

TESTIMONY OF THE NEW YORK PUBLIC INTEREST RESEARCH GROUP BEFORE THE JOINT HEARING OF THE SENATE FINANCE AND ASSEMBLY WAYS & MEANS COMMITTEES REGARDING THE FISCAL YEAR 2018-19 ENVIRONMENTAL AND ENERGY BUDGET PROPOSALS February 7, 2018 Albany, N.Y.

Good afternoon. My name is Megan Ahearn and I am the Program Director of the New York Public Interest Research Group (NYPIRG). NYPIRG is a non-partisan, not-for-profit research and advocacy organization. Consumer protection, environmental preservation, public health, healthcare quality, higher education affordability, and governmental reforms are our principal areas of concern. We appreciate the opportunity to testify on the Governor's executive budget proposals for the environment and energy.

Our testimony is organized by topic, both our reactions to what is in the executive budget as well as those which were left out.

NEW YORK MUST BE A NATIONAL LEADER IN RESPONDING TO CLIMATE CHANGE

As you evaluate the budget for environment and energy consider, the following: Scientists have declared 2017 as the second hottest year on record.¹ Climate change is the single biggest policy challenge the world faces. The burning of fossil fuels (coal, oil and gas) are the most significant culprits in those human activities. Ninety-seven percent of climate scientists agree that manmade climate change is a reality. Carbon pollution is warming the planet and contributing to extreme droughts, flooding, wildfires, and superstorms.²

Climate change will increase the frequency and intensity of extreme weather events. Heat waves will be more severe, sea level rises will increase storm surges in coastal areas, and precipitation will be more intense.³ The nation has seen it in the devastating hurricanes this year in Puerto Rico and the Gulf Coast, the wildfires in California, and the slow recovery in many low-income communities in New York City from Hurricane Sandy. Nearly five months late, half a million customers in Puerto Rico remain without power and many remain without access to safe drinking water.⁴

⁹ Murray Street, Lower Level ♦ New York, NY 10007-2272 ♦ 212-349-6460 ♦ Fax 212-349-1366 REGIONAL OFFICES: CAPITAL DISTRICT, HUDSON VALLEY, LONG ISLAND, NEW YORK CITY, SOUTHERN TIER, WESTERN AND CENTRAL NEW YORK

Climate Change is not just an environmental issue: A warming climate is affecting New York's agricultural and tourism sectors; deteriorating air quality results in more emergency room visits, illnesses and deaths; extreme heat causes an increasing number of deaths; and heat and frequent severe weather significantly increases the demands placed on the state's infrastructure.

Accelerate The Transition To Renewable Energy

Much of the state's funding for renewable energy does not come through the state budget. Instead hundreds of millions of dollars are raised through increase charges on and prices for consumers that are allocated through the Department of Public Service and New York State Energy Research and Development Authority (NYSERDA) to promote the development of renewable energy.

The disturbing news is that after 15 years of such efforts and funding, started in 2003 by Governor Pataki, that the state **only gets about 3% of its state's electricity by wind, solar and other clean energy resources**.⁵ Even when electricity from longstanding hydroelectric projects are added in, less than a quarter of the state's electricity comes from renewable energy. And electricity only accounts for about a quarter of the state's carbon footprint.⁶ The State's progress in reducing greenhouse gas emissions has been similarly slow in the transportation and buildings (cooling and heating) sectors.⁷ Progress in energy efficiency has lagged so poorly that the Governor announced in his State of the State that a new master plan on energy efficiency would be developed by Earth Day.

Other states have been moving much faster than New York to develop renewable electricity. California has a similar goal to New York to obtain 50% of its electricity from renewable energy. Yet last month they announced they expect to hit the 50% target ten years early – in 2020.⁸

The State Legislature needs to provide oversight of these expenditures of billions of dollars to make sure New York is making progress on the state's climate and energy goals. Renewable energy is already creating far more jobs than the fossil fuels and nuclear industries.⁹ The State needs to adopt a climate action plan with clear goals, timelines and short-term benchmarks. The administration needs to report back to the legislature annually on its progress in meeting such goals and propose corrective action when such goals are not being met. **NYPIRG urges that the State also consider requiring local governments above a certain population size to adopt climate action plans as California has done**.¹⁰

Climate change is already having a negative impact on the world's quality of life and it will only get worse for future generations. In Paris, world leaders agreed that it was time to end the era of reliance on fossil fuels for power generation. Instead, the world needed to commit to reduce its greenhouse gas emissions to limit global warming to no more than 2 degrees Celsius and to pursue efforts to limit it to 1.5 degrees.¹¹ Especially with the Trump administration backing out of the Paris agreement, it is imperative that the state step up to protect our future quality of life. And to protect jobs in the renewable energy industry which other countries will be glad to fill if Americans fail to embrace this industry.

