfers to meet budget needs is a debilitating practice that has stifled the agency's ability to engage in long term capital planning. The agency must be weaned off this practice and its budget must be shored up.

POST-PANDEMIC RE-EVALUATION

At the height of the pandemic, emergency executive orders mandating work-from-home options for all nonessential employees, NJ Transit saw its ridership dip by 90 percent. NJ Transit estimates only a return of roughly 60 percent of pre COVID ridership by the end of 2021. NJ Transit historically relies heavily on farebox revenue to fill its budget; this long-term reduction in ridership is a call to re-evaluate and futureproof transit's funding streams. The opportunity is now to repurpose NJ Transit service to meet the area's mobility needs, capture more riders, reduce dependency on automobiles, reduce harmful emissions and improve the overall quality of life for all New Jersey residents.

The pandemic has also highlighted the importance of the local bus network. About 60 percent of all NJ Transit trips are completed via bus; bus service remains the most affordable transportation option in many communities and buses serve more communities than rail. While NJ Transit ridership has dramatically dropped across all modes, since summer 2020 local bus ridership has hovered around 70 percent of pre-pandemic levels. Now is an opportune time to create equitable, safe, and accessible bus network for residents.

CAPITAL PROJECTS

North Highland, an Atlanta-based consulting firm, identified the need for a long term, agency-wide strategic plan and accompanying capital plan. NJ Transit's last major capacity project was completed in 2006 – fifteen years ago. Major capital funding shortfalls have been highlighted in the agency's 5-year capital program (which supports the agency's 10-Year strategic plan) that identified capital investment needs of $5 billion in excess of identified revenues. These shortfalls equate to projects with unidentified funding. These massive funding gaps leave New Jersey with a statewide transit agency that does not service the entire state.

TRANSITION TO AN ALL-ELECTRIC BUS FLEET

Signed into law in January 2020, S.2252 statutorily mandated NJ Transit's transition to an all-electric bus fleet. The new law stipulates that by December 31, 2024, at least 10 percent of the new bus purchases made by the New Jersey Transit Corporation shall be zero emission buses, 50 percent by December 31, 2026, and 100 percent by December 31, 2032 and thereafter. As of 2021, NJ Transit has rolled out one electric bus pilot in Camden with a second one slated to begin in Newark. This transition will require significant capital and

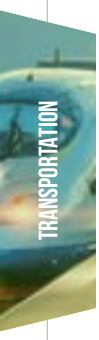
operating money to not only make the leap to electric buses but also to work with utilities to ensure sufficient electrical transmission and system resiliency. It is essential that NJ Transit also budget to train bus mechanics and operators to make sure the buses can be safely and efficiently operated and maintained. Finally, this transition must inform the recently started bus redesign process to make sure that new routing takes into account electric bus ranges and charging needs.

PRIMARY CONCERNS:

- There is no dedicated funding source for NJ Transit in New Jersey's annual budget.
- NJ Transit historically uses capital-to-operating transfers, as well as transfers from other sources such as the Clean Energy Fund, to keep its system moving.
- Future capital planning, including state of good repair and future system electrification projects, are delayed or nonexistent due to volatile funding.

POLICY RECOMMENDATIONS

- ➔ **Dedicate funding to NJ Transit to ensure a consistent operating budget.**
- ➔ **Design a holistic approach to bus route redesigns for the entire NJ Transit bus system, including community outreach, accounting for technology changes including electric buses, and connectivity with rail schedule, bike trails and pedestrian infrastructure.**
- ➔ **Move forward with existing bus depot renovations and other capital projects to capitalize on federal funding opportunities over the next four years, with an emphasis on getting NJ Transit climate- and electrification-ready.**



IMPLEMENT COMPLETE AND GREEN STREETS PROGRAMS

Over the past eight years, the popularity, design, political support and implementation of Complete Streets has grown substantially. When the conversation began, the Complete Streets program was a tool to improve personal safety: eliminating road fatalities of motorists, pedestrians and cyclists; reducing crash severity and injury; and minimizing crime risk. Since then, eight counties and one hundred sixty nine municipalities have passed policies in New Jersey, and Complete Streets has come to mean more than simply adding sidewalks, crosswalks and bicycle lanes. The program is a key tool to improve quality of life for communities in New Jersey which is classified as a "Federal Highway Administration Pedestrian and Bicycle Safety Focus State" due to its high pedestrian fatality rate.

In 2019 the NJ DOT published the "Complete and Green Streets For All: Model Complete Streets Policy and Guide," a one-stop resource for New Jersey municipalities, counties, transportation agencies and advocates. This resource is helpful in implementing Complete Streets in communities interested in an expanded vision in policies concerning economic vitality, health, equity and environment.

Complete Streets is the road to:

- Economic vitality, with increased foot traffic for downtown businesses, marketing and branding tools, transportation tourism, and active transportation events such as summer streets/ open-streets events.
- Better health, by providing outlets for increased physical activity and social connectivity all with the goal of lowering the risk of obesity, reducing chronic disease and promoting wellness.
- Opportunity and equity, as a tool to assure policies are implemented and funding is distributed and other resources are used equitably and responsibly in all neighborhoods; especially when it comes to improving non-auto focused transportation systems and access to transportation.
- Achieving environmental benefits, such as improved air quality, water quality and stormwater management, and reduced greenhouse gas emissions through green stormwater infrastructure called "green streets."

Despite the success of the Complete Streets program, many of New Jersey's roads are still dangerous due to outdated design standards. Pedestrian and bicyclist deaths are frequent: the 197 people who lost their lives in 2020 account for over one third of all traffic deaths in the state.

While New Jersey has led the nation with adoption of this Complete Streets policy, the program has yet to realize its full potential. Municipalities and counties have passed, but have not implemented policies. Many state and local roads lack maintained sidewalks and well lighted, marked crosswalks. Bicycle facilities, including protected bike lanes and bicycle parking, are almost non-existent.

The next step – setting a clear target of zero deaths on New Jersey's roads – may jumpstart universal adoption and enforcement. This new movement is gaining traction in over twenty-five cities in the United States and is called Vision Zero (VZ).

Cities such as New York and Philadelphia have comprehensive Vision Zero policies to achieve zero traffic deaths by 2024 and 2030 respectively. New Jersey has three cities with VZ policies: Princeton, Jersey City and Hoboken. The New Jersey DOT has adopted a Towards Zero Deaths Policy (TZD). TZD policies have been popular among Departments of Transportation, however these policies have historically lacked action plans and offer no end target of zero.

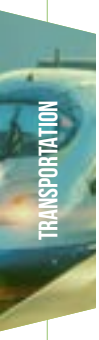
The ultimate goal of Complete and Green Streets and Vision Zero is to prevent traffic deaths in New Jersey. Through thoughtful street design and an emphasis on bicycle and pedestrian infrastructure, New Jersey can also create meaningful downstream effects to reduce emissions by making it safer to move around the state without a car.

PRIMARY CONCERNS:

- Complete and Green streets policies are not being meaningfully implemented in New Jersey.
- Current street design policies do not go far enough to stop traffic deaths.
- Policies that center cars before people are prohibitive to biking and walking, making reducing emissions by taking cars off the road difficult.

POLICY RECOMMENDATIONS

- **Update and follow NJ DOT's 2009 Complete Streets Policy to include all the benefits derived from strategic road design using 2019 Complete and Green Streets Model Policy with a targeted focus on priority communities and users as defined by model policy.**
- **Propose an executive order that sets forth a Vision Zero goal of eliminating deaths by a certain date and to create a Vision Zero Task Force.**
- **Make sure project problem statements include Complete and Green Streets**
- **Vet out all NJ DOT projects (with Complete Streets checklist) through a process that ensures Complete Streets principles are agency-wide rather than within one department.**
  - Include recommendation for public posting of accepted and exempted projects
  - Removing 20 percent financial exemption
- **Host regular and required trainings for all pertinent project management and engineering staff on Complete and Green Streets principles and how they are to be implemented in all projects.**
- **Work with NJ DEP to ensure that stormwater and other environmental regulations are problem-solved proactively and effectively and not a barrier. Include regulations for sidewalks, bicycle lanes and multi-use paths and trails in NJ DOT projects such as constructing trails through a wetlands; putting in sidewalks that now require stormwater management.**
- **Incentivize and encourage municipalities/counties to adopt and implement the revised Complete and Green Streets Model Policy and those who have existing policies to make appropriate updates/amendments.**



REDUCE TRANSPORTATION SECTOR POLLUTION AT THE STATE AND REGIONAL LEVEL

Transportation is the largest source of pollution in the Northeast. Transportation in New Jersey accounts for 40 percent of total greenhouse gas emissions according to the NJ Department of Environmental Protection. In addition to the health impacts associated with rising temperatures, motor vehicle emissions caused an estimated 1,175 deaths in 2016 in New Jersey according to a study in the Environmental Research Letters. The health impacts of transportation affect all of us, but especially vulnerable are children, the elderly, the chronically ill, and low-income households and communities of color near heavily trafficked freight corridors. Considering transportation is the largest emissions-producing sector in the state and region, New Jersey should address this issue and implement regional programs designed to decrease emissions, drive investments in clean transportation and prioritize reducing pollution burdens on environmental justice communities.

Currently, there are two burgeoning programs in New Jersey to reduce transportation sector emissions: the regional Transportation and Climate Initiative-Program (TCI-P) and a state-level Low-Carbon Fuel Standard (LCFS).

1. TRANSPORTATION AND CLIMATE INITIATIVE

The Transportation and Climate Initiative (TCI), is a coalition of states up and down the Eastern seaboard, as well as the District of Columbia, that proposes three goals: improve transportation, develop the clean transportation economy, and reduce carbon emissions from the transportation sector.

Potential TCI states, including New Jersey, have been working on a regional policy (TCI-P) to set a declining cap on transportation-sector carbon pollution. This cap will require major industrial suppliers of polluting transportation fuels, including gasoline and on-road diesel, to pay for pollution output through the purchase of carbon pollution allowances at auction. Payments would enable states to invest those payments in a broad range of clean, modern transportation solutions. As the cap ratchets down, suppliers would have to purchase allowances or reduce pollution output by switching to cleaner alternatives.

The funding from purchasing allowances would be a game-changer for all residents including over half a million New Jerseyans with lung disorders who struggle to breathe, as the TCI-P cap-and-invest program may yield sizable benefits.

At a minimum, the declining cap would guarantee at least a 26 percent reduction in transportation emissions, helping New Jersey achieve the statutory goals set by the Global Warming Response Act. New Jersey could further drive pollution reductions through its investment decisions, with $2.8 billion dollars in proceeds for New Jersey estimated over ten years. Four jurisdictions (Connecticut, Rhode Island, Washington DC, and Massachusetts) formally joined the regional program in December 2020. This first wave of signatories is beginning to negotiate important programmatic items including a minimum investment of 35 percent of proceeds for overburdened and underserved communities, independent equity advisory board authority for effective oversight, and air quality monitoring for a data-driven approach. This work is paving the way for New Jersey's future conversations in-state and regionally as the state considers entry into the program.

2. LOW-CARBON FUEL STANDARD

A Low-Carbon Fuel Standard (LCFS), is a state-based greenhouse gas emissions standard for fuels. It works by limiting (and over time, reducing) the amount of greenhouse gases that can be emitted per unit of transportation energy sold, including emissions associated with the extraction and processing of fuels. The standard does not limit the amount of total emissions, just

the carbon footprint of the fuel, which increases investment in and uptake of cleaner fuel sources. A LCFS provides an incentive for fuel suppliers to make investments in technologies and strategies that reduce the GHG intensity of fuels, such as vehicle electrification, advanced biofuels, or actions to reduce emissions from fuel production. Currently, New York is leading the way in the northeast on creating this program; California has had an LCFS on the books for nearly a decade. If New Jersey considers LCFS as an option to meet climate goals, there are opportunities to regionalize and reach markets of scale and create more significant emissions reductions, thereby reducing state-by-state patchwork.

NEW JERSEY'S TRANSPORTATION SECTOR NEEDS INVESTMENT AND TO DECARBONIZE

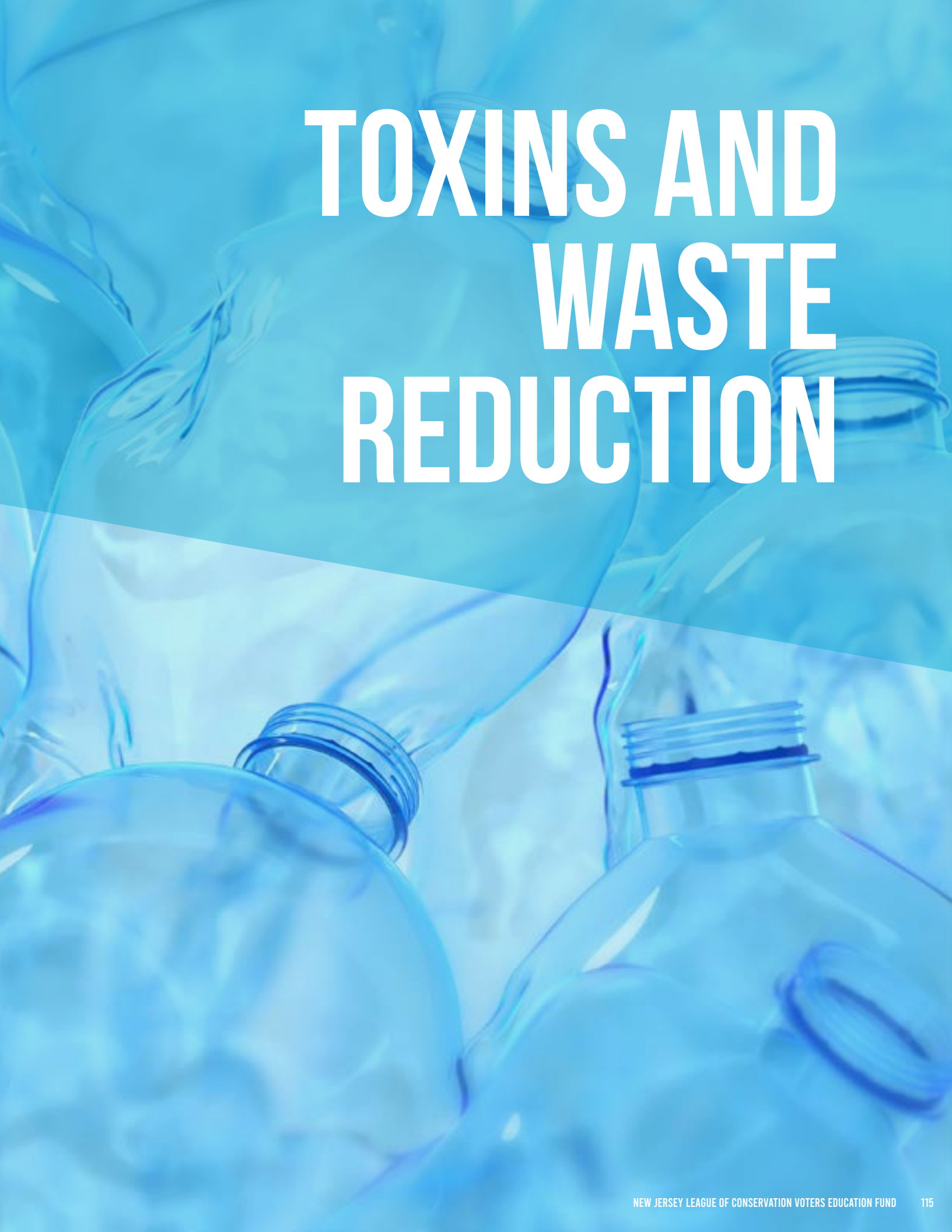
As a coastal and corridor state, situated between two of the largest domestic markets in the country with international trade pouring into the region's economy, it is critical that the state can move supplies, resources, and New Jersey's highly educated and diverse workforce to and from jobs in the region. An efficient, effective system is not enough. It is imperative that plans move forward rapidly to meet climate commitments and to build a more equitable future for environmental justice communities, which continue to bear a disproportionate burden of pollution. These programs could transform the state's broken transportation system into a world-class network that provides more transportation options, improves quality of life, cleans the air and better serves all of New Jersey.

PRIMARY CONCERNS:

- State-level policies leave patchwork guidelines for businesses to follow and create confusion. Addressing transportation regionally will improve efficacy for emissions reductions.
- Without new sources of funding, state-level electrification and emissions reduction goals will take longer to achieve. While regional frameworks are not the only option, they will help provide funding that is direly needed for transportation projects that alleviate air pollution and improve public transit.
- New Jersey's clean transportation policies are often restricted by what California has been authorized for under the Clean Air Act. New Jersey may have limited options for programs that create significant emissions reductions based on these restrictions.