New York should establish a goal of 100% clean energy as soon as possible. Earlier this decade scientists from Stanford and Cornell showed that it was possible for NY to provide 100% of its energy – not just electricity – from renewable energy by 2030.¹² That would be a good goal for New York to adopt. NYSERDA is conducting a study on how fast it is technologically feasible to move to 100% clean energy that will be released momentarily. The final budget agreement should work to make it a reality.

Among the barriers to developing more renewables in New York State is the long permitting process in New York for large scale renewable projects, especially when compared to the speedier process in other states. To date, only one major wind project has been approved under (the new?) article 10 and took almost 9 years to achieve. Large renewable energy projects are still dependent on renewable energy subsidies and/or long-term contracts from NYSERDA. This is especially true in upstate New York, which benefits from lower land prices, but which also have lower electricity prices from existing sources.¹³

Enactment of a true carbon pricing/tax would also speed up the development, as opposed to the carbon pricing plan under consideration by the Department of Public Service which, as of now, ignores the hazards of methane emissions and further subsidizes inefficient and aging nuclear power plants.

We support the executive proposal for \$260 million to create 1,500 megawatts of energy storage capacity by 2025. NYPIRG supports the Governor's Article VII bill to enable NYPA to build renewable energy projects, and to sell renewable energy products to their customers (we would go further and allow NYPA to sell renewable energy to any NY resident or business).

We oppose the executive's proposal to delay tax credits for two years for solar and electric vehicle charging stations as a very misguided way to resolve the state's budget deficit. We should be increasing and accelerating such incentives for renewable energy. We oppose any decrease or diversion of RGGI funding.

Accelerate The Transition To All-Electric Vehicles

NYPIRG supports the Governor's proposals to install additional charging stations for electric vehicles. NYPIRG supports establishing a target date for requiring that all vehicles sold be all electric or other Zero Emission Vehicles (ZEV).

New York is the middle of the states in term of its success in increasing the ownership of electric cars – about 1 in 1000 vehicles. California is at the top with 6.65 vehicles per 1,000.¹⁴ The Governor has called to increase the number of electric vehicle charging stations to 10,000 by 2021, and investing the \$130 million from the Volkswagen settlement in electric vehicles to replace diesel transit and school buses.¹⁵

Countries around the world are racing to phase out gasoline and diesel cars. China, the world's largest car market, is working on a plan to ban the production and sale of vehicles powered only

by fossil fuels.¹⁶ Norway has set that goal for 2025, India by 2030. France and the United Kingdom both announced this summer that they would ban the sale of new gas and diesel cars after 2040¹⁷ as is true with half a dozen other countries. Paris has set a goal of 2030.¹⁸

Bloomberg New Energy Finance reports that electric vehicles will be cheaper than fossil fuel vehicles in the U.S. and Europe as soon as 2025.¹⁹

The Clean Air Act allows states to either follow the federal requirements or adopt California's vehicle emission regulations.²⁰ The Multi-State ZEV Action Plan that New York is part of committed to 3.3 million Electric Vehicles (EV) on the road by 2025 with 850,000 in New York State.²¹

New York should thus work with California to adopt an accelerated time frame for the transition to all electric vehicles. In September 2017, Mary Nichols, the head of California's Air Resources Board, suggested the state could move to set a date within the next decade for 100% new electric cars or those running on other renewable energy. Nichols said that Governor Jerry Brown has been asking her about a ban on gas- and diesel-powered cars announced recently by China.²² California Assemblyman Phil Ting has introduced a bill that would ban the sale of new cars powered by internal-combustion engines after 2040.²³ NYPIRG urges that the final budget agreement include a requirement that New York coordinate with California in this fashion.

Oppose Funding of the Sheridan Avenue, Albany Microgrid, Unless the Power Source is Changed.

NYPIRG opposes the reappropriation of \$88 million for the addition of two new "fracked" gas plants at Sheridan Avenue in Albany to supplement the existing gas turbines to heat and cool the Empire State Plaza and to create a limited Microgrid to provide electricity to some state buildings, particularly in case of a weather emergency to enable the Empire State Plaza to provide shelter to local residents. The environmental benefits promoted by NYPA have been overstated, would have a negative impact on greenhouse gas emissions and climate change, and will still subject the low-income community to decades of continued air pollution. Methane from natural gas is more than 80 times more potent as a greenhouse gas than carbon dioxide,²⁴ and the state should not promote is a "cheap bridge fuel" to a clean energy future.

If the funds are to be reappropriated, the state should direct NYSERDA and OGS to issue a new Request for Proposals to solicit clean renewable energy alternatives and to examine the best way to provide resiliency both to the local grid and to community residents. Oklahoma and Colorado for instance presently heat /cool their state Capitols with geothermal energy and Michigan is in the process of doing so.²⁵ That State also needs to immediately upgrade the diesel turbines it operates as emergency backup at the site, in order to reduce air emissions and examine its present testing protocols which appear to operate the diesel far too often and long.

INCREASE INVESTMENT IN WATER INFRASTRUCTURE; AND DO MORE TO PROTECT DRINKING WATER SUPPLIES

Clean water is essential for life and one of the world's most precious resources. While federal and state laws are supposed to protect the public, too often public and private drinking water sources continue to face threats. Those threats include aging, crumbling water infrastructure that may further contaminate water supplies and possible funding cuts that may undermine the federal government's monitoring and enforcement activities.

The executive proposal continues annual appropriations of \$175 million in federal funding and \$35 million in State funding for the Clean Water State Revolving program which allows municipalities to apply for zero or low-interest loans for wastewater infrastructure and other clean water projects. The Executive proposal would continue to allocate funds from the Clean Water Infrastructure Act of 2017 (CWIA), a \$2.5 billion appropriation made for water infrastructure. This appropriation includes \$1 billion for clean water and drinking water infrastructure grants which municipalities can use for the required local match to loans from the State Revolving Fund.

We have a number of specific budget recommendations:

1. <u>Provide \$25 million in funding for Hoosick Falls to hook up to a new, clean water source, such as the Tomhannock Reservoir.</u> It has been two years since Hoosick Falls learned of their water contamination, yet they still do not have a new water source. While the community does have a filtration system, residents live in fear that the filtration system could fail, and the community will be unable to escape the stigma of polluted water until they have a new, clean water source. This should be achievable given the \$100 million funding line within the CWIA for water infrastructure projects that may not ordinarily qualify for state aid.

2. <u>Provide funding for Newburgh to remain on the Catskill Aqueduct</u>. The polluter responsible for Newburgh's PFOS pollution, the U.S. Department of Defense (DOD), has yet to agree to stop polluting, to clean up its pollution, or pay for the costs of its pollution.

Additionally, residents are deeply concerned that there may be other contaminants in the city's reservoir, Washington Lake in New Windsor. Until DOD stops polluting, and there is a greater understanding of what is in Washington Lake, the city should remain on the Catskill Aqueduct. This could also be funded, if needed, through the \$100 million line in the CWIA.

3. <u>Provide staff funding for the Department of Environmental Conservation (DEC)</u>. The final state budget for FY2018-2019 budget should restore DEC staff levels to address the losses sustained at the agency and ensure the state's laws and protections can be fully enforced.

Communities like Hoosick Falls and Newburgh are dependent upon a fully-funded DEC to make sure there is adequate outreach in their communities and there are enough cops on the beat to enforce regulations. 4. <u>Pass legislation that requires testing for private wells</u>. The Governor's proposed budget for SFY 2017-18 contained a proposal for private well testing. Unfortunately, that legislation did not make it into the final budget. While public water supplies are regularly tested for contaminants and toxics, and the results are sent to each ratepayer and made publically available, private groundwater wells are not held to the same standards. As a result, homebuyers have no assurances of water quality, and the public does not get the full picture of local water quality issues. Last year's water quality hearings promised New Yorkers that this would get done – 2018 is the year to do it.

Below is a summary of some of overall recommendations on water infrastructure:

<u>Recommendation #1. Budget.</u> The \$2.5 billion commitment in FY2017-18 budget is substantial, but only a start to fully address the staggering threats to New York's drinking water supplies. We urge action to create a "Clean Drinking Water Bond Act," which could provide billions more in bonding towards replacing outdated water infrastructure, septic system replacement, and mitigating water systems to reduce exposure to emerging contaminants. We urge that the bonding authority be paid off with an assessment on companies which produce pollutants that threaten drinking water supplies. **NYPIRG urges that such companies be responsible for paying off this bond act, not the general public.**

FY2017–2018 state budget contained a series of amendments to state law aimed at correcting certain inadequacies of New York's current regulatory framework. Those amendments include the Emerging Contaminant Monitoring Act, which establishes a New York State monitoring program for emerging contaminants; and the Clean Water Infrastructure Act, which allocates funds for a number of purposes.