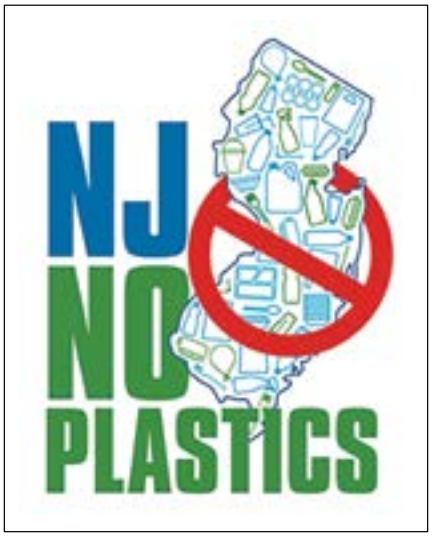
POLICY RECOMMENDATIONS

- **Enter New Jersey into the TCI-P.**
- **Fully implement the TCI-P, including by creating an air quality monitoring system and authorizing an Equity Advisory Board to oversee investments, reporting, and outcomes.**
- **Explore creating an LCFS to further catalyze carbon pollution and criteria air pollutant reductions.**
- **Prioritize clean transportation investments in projects that benefit communities most harmed by pollution, with at least 50 percent of proceeds targeted in New Jersey's more than 300 overburdened communities.**
- **Combine regional approaches with state-specific complementary policies— such as measures to reduce congestion and employ smart growth strategies to spur density; and additional investments in electrifying public transportation like buses, electric vehicles, and increasing funding for municipalities to foster walk- and bicycle-friendly communities.**
- **Study rural transportation innovation options and improve overall connectivity through installing broadband internet access in all corners of the state.**
- **Establish a Just Transition Fund and provide workforce development, job retraining and other compensation to workers in fossil fuel-dependent industries as the transportation sector continues to electrify, including those working in manufacturing, maintenance and fueling operations.**



TOXINS AND WASTE REDUCTION

STOP PLASTIC POLLUTION



New Jersey took a huge leap forward tackling single-use plastic waste in 2020 with the passing of the nation's strongest and most comprehensive Plastic Pollution Reduction Law. The law phases out the use of carryout plastic and paper bags, polystyrene foam and straws. However, other single-use plastics, including plastic bottles, utensils and packaging, continues to be a threat to the state's public health, economic and environmental future.

Plastic production fuels the climate crisis with increased greenhouse gas emissions and damages local communities where plastic is made with toxic air and water pollution. Plastic is also a threat to human health. Food and drinks in single-use plastic wrappers and containers exposes the population to chemicals linked to many of the known public health crises of our time including infertility, obesity, ADD/ADHD, and many forms of cancer.

Across the globe, 350 million tons of plastic are produced annually, and this volume is increasing each year according to PlasticOceans.org. By 2050, global plastic production is projected to triple, and will account for 20 percent of all fossil fuel consumption. As much as two-thirds of plastic produced then becomes waste.

Following the lead from China and India in 2018, many larger countries are no longer accepting America's recycled plastics which has left the country with a waste crisis. In 2019 New Jersey was identified as one of the top 15 states exporting to countries with poor waste management systems. The recycling system is broken and in need of a major overhaul. According to the United States Environmental Protection Agency, the plastic recycling rate in the United States is an anemic 8 percent. More than 90 percent of plastics in the U.S. is buried, burned or released into the environment. Plastic products typically enter local waterways by means of littering, stormwater runoff and improper waste management. Once in a local waterway, plastic does not biodegrade. Instead, water currents and sunlight act like paper shredders transforming larger plastics into microplastic (plastic about the size of a grain of rice or smaller). To make matters worse, many wastewater treatment plants are unable to capture tiny floating plastics and discharge them into waterways. These microplastics then serve as sponges, absorbing contaminants such pesticides and heavy metals already present in the water. Thus, when plankton, fish, or birds mistake microplastic for food, the contaminants adhered to the plastic bioaccumulate and travel up the food web. Microplastics have been found in fish and shellfish tissue, indicating that microplastics are entering aquatic and human food chains.

PRIMARY CONCERNS:

- Plastics manufacturing facilities, along with landfills and incinerators, are disproportionately located in overburdened and vulnerable black, brown, and Indigenous communities. Not only are these communities exposed to the air pollutants that the plastics manufacturing and disposal processes emit, but they may also lack access to fresh food and live in areas known as "food deserts." In these areas, people eat more processed foods packaged in plastic, and are therefore exposed to higher levels of chemicals in food and food packaging. What's more is that over 4,000 chemicals can be present in plastic packaging, some of which are linked to infertility, obesity, ADD/ADHD and cancer.
- Plastics from generation to waste have created a health crisis for humans, wildlife and marine life. Once in waterways, plastics never degrade; they break down into microplastics.
- Plastics are produced by fossil fuels byproduct. The entire life cycle of plastic production fuels the climate crisis with the resulting greenhouse gas emissions.

- Plastics recycling infrastructure and markets are weak. Municipalities have been struggling with rising solid waste and recycling costs. Zero waste systems create over 200 times as many jobs as landfills and incinerators, yielding both the most environmental benefits and the most jobs of any waste management approach.
- Manufactures are not responsible for the full life cycle of their products. Wind down the current antiquated model of consumption where the consumer and municipality are responsible for proper disposal.
- Balloons and their attachments (plastic ribbons, valves, tie-off disks, and clips) present a threat of entanglement and ingestion to birds and marine wildlife as well as horses, cows and other animals.
- The solution to plastic pollution is simple. Stop it at its source by reducing the amount of unnecessary plastic produced and require producers to shoulder the responsibility for the full lifecycle of their products. Additional bold policy changes are needed to support the movement away from single-use plastics. All of these changes must be rooted in Extended Producer Responsibility (EPR) whereby the originator of these items takes responsibility for zero waste.

Green Brook, NJ *Photo Credit: Central Jersey Stream Team*

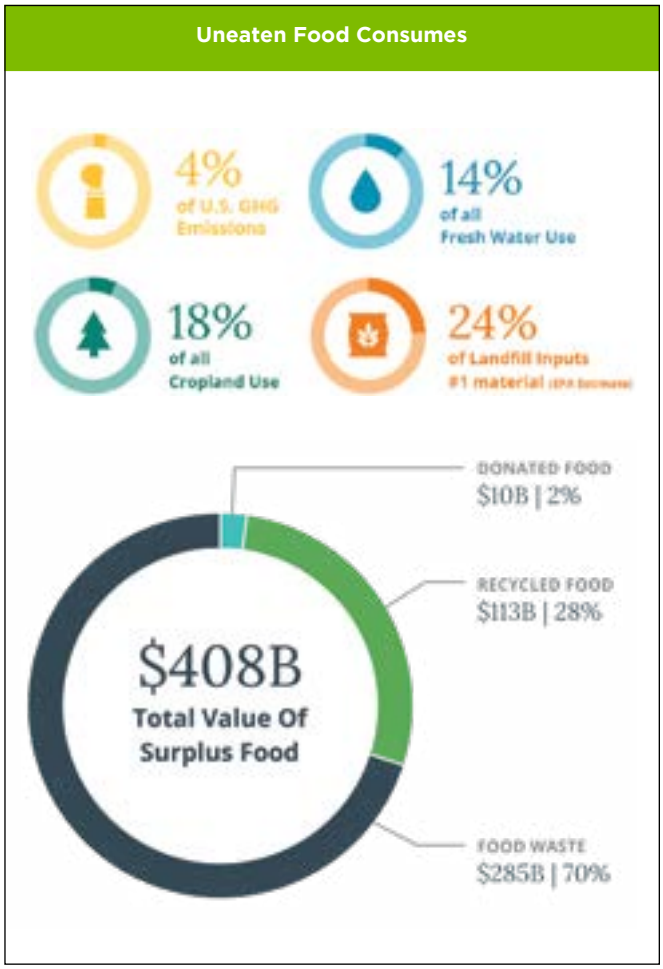
POLICY RECOMMENDATIONS

- **Continue to advance the successful implementation of the Plastic Pollution Reduction Act by:**
  - Ensuring robust education and enforcement
  - Appointing members to the Plastics Advisory Council as required by the law
  - Building a feedback loop and monitoring rollout of the law
- **Create a strong recycling market for items that can be easily reused by passing a Recycled Content law (S2515/A4676) to establish minimum recycled content requirements for containers, packaging, and food-service products.**
- **Pass legislation (A4322) aimed at prohibiting the intentional outdoor release and tethering of balloons and other floating devices.**
- **Amplify the importance of shifting to reusable and refill non-plastic alternatives.**
  - Adopt a policy through the New Jersey Department of Health of support for reusable items such as coffee cups and food containers brought into a store/restaurant for the purpose of filling an order are safe to use
  - Create a reuse and refill economy that reduces waste and pressure on New Jersey's landfills.
- **Enact Extended Producer Responsibility Legislation – Comprehensive plan to ensure manufactures shoulder the responsibility for plastic packaging, bottles and the reduction in the amount of manmade chemical toxins such as per- and polyfluoroalkyl substances (PFAS) and make plastics takeout utensils and condiments accessible by request only.** (see Clean Water section for more info)

REDUCE FOOD WASTE

According to a report from the New Jersey Department of Environmental Protection, the average New Jersey resident wasted 325 pounds of food in 2017, which makes up 22 percent of municipal solid waste. Yet, 11 percent of the population in New Jersey is food insecure, meaning they do not have reliable access to nutritious food. And, the Food and Agriculture Organization of the United Nations (FAO) estimates that one-third of all food produced globally is lost or goes to waste. If global food waste were a country, it would be the third-largest greenhouse gas emitter in the world.