The FY2017–2018 state budget included \$20 million for the replacement of lead drinking water service lines. Replacing lead service lines is an important undertaking, but the immense scope of that project makes it impractical as a near-term solution. The \$20 million allocated in the budget covers the expected estimated cost of replacing about 8,000 lines,²⁶ or about half the number of lead service connections in Syracuse alone.²⁷ Absent any plan in the immediate-term to invest the estimated billions of dollars it would take to replace all of the lead connections in New York State, policymakers need to do a better job to control the lead content of water that we anticipate will flow through lead plumbing. Alongside replacing lead pipes on an ongoing basis, New York must improve monitoring and enforcement of lead and copper regulations, at daycare centers, in schools, and in community water systems throughout the state.

According to a 2008 assessment by the N.Y. Department of Health, the estimated cost of repairing, replacing and updating New York's drinking water infrastructure was \$38.7 billion over the next 20 years²⁸ plus an additional \$36.2 billion for municipal waste-water infrastructure.²⁹ That estimate is now almost a decade old and the needs have continued to grow. Beyond infrastructure replacement, sufficient enforcement resources are critical to the success of this sort of regulation, and the creation and maintenance of a robust public information tool, paired with a highly publicized public outreach campaign will take substantial resources. The state must provide more revenues to address the drinking water needs of New York State. To start, as mentioned earlier, we urge the creation of a "Clean Drinking Water Bond Act,"

paid off with an assessment on companies which produce pollutants that threaten drinking water supplies.

Recommendation #2: Develop and deploy a public website that offers easy-to-digest water quality data coupled with an aggressive educational effort to draw attention to the information. The first step in ensuring that drinking water supplies are adequately protecting the public is to empower New Yorkers through access to drinking water quality information.

<u>Recommendation #3:</u> Survey and map data on use and storage of PFOA and other emerging contaminants known or suspected in New York. As part of the state response to the PFOA "hot spots" on Long Island, the mid-Hudson Valley, Hoosick Falls, and Petersburgh, the DEC conducted a select survey of PFC use in the state. The DEC should expand this to other possible historic PFC users and also include other emerging contaminants to create a comprehensive database. In addition to publicly releasing the primary survey responses, the state should map the data so New Yorkers can easily and visually understand the threats in the local community and to their water supplies.³⁰

<u>Recommendation #4:</u> Establish surveillance testing and remediation programs for known and <u>likely sites of water contamination</u>. Report this data to the public. Toxic chemicals, such as PFOA, are persistent and bio-accumulative; they will not break down in the environment and therefore pose long-term threats. The costs to clean up these problems—before they harm public health—are much less than when the chemicals spread and contaminant drinking water or migrate into areas where the risk profile is greater.

<u>Recommendation #5: Improve the quality and credibility of lead monitoring programs</u>. In the wake of a repeatedly mismanaged lead crisis in Flint, Michigan, New York has made some of the same mistakes. Lead sampling must be done regularly, correctly, and transparently to restore public confidence in the protection offered by lead monitoring programs.

Recommendation #6. Water quality testing protocols, timing, and methodologies must be state of the art. New York's monitoring for emerging contaminants should improve on flawed federal programs, which have set Minimum Reporting Levels too high, and instead use detection thresholds that fully utilize the capabilities of modern laboratories to detect contaminants. Stringent sampling protocols must be established so that tests cannot be "gamed" and the public imperiled. The goal is to get the best possible information about water quality, not to artificially produce the lowest detection rates.

<u>Recommendation #7. Water quality health standards must be based on the precautionary principle</u>. The precautionary principle holds that in the face of known or suspected public health risks, scientific uncertainty should be resolved in favor of protecting public health and the environment. For example, when chemically similar compounds are advanced as "safe substitutions" for chemicals like PFOA/PFOS, the precautionary principle impels regulators to assume toxic qualities and enact safeguards until the substitutes are proven safe. In short, when it comes to safeguarding our drinking water, New York must err on the side of safety and caution.

REDUCE FOOD WASTE THROUGH FOOD RECOVERY AND RECYCLING

NYPIRG supports the Governor's proposal related to food waste.

The Food Recovery and Recycling proposal would require the state's largest food waste generators – supermarkets, hospitals, colleges, large restaurants – as of January 2021 to reduce their food waste by first donating any excess food to food rescue organizations and then recycling their food scraps as animal feed or compost. Only businesses that generate more than 2 tons (4,000 pounds) of food waste weekly would be covered, and only if there is a food waste recovery business within 40 miles of their establishment.

The proposal would not apply to New York City, which has its own existing requirements. It does not apply to elementary and secondary schools statewide. The program would be overseen by the Department of Environmental Conservation and funding would be provided through the Environmental Protection fund to support food pantries, waste diversion and oversight. Food waste generators may apply for hardship waivers based on cost, capacity of nearby recyclers and unique circumstances. The program is intended to promote new businesses and jobs to handle the food waste recovery.

In the United States, an enormous amount of food sold is thrown away. The result of this waste, which happens at every stage of the journey from farm to fork, is that millions of pounds of food end up rotting in landfills, releasing methane, a highly potent greenhouse gas.

Americans waste about 25 percent of the food we purchase. According to the Natural Resources Defense Council ("NRDC"), the average American family throws out \$1,500 worth of food every year—some \$164 billion each year.³¹ Most of our wasted food ends up in a landfill where methane gas is generated as it decomposes in the absence of air. Methane, a potent greenhouse gas, contributes to climate change. Landfills are the third largest source of methane in the US. In fact, this huge amount of uneaten food ends up rotting in our landfills, where organic matter accounts for 16 percent of U.S methane emissions.³²

In the United States, food waste is estimated at between 30-40 percent of the food supply. This corresponded to approximately 133 billion pounds of food in 2010.³³ In New York, food makes up 18% of the municipal solid waste stream. An estimated 4 million tons of excess food, edible food not sold or used by its generator, and food scraps, inedible food and edible food not donated, are generated annually in New York State. Each year, more than 97 percent of these food wastes are landfilled or combusted, increasing emissions of harmful methane gasses.³⁴

Despite the proliferation of food waste, more than three million New Yorkers struggle to have enough to eat.³⁵ If we reduce food loss by just 15 percent there would be enough food to feed 15 million Americans every year.³⁶

An important part of the solution to this problem is obvious: large generators of food waste should donate excess edible products to local food pantries or farmers and compost the rest. The state estimates that if even 5% of currently wasted food from major generators was donated, food banks would see a 20% increase in available food for hungry New Yorkers.³⁷

NYSERDA estimates that if food scraps were recycled or diverted to composting, large food waste generators could reduce costs and greenhouse gas emissions by 175,448 metric tons annually, the equivalent of taking 37,093 cars off the road. NYSERDA also estimates the cost associated with hauling, tipping (dumping), greenhouse gases and the damages from disposing of food wastes from large producers is approximately \$41 million annually. If the use of food waste recycling facilities is expanded throughout the state, it could reduce those costs by up to \$22 million a year.³⁸

This proposal would support food donations and the recycling of food scraps, feed hungry New Yorkers, conserve landfill space, fight climate change and generate jobs within the communities around New York. For these reasons, NYPIRG urges that you support the Food Recovery and Recycling program.

SUPPORT THE ENVIRONMENTAL PROTECTION FUND

NYPIRG supports the Governor's continued funding of the Environmental Protection Fund at last year's level of \$300 million. We would also support an increase in funding. The maintenance of this protection of the state's natural resources is important to maintaining the beauty of New York, from the Great Lakes, to the mountains of the Adirondacks to the banks of the Hudson and the shores of Long Island.

The Executive proposal also continues to fully fund the State's Superfund Program with a \$100 million appropriation. We support the proposal though more funding is needed to deal with the state's toxic waste cleanup

BAN PLASTIC BAGS

We are disappointed that the Governor failed to include a proposal in his budget to deal with the problem of plastic bags. In 2017 the Governor and State Legislature blocked New York City law regulating plastic bags from going into effect. More than a dozen other communities have enacted plastic bags laws, including Suffolk County which went into effect on Jan. 1, 2018.³⁹

We recommend that New York adopt a measure similar to that of California.⁴⁰ The California law has two major components: (1) a statewide ban on thin plastic bags (under 2.25 mils) that are the ones most often distributed by supermarkets (those with handles, not the ones used to wrap foodstuffs, clothes, etc.); and (2) a minimum 10-cent fee for paper & reusable bags (including thicker plastic bags).