Due to insufficient food waste tracking systems in New Jersey, it is difficult to estimate the environmental impacts of food waste at the state level. In a national report conducted by ReFed, a national nonprofit dedicated to ending food loss, uneaten food consumes 4 percent of greenhouse gas emissions and 14 percent of all freshwater use. Food waste sent to landfills emits high amounts of methane, a greenhouse gas that is twenty-eight times more potent than carbon dioxide. The economic impact of throwing out time, energy and resources cost the nation around $285 billion in 2019.



Wasted food occurs throughout the food supply chain, and it can be classified into three groups: food loss from unharvested crops, excess food recovered and food waste thrown away by consumers and retailers. Excess food usually becomes food waste as most businesses and retailers generally discarding food.

The EPA has created a food recovery hierarchy offering the best ways to manage food waste. The initial step to prevent food waste is to reduce the volume created at the source, followed by feeding hungry people and animals. Thereafter, tactics such as conversion for energy and composting are suggested, followed by incineration and landfill.

CURRENT FOOD WASTE LEGISLATION

New Jersey has recognized the problem of food waste through key legislation. S3027 signed into law in 2017 established the goal to reduce annual food waste in New Jersey by 50 percent by 2030. A package of bills was signed as "first step measures" in 2019 to reduce food insecurity by addressing the need for better food recovery networks. Followed by A2371 in 2020, large food generators that produce more than fifty-two tons of food are required to do one of the following: recycle food on-site, treat food waste on-site with a permit, send food to an offsite farm to be used as animal feed, use an anaerobic digester, or provide an alternative recycling method.

Donation liability laws enacted over thirty years ago have not incentivized businesses to utilize food recovery programs due to misinformation and lack of education of these protections. Despite A2371's passing, food waste generators can receive a waiver for recycling if a food recycling center is more than twenty-five miles from their facility or the cost of transport is 10 percent more expensive than landfill disposal. Since there are only two large-scale food waste recycling centers in New Jersey, there is a demand for food waste recycling operations that can create more jobs while diverting

waste from landfills. ReFed estimates in the next ten years, 15,000 U.S. jobs can be created from food waste management. In New Jersey, these opportunities exist with the expansion of food waste digestion facilities and municipal composting programs.

PRIMARY CONCERNS:

- Increased food waste due to the impacts of the pandemic will make it difficult to achieve the 2030 reduction goals.
- Lack of food waste tracking makes it difficult to measure and understand the problem.
- Continued emissions from food waste sent to landfills does not help meet carbon reduction goals.
- There is a need for better food recovery networks to increase nutritional access in food insecure communities.
- Lack of funding to educate and incentivize schools to reduce and recycle food waste.

POLICY RECOMMENDATIONS

- ➔ **Finalize New Jersey DEP's Food Waste Reduction Plan that is in draft form and establish the Food Waste Reduction Council.**
- ➔ **Fund and implement education campaigns for schools to prevent food waste in cafeterias.**
- ➔ **Educate industry on donation liability laws and create better food donation networks.**
- ➔ **Research affordable pay-as-you-throw programs to reduce municipal food waste.**
- ➔ **Incentivize businesses to implement better tracking systems and digestion technology to optimize production efficiency and prevent less processing waste.**
- ➔ **Set uniform standards for food date labeling to prevent consumer confusion over expiration dates.**
- ➔ **Enact a tiered permitting system for Class C solid waste recycling centers to make it more accessible for municipalities to accept food waste.**
- ➔ **Encourage more co-digestion options for institutions to overcome transportation concerns.**

STOP THE GROWING STREAM OF E-WASTE

Technologies are becoming ever important in our lives, causing an upsurge of electronic sales. Concurrently, the lifespans of these technologies are decreasing, with consumers often buying new devices after just a few years. This causes a rapid and devastating cycle of consumption. In 2019 alone nearly seven million tons of e-waste was generated in the United States according to Earth911 and only 15 percent of e-waste was recycled.

The materials used in electronic devices are complex and often valuable: including gold, silver, platinum and cobalt. However, these precious materials are combined with lead, mercury, dangerous chemicals and other toxic materials to human health and the environment.

While New Jersey enacted the Electronic Waste Management Act in 2011 to put in place recycling standards, it only considers "covered electronics," leaving out many other devices. There is currently no strong national standard to undergo the e-waste recycling process, resulting in twenty-five states with varying recycling processes and regulations. Therefore, no state individually has the market power to incentivize large manufacturers to design more durable products and change practices.

When e-waste is not recycled, it is often sent to commercial incinerators or landfills. Both commercial incinerators and landfills are located disproportionately near low income and minority communities in the United States, feeding into vicious cycles of pollution burdens and poor public health outcomes. When e-waste is burned, it releases plastics, gases and metals into the air, contributing to air pollution and climate change.

The precious materials can be recovered through recycling either formally or informally. While formal e-waste recycling has risen in New Jersey in the past few years, informal recycling is much cheaper for producers, so e-waste is still shipped to developing countries, often in Asia, where regulations are less stringent. All told, about 23 percent of developed countries e-waste is sent to foreign nations.

At these locations, both adults and children work to recover these valuable materials, often without protective equipment or knowledge of the true dangers of the substances they are handling, causing major health issues including decreased lung functions, adverse pregnancy outcomes and behavioral changes. However, many make their living off of the e-waste recycling business.

While recycling standards have improved in New Jersey, "built in obsolescence" by manufacturers, a root issue, has been untouched. Built in obsolescence is the practice of technology manufacturers purposely decreasing the lifespan of their products, ensuring greater profits for their business. These trends are at the heart of the current e-waste issue, and they are not solved through e-waste recycling.

Source: https://www.roadrunnerwm.com/blog/recycle-e-waste

PRIMARY CONCERNS:

- Recycling is currently seen as the leading solution, but it does not solve the root issue of built in obsolescence and overconsumption in developed nations.
- Valuable raw materials found in e-waste are often not recovered, causing the producers of new devices to drain more of the needed materials for their devices.
- Patchwork laws across the United States means no state has enough market share to force companies to design more durable products.
- When e-waste is not recycled, it is often dumped in landfills where toxins often leech into the local environment, or burned in incinerators contributing to air pollution.
- Landfills and incinerators in the United States are disproportionately near minority and low-income communities, exacerbating health inequalities.
- Developing nations are being shipped e-waste for informal recycling, greatly harming the health of people and environment.

POLICY RECOMMENDATIONS

- ➔ **Incentivize the New Jersey Department of State Business Assistance program to support small and medium repair businesses.**
- ➔ **Support federal or state initiatives, including**
  - Enacting a right to repair law to give consumers an avenue to repair rather than toss their electronic devices
  - Directing agencies charged with consumer protection agencies to investigate “built in obsolescence” as a manufacturing strategy with public reporting.
- ➔ **Collaborate with other states in the region to create a standard for e-waste recycling focused on extended producer responsibility.**
  - Ensure companies that produce products are responsible for disposal and/or material reuse.
- ➔ **Promote leasing programs for electronic devices.**
- ➔ **Advance urban mining practices, which is currently more economical than virgin mining, to reduce the consumption of limited raw materials.**

CLOSE THE LOOP ON TEXTILE WASTE

Textile waste consists of all fiber based products such as clothing, linens, shoes, etc. Waste is generated at all levels. This includes waste from spinning, weaving, knitting, dyeing, finishing and consumer use. In clothing alone, Vox reports that 60 percent of garments are made with synthetic materials. These are largely oil-based materials (polyester, acrylic, nylon) which makes them by-products of the fossil fuel industry. This contributes to two large problems; microplastics in waterways and climate change. Although nearly 95 percent of textiles are recyclable only 15 percent are donated while 85 percent are either landfilled or incinerated according to the US Environmental Protection Agency. In a world with finite resources faced with a global threat of climate change, these statistics are quite alarming. Just as other waste streams in New Jersey, textile waste is disproportionately incinerated in low-income, minority communities.

FAST FASHION

The Council for Textile Recycling indicates that the average consumer disposes of 70 pounds of textiles per person per year. This can be widely contributed to a cultural shift that is often called "fast fashion." Consumers are expected to follow trends in style that change every week. Where there was once four seasons in the fashion industry there are now fifty-two. This has led consumers to increase purchasing of products while at the same time prioritizing cheaper goods. Items such as garments and home decor are now short-term investments; expected to quickly become "unfashionable."

All told, moving toward the establishment of a circular economy (where products have long lifecycles) can help mitigate current waste and disposal trends that negatively impact the planet.

➔ What is a Circular Economy?

Rather than "take, make, use and dispose" as is the case in the current economy, a circular economy is restorative and regenerative in that it takes the "waste and disposal" aspects out of products so everything is in a closed loop (shared, repaired, reused or recycled).

PRIMARY CONCERNS:

- The volume of textiles Americans sent to landfills and incinerators as waste is growing according to United States EPA
- Shortage of curbside textile recovery programs
- The laundering and wear of consumer textiles is the largest contributor of microplastics in our waterways.
- The manufacturing process of synthetic textiles consumes high levels of energy, utilizes oil-based chemicals while generating high levels of pollution.
- Preliminary studies show that synthetic fibers likely contribute to poor health in humans.