Like New York, California has a large, diverse population with large urban areas and a substantial coastline. California's law has been in force for over a year. As described by the *Los Angeles Times*, "Californians took in stride the sudden absence of some 13 billion bags that in previous years were handed out at grocery checkout counters and by other retailers of all sorts." Not only were consumers able to handle the change in their shopping experience, but there was a significant reduction in the amount of plastic bags found on California beaches. Again according to the *Los Angeles Times*, "Plastic bags (both the banned and the legal variety)

accounted for 3.1% of the litter collected from the state's beaches during the 2017 Coastal Cleanup Day, down from to 7.4% in 2010."⁴¹

One concern raised about a fee system is that it disproportionately impacts low-income communities. However, experience has shown that such worries are overblown, according to a recent review of localities that have enacted fees. (Similar to California, the NYC law also sought to protect low-income consumers by exempting purchases made with SNAP or WIC.)

Lower-income communities adjust to the fee effectively. In Richmond, CA, customers of a discount grocery store chain increased their rate of bringing reusable bags or no bags at all by 48 percentage points. Plastic bag fees are expected to immediately reduce curb-side litter. Immediate reductions in litter were observed in San Jose, CA, Austin, TX, and Ireland. Air quality and public health are improved by a reduction in waste disposal. As waste processing facilities are disproportionately located near low-income communities, these communities suffer the most from their presence due toxic byproducts in the air and water.⁴²

California's experience shows that its law is a model – consumers adapt and plastic bag refuse is slashed. According to Cuomo Administration, "residents use 23 billion plastic bags annually. A significant number of these bags make their way into the environment causing litter and damaging wildlife, which can be seen within our waterways, along our streets and in our oceans and lakes. Moreover, these bags do not biodegrade – they persist for years. The New York City Department of Sanitation currently estimates that it collects an average of 1,700 tons of plastic bags per week, costing \$12.5 million per year in disposal expenses.⁴³

The problem is not unique to New York; it is a global problem. According to a recent report, experts estimate that over eight million metric tons of plastic waste ends up in the world's oceans each year, and that amount is likely to increase dramatically over the next decade unless nations act.⁴⁴

The amount of plastics waste found in the ocean is the equivalent of "five plastic grocery bags filled with plastic for every foot of coastline in the world."⁴⁵ Experts estimate that by 2025, the amount of plastic waste entering the oceans would double, or the equivalent of 10 bags per foot of coastline.⁴⁶ The plastic that ends up in the ocean isn't just unsightly and harmful to aquatic life; it ends up in the food chain, including shellfish, fish.⁴⁷

The Governor's task force on plastic bags highlighted many of these problems. "EPA estimates that 80% of plastic pollution in the ocean originates as land-based trash which includes plastic bags. In 2010, approximately 4 to 12 million metric tons of plastics found their way into aquatic environments. It is estimated that by 2050, there will be more plastic by weight in the world's oceans than fish. Plastic bags also interfere with wastewater treatment plants, pose a threat to fish and wildlife, and break down into microplastics. These microplastics, which can be millimeters to micrometers in size, can absorb toxins and leach chemicals. When ingested by wildlife, these chemicals and toxins bioaccumulate up the food chain to humans."

We appreciate the opportunity to share our views on the energy and environment budget.

¹¹ United Nations, "The Paris Agreement," <u>http://unfccc.int/paris_agreement/items/9485.php</u>.

¹² Jacobson, M., et al, "Examining the feasibility of converting New York State's all-purpose energy infrastructure to one using sunlight," wind water and Energy Policy 57 (2013)585-601, see p. 591. https://web.stanford.edu/group/efmh/jacobson/Articles/I/NewYorkWWSEnPolicy.pdf.

¹³ Alliance for Clean Energy New York, "First Project Approved by NYS Board on Electric Generation Siting and the Environment," Jan.17,2018

https://www.acenv.org/Public/News Articles/First%20Project%20Approved%20bv%20NYS%20Board%20on%20Electric%20 %20Generation%20Siting%20and%20the%20Environment.aspx

¹⁴ Voelcker, J., "These six states have the highest electric-car adoption rates in the country," Green Car News, December 11, 2017, http://www.greencarreports.com/news/1114242_these-six-states-have-the-highest-electric-car-adoption-rates-in-thecountry.

New York State Governor Andrew Cuomo, 2018 State of the State Address, https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2018-stateofthestatebook.pdf. P. 308

¹⁶ Pham, S., "China wants to ban gas and diesel cars." September 11, 2017, http://money.cnn.com/2017/09/11/news/china-gaselectric-car-ban/index.html ¹⁷ Welsh, T., "France to ban sale of gas cars in favor of electric to meet Paris climate goals," Sacramento Bee, July 6, 2017,

http://www.sacbee.com/latest-news/article159944519.html. ¹⁸ Love, B. "Paris plans to banish all but electric cars by 2030" October 12, 2017 <u>https://www.reuters.com/article/us-france-paris-</u>

autos/paris-plans-to-banish-all-but-electric-cars-by-2030-idUSKBN1CH0SI

Shankleman, J., "Pretty Soon Electric Cars Will Cost Less Than Gasoline," Bloomberg, May 26, 2017, https://www.bloomberg.com/news/articles/2017-05-26/electric-cars-seen-cheaper-than-gasoline-models-within-a-decade.