POLICY RECOMMENDATIONS

➔ **Introduce legislation that incentivizes markets for textile waste recovery and mandates Extended Producer Responsibility (EPR) for proper reuse or disposal of products at end use.**

➔ **Request the New Jersey DEP to create educational resources on the harms of microplastics and how to prevent shedding from textiles.**

➔ **Promote circular economy markets in order to reduce textile waste at all levels of manufacturing and consumer use.**

- This would not only help close the loop for this waste stream but create a new economic sector.

➔ **Help Re-Purpose NJ, a New Jersey textile recycler, in contracting with municipalities for curbside collection services, including scheduled collection coordinated with trash collection.**

ENSURE THE PUBLIC'S RIGHT TO KNOW ABOUT ENVIRONMENTAL HAZARDS

In 1983 the New Jersey Legislature found when enacting the Worker and Community Right to Know Act "...that the proliferation of hazardous substances in the environment poses a growing threat to the public health, safety, and welfare... and that individuals have an inherent right to know the full range of risks they may face so that they can make reasoned decisions and take informed action concerning their employment and their living conditions." It further declared "that it is in the public interest to establish a comprehensive program for the disclosure of information about hazardous substances in the workplace and community."

This precedent-setting law has protected our health and environment and saved countless lives because of its requirements for thousands of New Jersey facilities – from chemical plants to hospitals – to report to the public any chemicals that are used on-site, label chemical containers, train employees, and make hazardous substance fact sheets available. The grassroots campaign for the law – and the impact of the chemical disaster in Bhopal, India in 1984 – also led to passage of the state Toxic Catastrophe Prevention Act (TCPA) in 1986, which requires high-hazard chemical facilities to develop comprehensive accident prevention plans.

However, challenges remain to ensure the public's right to know to prevent chemical catastrophes as well as to inform about the legacy contamination that currently exists:

- Massive amounts of crude oil are shipped in by rail, with potentially deadly rail cars passing through at least eleven New Jersey counties to refineries and terminals in Linden, Westville, Perth Amboy and Philadelphia. Residents, oil and rail workers, firefighters and other emergency responders are all at risk, but current right to know laws applying to facilities in New Jersey do not cover railroad cars carrying oil and chemicals.
- Public access to emergency response plans, which are required for facilities using hazardous chemicals, remains challenging.
- Communities, jobs and the environment remain at risk from an on-site toxic disaster. Facilities located across the state use sufficiently large quantities of extraordinarily hazardous chemicals that they are required to submit to the state Department of Environmental Protection (DEP) an Inherently Safer Technology (IST) review. An IST review requires a facility to *assess* whether it can use an IST (such as safer chemicals or processes). The rule does not require facilities to adopt the IST. If facilities assert that alternatives are not feasible, they must include an explanation. DEP rules and policies keep many of these reports from the public.
- In 2009 New Jersey adopted the Site Remediation Reform Act and Licensed Site Professional Program to address the backlog of more than 30,000 known contaminated sites (KCS) identified by the New Jersey Department of Environmental Protection. Since then, the KCS has been reduced to approximately 10,000 sites. The Act established that remediation of certain KCS could be overseen by a Licensed Site Professional (n LSRP). While moving some site clean-ups over to third parties, with New Jersey DEP certification, was necessary to speed up the pace of clean-ups, it has made it more challenging for the public and municipalities to obtain information on the nature of the contamination, proposed remediation, and what contamination may remain on-site post remediation.

PRIMARY CONCERNS:

- Potentially hazardous trains are regularly traveling through New Jersey communities
- The public does not have easy access to updated emergency response plans even though they are legally required to by the EPCRA
- Facilities that handle extremely hazardous materials are not required to adopt an IST, and the public can be denied access to the company's reasoning
- Access to timely information about contaminated sites under LSRP purview and potential mobilization of contaminants from a KCS that remain on the site as part of the remediation

POLICY RECOMMENDATIONS

➔ **Right to Know about rail car hazards**

- The state has records of the crude oil shipments passing through our communities, homes, schools and workplaces, and should make the following information publicly available:
  - Routes and volume of cargo updated on a monthly basis
  - Worst-case emergency impact scenario, discharge response, cleanup and contingency plan
  - Evidence of financial responsibility for cleaning up and removing discharge or release of a hazardous substance
  - Railroad routing analysis
- Ensure that the SERC obtains and makes publicly available critical information from the railroads that carry crude oil

➔ **Right to Know about emergency response plans**

- Direct SERC to enforce EPCRA by requiring Local Emergency Planning Committees for New Jersey's 21 counties and 565 municipalities to:
  - Make up-to-date Emergency Response plans accessible for public review, including posting plans on its website
  - Ensure annual publication about public access in local newspapers
  - Ensure that Local Emergency Plans are written to inform neighbors about what to do in case of an emergency
- Direct the DEP to conduct and publish an Emergency Response plan capacity assessment for each county and municipality to determine whether funding levels are sufficient for effective prevention, preparedness and response

➔ **Right to Know *and* implement safer alternatives**

- Direct the DEP to amend TCPA program rules to:
  - Require facilities to adopt safer alternatives whenever feasible
  - Prevent facility management from declaring IST reviews non-public documents
  - Require facility management to better document claims that adopting safer chemicals and technologies is not feasible
  - More clearly define "inherently" safer options
- Direct DEP to produce an annual report about safer chemicals and processes identified and adopted by facilities, as well as facilities that failed to do so
- Provide additional staff and resources for DEP's TCPA program to ensure effective enforcement

➔ **Amend the Site Remediation Reform Act and Licensed Site Professional Program legislation to require the disclosure of type and extent of contamination present at the beginning of remediation as well as remediation techniques employed; pre-and post- remediation monitoring; and continued monitoring schedule and data on a more automatic, routine basis to the general public and municipalities which includes online access.**

ELIMINATE LEAD EXPOSURE TO WILDLIFE

Spent lead ammunition and tackle are dangerous when ingested by wildlife, and equally important, carry long-term environmental impacts. Lead has been used to manufacture ammunition and fishing tackle for centuries, though its use is being phased out in many states. Lead ammunition and tackle can be ingested directly by wildlife or dissolved into the soil. Once in the soil, lead can be biologically incorporated into plants and invertebrates which are then ingested by wildlife. In some parts of the United States, the use of lead shot for hunting waterfowl in North America has been banned. Some states have even more stringent guidelines in restricting the use of lead for these uses. These restrictions on the use of lead were successful in reducing lead exposure to waterfowl species resulting in less lead in animal tissue. In New Jersey, it is illegal to hunt ducks, geese, brant, coors, rails, snipe or moorhens while possessing shot other than approved non-toxic shot. However, the continued use of lead tackle and lead ammunition in other hunting and fishing pursuits maintains some risk for wildlife. Mortality rates linked to lead toxicity in wildlife remain high in some localized areas despite some legislative action to phase out the use of lead. Scavengers such as condors, vultures and eagles can be exposed to lead by consuming carcasses of animals harvested with lead ammunition.

PRIMARY CONCERNS:

- An estimated twenty million animals, including more than one hundred thirty differing species throughout the food chain, die each year from lead poisoning, according to the Humane Society of the United States.
- Although there are numerous sources of lead in the environment, research reveals that spent lead ammunition and lost fishing tackle are the most frequent causes of lead exposure and poisoning in wildlife.
- Lead can cause damage to the nervous system, paralysis and even death in wildlife, particularly birds. At lower levels, lead causes damages to tissues and organs, the immune system, the reproductive system and the neurological system.

POLICY RECOMMENDATIONS

- **Restrict use of lead in ammunition and tackle. The United States Fish and Wildlife Service prohibited lead shot in the hunting of waterfowl and coots in 1991. New Jersey should ban the use of small lead sinkers in all parks and wildlife areas.**
- **Create non-lead zones in parks and wildlife areas.**
- **Promote alternatives to lead in fishing and hunting materials. There has been an extensive effort in the development, testing, and regulation of alternatives to lead-based ammunition in recent years. Manufacturers have developed non-toxic ammunition that can be used safely in all gauges of modern shotguns, as well as non-toxic rifle bullets. Dozens of substitutes for lead fishing tackle have entered the marketplace in recent years. Non-toxic substitutes for tackle and ammunition include bismuth, steel, tin, and tungsten.**

GOVERNANCE

ENHANCE LOCAL ENVIRONMENTAL POWERS

In 1968 legislation was enacted that provides a municipal authority in New Jersey the ability to create environmental commissions (ECs) for the primary goal of protecting natural resources. The environmental commission enabling legislation (NJSA 40:56A-1 et seq.) states that an environmental commission has responsibility for "the protection, development or use of natural resources, including water resources, located within its territorial limits." Moreover, New Jersey Municipal Land Use Law (MLUL) states that "whenever the environmental commission has prepared and submitted to the planning board and the board of adjustment an index of the natural resources of the municipality, the planning board or the board of adjustment shall make available to the environmental commission an informational copy of every application for development submitted to either board." (NJSA 40:55D-27)

➔ What is the New Jersey Municipal Land Use Law?