U.S. Environmental Protection Agency, "Vehicle Emissions California Waivers and Authorizations," https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations.

²¹ Governor Andrew Cuomo, <u>https://www.governor.ny.gov/news/governor-cuomo-announces-multi-state-plan-increase-number-</u> zero-emission-vehicles-us; Sierra Club,

https://www.sierraclub.org/sites/www.sierraclub.org/files/uploads-

Oosting, J., "Michigan Capitol going green with geothermal," The Detroit News, August 14, 2017, http://www.detroitnews.com/story/news/politics/2017/08/14/michigan-capitol-geothermal-heating-cooling/104610448/.

Doyle, Al, "2017 was second hottest year on record, after sizzling 2016: report," Reuters, January 4, 2018, https://www.reuters.com/article/us-climatechange-temperatures/2017-was-second-hottest-year-on-record-after-sizzling-2016report-idUSKBN1ET1JF.

² Wright, P., "Why Extreme Deadly Hurricanes, Heat Waves and Wildfires Are Here to Stay," The Weather Channel, September 14, 2017, https://weather.com/science/environment/news/climate-change-hurricanes-wildfires-heat-waves-global-warming.

³ USGCRP (2014). Climate Change Impacts in the United States: The Third National Climate Assessment. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe (eds.). United States Global Change Research Program. 841 pp.

Savransky, R., "Nearly half a million customers are still without power in Puerto Rico," January 25, 2018, http://thehill.com/blogs/blog-briefing-room/news/370744-nearly-half-a-million-customers-still-dont-have-power-in-puerto.

Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-923), https://www.eia.gov/electricity/data/state/ - lines 46674-46686

New York State Department of Change," Environmental Conservation, "Mitigating Climate http://www.dec.ny.gov/energy/99223.html.

French, M., "Transportation sector emissions could cloud state's energy agenda," Politico New York, December 22, 2017, https://www.politico.com/states/new-york/city-hall/story/2017/12/19/emissions-could-cloud-states-energy-agenda-155617; Institute for Energy and Environmental Research, "Making Residential Heating and Cooling Climate-Friendly in New York

State," July 2017, https://ieer.org/wp/wp-content/uploads/2017/07/NY-HVAC-2017-07-19-revised-final.pdf. California Public Utilities Commission, "Renewables Portfolio Standard," Annual Report, November 2017, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/No v%202017%20-%20RPS%20Annual%20Report.pdf, p. 1

Popovich, N., "Today's Energy Jobs Are in Solar, Not Coal," The New York Times, April 25, 2017, https://www.nytimes.com/interactive/2017/04/25/climate/todays-energy-jobs-are-in-solar-not-coal.html.

¹⁰ California Air Resources Board, "Local Government Actions for Climate Change," 2016. April 13 https://www.arb.ca.gov/cc/localgovernment/localgovernment.htm.

wysiwig/ChargingUp_DIGITAL_ElectricVehicleReport_Oct2015_0.pdf, p. 7 ²² Kasler, D. and Sabalow, R., "No more gas or diesel cars in California? State considers ban," Sacramento Bee, September 17, 2017, www.sacbee.com/news/local/transportation/article175740811.html.

²³ The state of California, Assembly Bill 1745, https://a19.asmdc.org/sites/a19.asmdc.org/files/pdf/ab-1745-clean-cars-2040-factsheet.pdf. ²⁴ Environmental Defense Fund, "Methane: The other important greenhouse gas," <u>https://www.edf.org/methane-other-important-</u>

greenhouse-gas.

²⁶ Fears, D. and Dennis, B., "One city's solution to drinking water contamination? Get rid of every lead pipe," Washington Post, May 10, 2016. https://www.washingtonpost.com/national/health-science/one-citys-solution-to-drinking-water-contamination-getrid-of-every-lead-pipe/2016/05/10/480cd842-0814-11e6-bdcb-0133da18418d_story.html?utm_term=.9baa67f857d0.

To determine the cost for New York would incur with lead pipes, we used costs incurred in Wisconsin as a reference.

Mulder, J., "Syracuse's 15,000 lead pipes pose risk to drinking water," Syracuse.com, March 20, 2016. http://www.syracuse.com/health/index.ssf/2016/03/syracuses_15000_lead_pipes_pose_risk_to_drinking_water.html

New York State Department of Health, "Drinking Water Infrastructure Needs of New York State." November 2008. https://www.health.ny.gov/environmental/water/drinking/docs/infrastructure_needs.pdf, p. 3

New York State Department of Environmental Conservation "Wastewater Infrastructure Needs of New York State," March 2008. http://www.dec.ny.gov/docs/water_pdf/infrastructurerpt.pdf.

New York State Department of Environmental Conservation, "Perfluorinated Compounds (PFCs)." http://www.dec.ny.gov/chemical/108831.html

"Tackling Food Waste at The City Level: The Nashville Food Waste Initiative," NRDC Darby Hoover, March 9, 2016, https://www.nrdc.org/experts/darby-hoover/tackling-food-waste-city-level-nashville-food-waste-initiative. Ibid.

³³ U.S. Department of Agriculture, Office of the Chief Economist, <u>https://www.usda.gov/oce/foodwaste/faqs.htm</u>.

³⁴ Biomass Magazine, by NYSERDA, http://biomassmagazine.com/articles/14278/nyserda-ny-food-waste-diversion-could-net- $\frac{22\text{-million-yearly}}{35}$

Strong Food Proposals in 2019 NY Budget, Margaret Brown, NRDC, January 22, 2018. Accessed at https://www.nrdc.org/experts/margaret-brown/strong-food-proposals-2019-ny-budget.

"Wasted: How America is Losing up to 40 percent of its Food from Farm to Fork to Landfill," Dana Gunders, NRDC Issue Paper, August 2012, p. 1, https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf.

³⁷ Governor Cuomo,

https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2017StateoftheStateBook.pdf#page=238.

⁸ NYSERDA, "NYSERDA Report Finds Diverting Food Scraps From Landfills Could Produce Net Benefit of up to \$22 Million Annually,"

https://www.nyserda.ny.gov/About/Newsroom/2017-Announcements/2017-03-16-NYSERDA-Diverting-Food-Scraps-From-Landfills-Produce-Net-Benefit-22M-Annually. ³⁹ Blasey, L., "Suffolk County's 5-cent fee for plastic and paper bags, explained," Newsday, January 3, 2018,

https://www.newsday.com/long-island/suffolk/suffolk-plastic-paper-bag-fee-1.15786305. ⁴⁰ The state of California, Senate Bill 270,

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB270. ⁴¹ Los Angeles Times Editorial, "It's been a year since California banned single-use plastic bags. The world didn't end," *Los* Angeles Times, November 18, 2017, http://www.latimes.com/opinion/editorials/la-ed-plastic-bag-ban-anniversary-20171118-

story.html. ⁴² Scientist Action and Advocacy Network, "Scientific support for a plastic bag reduction law," December 4, 2017, http://scaan.net/docs/ScAAN Bags report.pdf. P. 3 ⁴³ Governor Cuomo, News Release, "Governor Cuomo Announces Launch of Statewide Plastic Bag Task Force," March 12,

2017, also, http://www.dec.ny.gov/docs/materials_minerals_pdf/dplasticbagreport2017.pdf pp. 4, 25.

https://www.governor.ny.gov/news/governor-cuomo-announces-launch-statewide-plastic-bag-task-force.

https://www.nytimes.com/2015/02/13/science/earth/plastic-ocean-waste-levels-going-up-study-says.html? r=0. Schwartz, J., "Study Finds Rising Levels of Plastics in the Oceans," The New York Times, February 12, 2015,

⁴⁶ Ibid

⁴⁷ Parker, L., "Ocean Life Eats Tons of Plastic—Here's Why That Matters," National Geographic, August 16, 2017, https://news.nationalgeographic.com/2017/08/ocean-life-eats-plastic-larvaceans-anchovy-environment/,

also Governor Cuomo, News Release, "Governor Cuomo Announces Launch of Statewide Plastic Bag Task Force," March 12, 2017, https://www.governor.ny.gov/news/governor-cuomo-announces-launch-statewide-plastic-bag-task-force.

⁴⁸ "New York State Plastic Bag Task Force Report: An Analysis of the Impact of Single-Use Plastic Bags," January 13, 2018, http://www.dec.ny.gov/docs/materials_minerals_pdf/dplasticbagreport2017.pdf, p. 2