The Municipal Land Use Law (NJSA 40:55D-1), first established in 1975 grants towns the power to enact a master plan to set land-use priorities and direction, as well as adopt a zoning ordinance to dictate where and in what form development should happen, all with the purpose of protecting the health, safety and welfare of citizens.

EXPANDING THE ROLE OF NEW JERSEY'S ENVIRONMENTAL COMMISSIONS

While ECs have responsibility for the protection, development or use of natural resources, including water resources, located within their municipalities, they operate on an advisory-based capacity and without legal powers of decision-making authority under the law. This inconsistency between their responsibilities and authority to carry out duties limits ECs effectiveness at the expense of New Jersey's shared natural resources.

New Jersey is both the most densely populated state in the nation as well as the most diverse. The state is experiencing average temperature increases greater than 20C (the maximum increase by 2050 per the Paris Climate Agreement). What's more, New Jersey's peninsula is sinking due to tectonic shifts. Data models show New Jersey's average annual precipitation will increase between 4 percent and 11 percent through 2050, drastically altering storm patterns. These compounding stressors exacerbate the impacts of sea level rise. New Jersey will continue to experience more frequent and intense rainstorms followed by longer periods of dry weather, stressing water supply systems. By 2100 precipitation volume is projected to push the state's one hundred year floodplains to where the five hundred year floodplains are now, thereby significantly increasing lands that flood. Many of New Jersey's communities will likely experience the effects of flooding – including already overburdened communities, composed largely of minority, low-income households.

Given the tremendous environmental challenges facing New Jersey, more than fifty years after ECs were first established, the time has come to expand and codify decision-making power and authority of ECs to protect local natural resources. All municipalities should be required to establish an EC, as the time for optional environmental protection is gone. Additionally, required training for planning board members should be expanded to include climate change and resiliency impact planning. Currently, training for planning-board members is limited to a one-time requirement. Since the impacts of climate change are evolving and laws and policy change over time, compulsory training at regular intervals should be the standard.

EC authority should be expanded to ensure through environmental planning, review and compliance at the municipal level. Granting ECs decision-making authority similar to other municipal land use boards will ensure that development and redevelopment plans include climate crisis assessment review and minimize impacts, reduce impacts on overburdened

communities, and protect natural resources and habitats for ecological and human use. Given New Jersey's existing municipal authority structure, existing land use boards are overwhelmed with affordable housing, zoning requirements, traffic plans, community character, etc; environmental planning and protection too often falls to the wayside at land use board meetings. Expanding the authority of EC will ensure dedication to municipal environmental protection and planning.

PRIMARY CONCERNS:

- Natural resource protection, planning for climate threats, and development/ redevelopment impacts on overburdened communities are often given little to no consideration at the municipal level, specifically within context of site plan application review
- Approximately four hundred of New Jersey's five hundred sixty five municipalities have established environmental commissions (ECs) to advise on natural resource protection with about three hundred active with current appointments. Local governing bodies will allow appointments to expire and EC to go dormant when they want to fast track development without hearing about or abiding environmental best practices at the local level.
- ECs often provide thoughtful review and comment of site plan applications, but since ECs are advisory only, land-use boards often ignore their advice in the pursuit of increasing ratables (more taxes) to the peril of natural resources and the people living in the municipalities.

POLICY RECOMMENDATIONS

- ➔ **Amend the Municipal Land Use Law to require every municipality to establish an Environmental Commission (EC)**
- ➔ **Expand the powers and authority of ECs to include their required review and approval for environmental impacts review development and redevelopment plans. Such impacts include: stormwater, development or infringement into steep slopes, tree removal, construction phasing and landscape planning.**
- ➔ **Ensure all development plans include a climate impact assessment for EC review this.**
- ➔ **Include an environmental justice impact assessment in any development plan that's in a environmental justice community, as defined by recent state legislation**
- ➔ **Ensure ECs approve/review all new environmental ordinances in the town before ordinances go to municipal council for voting**
- ➔ **Allow enforcement or review of permits for items such as tree removal, impervious cover variances, etc. by ECs**
- ➔ **Require ECs and Planning Board members to attend appropriate training on an annual basis**

ENSURE BETTER GOVERNANCE FOR COASTAL RESILIENCE

With over 1,700 miles of ocean, bay, and river shoreline, coastal New Jersey is squarely in the crosshairs of the climate crisis. Flooding from more frequent and intense storms, as well as the eventual permanent flooding from sea level rise, threatens to disrupt or displace hundreds of thousands of residents and businesses in urban, suburban and rural communities around the state, while impacting the transportation, energy, water and sanitary infrastructure.

The deluge of water from flooding does not occur solely within specific jurisdictional boundaries nor are the impacts of flooding comprehensively or consistently addressed in the budgets or by the actions of any one program, department or agency. And, taken as a whole, the authority to act and resources at all levels of government fall far short of what is needed for a challenge of this magnitude. In fact, the governance structure of the state around coastal adaptation and the limited capacity of hundreds of municipal governments each responsible for the safety and well-being of residents (particularly those who have been historically marginalized) all threaten the state's ability to effectively meet the challenges to be resilient in the fact of climate change.

The state is beginning to address these impacts more comprehensively and with greater emphasis. A 2019 Executive Order No. 89 appointed a Chief Resilience Officer, established a Climate and Flood Resilience Program and established an Interagency Council on Climate Resilience to develop a Climate Change Resilience Strategy, which was released in April, 2021. Executive Order No. 100 (NJ PACT), signed in January, 2020, includes a proposal for sweeping reforms to land use regulations through new zones that would factor climate projections into state permitting decisions and put restrictions on development in high flood risk areas. Additionally, new legislation was passed and adopted into law early in 2021 that requires municipalities to include a climate-related hazard vulnerability assessment in the mandatory land use plan element of master plans.

As the state moves toward increased oversight and implementation in flood zones, municipalities face many of the same challenges they did prior to these actions. Capacity to respond to the consequences of climate change is increasingly limited and there is little to no additional funding to implement adaptation or resilience practices. Further, aside from a state pilot program – Resilient NJ – that provides funding and technical assistance to multi-municipal regions within the nine NJ counties most affected by Superstorm Sandy – there is little motivation for local communities to forge partnerships to seek shared resiliency measures across boundaries, despite sharing coastlines and infrastructure.

PRIMARY CONCERNS:

- Increasing risk from flooding threatens to disrupt or displace hundreds of thousands of residents and businesses in coastal communities and threatens infrastructure
- The state is beginning to take action to address potential flooding and climate issues, but greater clarity is needed, as well as interdepartmental approaches along an aggressive timeline
- Many communities lack the administrative, technical and financial capacity to adequately plan for and implement flood resilience practices
- There are few incentives to collaborate or coordinate resilience efforts across municipal boundaries
- Communities of color and communities with less wealth are disproportionately affected by climate impacts, including flooding

POLICY RECOMMENDATIONS

- Significantly expand the Resilient NJ regional planning program to provide funding for and technical support to additional regional groups of communities at risk from coastal flooding with a goal of engaging at least half of all coastal municipalities by 2025
- Advance greater state-level interdepartmental coordination around resilience and ensure each department prioritizes resilience in their budgets and through their activities
- Specify mechanism to enhance coordination between states and relevant regional planning entities, like the New Jersey Sports and Exposition Authority, ensuring that coastal resilience policies are consistent and that projects advanced in the coastal zone and in coastal areas of regional jurisdictions are held to the highest standards of resilience.
- Turn over control of the Coastal Area Facility Review Act (CAFRA) areas in the overlap zone of the Pinelands National Reserve to the Pinelands Commission for decision-making for more effective oversight
- Study the need for a Coastal Commission to better align state and local policies around resilience, coordinate and encourage collaborative adaptation, advance best practices, promote design guidelines, and ensure representative voices in resilience decisions
- Institute an ongoing, dedicated stream of state funding for adaptation projects (bond, insurance surcharge, etc.), with minimum dedication to overburdened and environmental justice communities
- Strengthen the state hazard-mitigation plan by requiring greater integration and coordination with county plans that will help direct funding appropriately and reduce improper land use
- Incentivize and streamline mechanisms for municipal consolidation, in particular for small coastal communities, to increase potential revenue for struggling areas
- Enable municipalities to regulate development, project approval timelines and public infrastructure improvements based on best available flood projection data.

RESTORE THE PINELANDS

The Pinelands regional planning program was the result of the National Parks and Recreation Act of 1978 and the state Pinelands Protection Act of 1979. Thirty-seven years later, the Pinelands program is still the country's strongest regional planning authority. A central goal of the Pinelands program is to protect the Kirkwood-Cohansey aquifer by protecting the forests that collect and cleanse rainfall across the aquifer's two million acres. The aquifer provides more than thirty-five billion gallons of water per year to residents, farmers, businesses and industry in southern New Jersey. In addition to farmers who use the aquifer for irrigation, the region's cranberry industry is dependent on this water to maintain its bogs. A 2009 report by the U.S. Department of Agriculture identified the Pinelands watershed as one of the northeastern United States' most critical sources of water.

Currently, the 1.1 million acres of the Pinelands National Reserve are home to 800,000 acres of forest, 300,000 acres of which are owned privately. An additional 60,000 acres of the reserve is farmland and the rest is composed of communities ranging from new suburbs to towns tracing their history to early colonial settlers.

PINELANDS PROGRAM

The Pinelands Program has two key components. The Pinelands Comprehensive Management Plan (CMP) consists of a land-use map and regulations that govern all development in the Pinelands. The plan establishes mandatory regional zoning for conservation and economic growth zones, and is designed to protect the natural functioning of the Pine Barrens habitats and the integrity of the Kirkwood-Cohansey aquifer. The Pinelands Commission is responsible for overseeing and amending the Comprehensive Management Plan. It is composed of fifteen volunteer commissioners: seven appointed by the Governor, seven chosen by counties in the Pinelands region, and one representative from the U.S. Secretary of the Interior.

PRIMARY CONCERNS:

- Lack of leadership due to hold-over Commissioners and staff from previous administration
- Circumvention of agency review and approval for compliance with the Pinelands Comprehensive Management Plan (CMP)] on recent energy infrastructure projects
- Contamination of the aquifer from increased development leading to increased levels of nitrogen from lawn and farm stormwater runoff
- Increased demand for clean water resulting in saltwater intrusion into the aquifers, periodic water supply crises, and drying out of wetlands, streams and ponds
- Destruction of public lands and habitats by illegal, but nearly unregulated, off-road vehicle and truck traffic in regulated areas

POLICY RECOMMENDATIONS

PINELANDS COMMISSION

- Advance the list of nominees to the Pinelands Commission that bring gender and ethnic diversity along with years of experience and expertise in governance and environmental protections
- Ensure staff leadership consist of people who believe in the mission of the agency and consistent implementation of the CMP
- Support changes to the CMP to ensure that infrastructure projects are properly reviewed by the Pinelands Commission before they can move forward
- Use New Jersey's existing regulatory authority to deny all new fossil fuel infrastructure projects and pipelines.

WATER QUANTITY AND QUALITY

- Expand stream buffer requirements for new construction and public facilities
- Revise the CMP to better protect high-quality habitats from future development
- Employ comprehensive planning for the location and volume of wells serving current and future needs to ensure water supply is protected from impacts of climate change
- Reform regulations to bar new or increased withdrawals in locations that harm wetland and stream ecosystems, and require water conservation actions that offset new or increased withdrawals
- Promote infrastructure planning and repairs to eliminate water lost from public supply systems
- Establish new rules requiring water protection measures in site preparation and design of new construction

PINELANDS COMMISSION

- Adopt a comprehensive, scientifically based plan for controlling motor vehicle use on state lands to protect natural areas and the rights of non-motorized recreational users
- Launch a sustained public communications and enforcement initiative to change the expectations of those doing the damage and engage the broader public in enjoying state lands through low-impact recreation

SUPPORT REGIONAL PROTECTIONS OF THE NEW JERSEY HIGHLANDS

The Highlands Region is a physiographic province that is part of the Appalachian mountain chain, stretching northeast from east-central Pennsylvania through New Jersey, New York and western Connecticut. New Jersey's portion of the Highlands Region encompasses 88 municipalities located in seven counties: Bergen, Passaic, Morris, Sussex, Warren, Hunterdon and Somerset, and is composed of nearly 860,000 acres covering 1,342 square miles.

In 2004 New Jersey's Highlands Water Protection and Planning Act was passed to protect the Highlands from the piecemeal development that was consuming five square miles of Highlands forests and wetlands each year. The national significance of the Highlands Region and its resources, including water, forests, farmland, wildlife and recreation, was recognized by the 2004 federal Highlands Conservation Act (HCA), which offers some funding for land preservation in the region. The region is also rich in historic, cultural and scenic resources.

The Highlands is as important to the water supply of New Jersey as the Catskills region is to New York City. With only 15 percent of the state's area, the Highlands provides drinking water for more than 6.2 million people, more than 70 percent of the state's population. The Highlands also provide water to a large portion of New Jersey's pharmaceutical, manufacturing and food and beverage industries.

Even with New Jersey's dense population and demand for water, the cost of water in New Jersey is the fourth lowest in the country, largely due to the purification function that the Highlands forests provide naturally, at no cost.

In addition to the water resource that Highlands forests provide, the 320 square mile core mature forest is home to a great diversity of native plant and animal species, many of them rare, threatened and endangered. The forest offers abundant, accessible outdoor recreational opportunities, filters our air and moderates flooding, and its outstanding ability to capture and store atmospheric carbon makes it a significant part of New Jersey's developing climate resiliency strategies.

HIGHLANDS PRESERVATION AND PLANNING AREAS

By statute, the Highlands region is delineated by two distinct areas: the Preservation Area, which became subject to the strict land-use regulations of the New Jersey Department of Environmental Protection (DEP) with passage of the Highlands Act; and the Planning Area, which balances growth and development with capacity-based water resource protections through voluntary municipal conformance to the Highlands Regional Master Plan.

The water resource protection goals for the Preservation and Planning Areas are the same. But, whereas in the Preservation Area, the goals are achieved by regulation, in the Planning Area they are achieved through innovative

regional planning. Of the Highlands' eighty-eight municipalities, five are located entirely within the Preservation Area, thirty-six are entirely within the Planning Area, and forty-seven are split between Preservation and Planning Areas.

HIGHLANDS REGIONAL MASTER PLAN

The Highlands Regional Master Plan (RMP), a capacity based plan, was adopted by the Highlands Council in 2008 primarily to balance natural resource protection with appropriate economic growth in the Planning Area. Since municipal conformance to the RMP is voluntary, and because the goals and objectives of the Highlands Act are implemented in the Planning Area through RMP-consistent ordinances adopted by conforming municipalities, the work of the Highlands Council to promote municipal conformance is extremely important.

PRIMARY CONCERNS:

- Senatorial courtesy is preventing the appointment of highly qualified, pro-environmental Highlands Council nominations made by the governor.
- Highlands Council members appointed by the prior administration for the purpose of undermining the Highlands Council remain on the Highlands Council.
- Policy and administrative changes adopted under the prior administration to weaken water resource protections remain in place, despite the election of a more environmentally friendly Governor.
- Approximately 6.2 million people rely on the Highlands for drinking water, but many of these waters continue to be degraded because of inadequate protection.

POLICY RECOMMENDATIONS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

- ➔ **Reverse weak rules. Although the Legislature invalidated the weakened Highlands Preservation Area Septic Density Standard adopted during the Christie Administration, weakened Freshwater Wetlands Rules, Flood Hazard Area Control Act Rules, Water Quality Management Plan Rules and Highlands Council Consistency Determinations remain in place. Because of these weaker rules, major development proposals are advancing in the permitting process. Advocates, led by the Highlands Coalition, are working with the DEP to reverse these regulatory rollbacks.**
- ➔ **Ensure that forest stewardship plans address all components of the forest ecology including soils, native species, carbon sequestration, wetland communities, water resource protection and production, compatible recreational values, and connectivity and retain the native resources. Capitalize on carbon sequestration gains in maturing forests in the Highlands Core Forest.**
- ➔ **Convince the New Jersey DEP to end the abuse of Highlands Exemption #4 for reconstruction, and require public notice when Exemption #4 is sought under the Certified Municipality Program.**
- ➔ **Promote a new Highlands Water antidegradation standard ("H-1") that protects existing uses to better protect the drinking water relied on by 6.2 million New Jersey residents.**

HIGHLANDS COUNCIL

- ➔ **Continue to press Senators to release their courtesy holds, or nominate other qualified, pro-environmental Highlands Council members who will not be held under Senatorial courtesy to replace former administration appointments.**
- ➔ **Continue to press DEP and the Highlands Council to return to the former, full Regional Master Plan policy reviews of Highlands Council Consistency Determinations for major permit decisions in the non-conforming Planning Area, including for proposed amendments to areawide Water Quality Master Plans to assign new sewer service areas.**

CLIMATE PROOF THE MEADOWLANDS

The New Jersey Meadowlands is a sanctuary for diverse wildlife, a network of communities where hundreds of thousands live, a major industrial and commercial employment center and tourist attraction, and a critical convergence of transportation, energy, waste and wastewater infrastructure. As one of the state's regionally planned districts, the Meadowlands district serves as a unique model of governance that by nature takes a regional and long-term approach, with shared costs and opportunities. And thanks to the tireless efforts of advocates like the Hackensack Riverkeeper and others, the Meadowlands is the tri-state region's largest remaining intact wetland habitat.

But the impacts of climate change, in particular flooding from precipitation, storm surge and sea level rise, present an existential threat to the Meadowlands. By the end of this century, permanent flooding from sea-level rise could displace between 4,000 and 8,000 Meadowlands residents, and cost 51,000 jobs. The lives of another 40,000 people could be disrupted by periodic flooding from increased precipitation and storm surges, while infrastructure will be threatened by more frequent flooding and saltwater intrusion – a particularly vexing public health problem given the area's concentration of hazardous-waste sites.

To begin to address this challenge, the New Jersey Sports and Exposition Authority, which manages the district, adopted for the first time in sixteen years its updated 2020 Master Plan. The plan notably included a chapter on resilience which highlighted the future risk of flooding, referencing estimates of at least three feet of sea level rise by the end of the century. Where the plan falls short, however, is in advancing meaningful adaptation approaches with any sense of urgency. As a stand-alone chapter in the Master Plan, there is no integration of resilience into any of the plan's other elements.

Another statewide effort to address flooding in the Meadowlands is the New Jersey DEP Rebuild by Design initiative. Stemming from a national competition to holistically integrate resilience at a regional scale, the state's Rebuild by Design project was scaled down from the original district-wide vision and is now focused on improved stormwater drainage systems and new waterfront parkland that will benefit five towns particularly prone to flooding, including Little Ferry Carlstadt, Moonachie, South Hackensack and Teterboro. The project represents a good short-term solution to flooding caused by storms.

For the Meadowlands to have a sustainable future in the long-term though, a delicate balance must be struck with climate adaptation and economic development, and resilience must be made an integral part of every decision made moving forward.

PRIMARY CONCERNS:

- The Meadowlands region is a critical hub of communities, businesses, infrastructure and ecology at significant risk of flooding from climate impacts
- While under a regional planning management scheme, there is little planning for adaptation or resilience among the fourteen communities and other stakeholders in the District
- Significant adaptation measures will be needed, yet there is no dedicated stream of funding to pay for them
- Critical wetland habitat protection remains a primary need

POLICY RECOMMENDATIONS

- ➔ **Grant all applicable state-owned open space, natural lands and waterways in the Meadowlands special designation that recognizes the Meadowlands as a cohesive unit of park, preserve or natural areas system within the state's existing framework of natural lands stewardship**
- ➔ **Allow no further destruction of wetlands within the district boundaries and acquire any high-priority, privately held wetlands remaining in the district**
- ➔ **Develop a comprehensive adaptation plan for the communities, infrastructure and habitat within the Meadowlands District, including a long-term buyout plan for those properties at greatest risk of flooding, in partnership with New Jersey Blue Acres**
- ➔ **Expand the intermunicipal tax sharing approach to develop a dedicated Meadowlands Adaptation Fund to help support community and infrastructure resilience projects, buyouts, wetlands protection, and other nature-based projects**
- ➔ **Showcase the Meadowlands as an innovative hub of climate adaptation through partnerships with universities, and through novel approaches that could include a regional climate park**

PROTECT THE NEW JERSEY PALISADES

The Palisades Interstate Park Commission was created in 1900 by the states of New Jersey and New York to protect the cliffs of the Palisades, an internationally significant geological formation. Palisades Interstate Park, stretching twelve miles north of the George Washington Bridge, was established in 1909. To further protect the Palisades, a narrow strip of land at the summit going west from the edge of the escarpment and running the length of the park, was purchased by John D. Rockefeller and donated to the Commission in 1933. Existing buildings along the summit were removed to return the tree line to its unbroken natural state, followed in 1948 by construction of the Palisades Interstate Parkway, complete with overlooks and service buildings, hidden from view among the trees. The parkway was completed in 1958, since which time the Palisades have stood pristine, surrounded on both the New Jersey and New York sides by some of the densest development in the world.

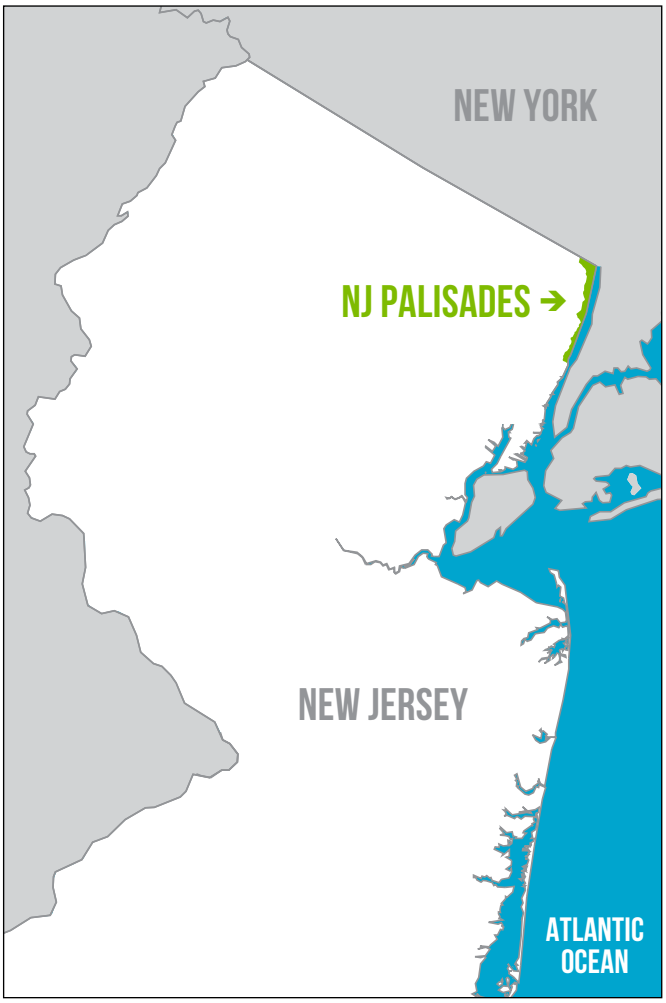
In 1965, Congress designated the Palisades Interstate Park a National Historic Landmark, noting, "The Palisades Interstate Park represents an unusual effort by two states, New Jersey and New York, to preserve the scenic beauty of the cliffs on the lower western side of the Hudson River..." In 1983 "The Palisades of the Hudson" was designated a National Natural Landmark, and in 1998 the Palisades Interstate Parkway was designated as a National Landmark by the National Park Service.

For decades, the New Jersey towns north of the George Washington Bridge acted as guardians of the Palisades – a national treasure - preserving the unspoiled view through zoning laws that limited building heights to 35 feet.

THREATS

In 2012, Englewood Cliffs granted LG Electronics a variance to build a 143 foot office tower that would rise far above the tree-line, marring the iconic cliffs that are a National Natural and National Historic Landmark. The variance sparked protests from conservation groups, residents and elected officials in New Jersey and New York. New Jersey Conservation Foundation joined the Natural Resources Defense Council (NRDC) and Scenic Hudson in a lawsuit challenging the variance. After extensive advocacy and negotiations, and a call by four former New Jersey governors for a low-rise alternative, a settlement was reached in 2015. The agreement allows for a five-story wing just shy of 70 feet and a three-story wing, with landscaping, lighting and other design features to reduce visual impacts. The settlement was hailed as a win by advocates, LG and the town, but the struggle made clear the tenuous nature of the protection.

In 2020 a zoning overlay adopted under an affordable housing court settlement between Englewood Cliffs and Fair Share Housing, permits another tract critical to the Palisades viewshed to be developed in violation of the State Plan and against the regulations of the Council on Affordable Housing (COAH). The subject site is surrounded by parkland and is designated Planning Area 5 (environmentally sensitive) via the State Development and



Redevelopment Plan and was removed from the NJ DEP's sewer service area. COAH's regulations for affordable housing require that any proposed PA5 development be in a designated center, which is not the case for this site. Any further development on this site will almost certainly have a negative impact on the integrity of the Palisades.

PRIMARY CONCERN:

- Without a higher level of protection through State action, the Cliffs remain vulnerable to zoning changes and proposed development at the local level and other threats.

POLICY RECOMMENDATION

➔ **Pass state legislation (S767/A2410) protecting the New Jersey Palisades viewshed north of the George Washington Bridge by prohibiting development over 35 feet in height. The bill, which has bipartisan sponsorship, creates a preservation zone that extends 2,000 feet inland from the top of the Palisades Cliffs, capping the height of buildings at 35 feet.**

THANK YOU

The New Jersey League of Conservation Voters Education Fund would like to thank the over twenty-five partner organizations that contributed to the creation of Environmental Policy Guide 2021. We greatly appreciate their contributions to this effort, expertise and commitment to safeguarding New Jersey's environment for generations to come. We also thank Debbie Mans, TWENTYTWENTY public affairs, for her expertise and guidance in managing this project.

We are extremely grateful for the generous support from our funders, the William Penn Foundation and The Fund for New Jersey, without whom this project would not be possible.

As with any collaborative effort many views were expressed during the writing of the Environmental Policy Guide and it is important to note that the perspectives presented herein solely reflect those of the New Jersey League of Conservation Voters Education Fund.

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