



The Global Problem of Plastic Pollution: What Can New York Do?

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I. INTRODUCTION

Plastic is a material that has become integral to modern life, but it comes at a tremendous ecological cost. Plastic released into the environment takes centuries to degrade, and the planet—not only landfills, but also streets, waterways, oceans, and other natural areas—is becoming choked with plastic waste. If we continue using and disposing of plastic waste at current rates, another 33 billion tons of it will accumulate by 2050.¹ And those current rates are likely to grow: plastic production is expected to skyrocket in the coming years, due to the availability of low-cost natural gas (the primary feedstock for plastic production), and ever-growing global demand. Thus, the minimization and management of plastic waste is proving to be one of the most challenging environmental problems of our time. Plastic also has significant implications for climate change: in addition to its origin as a petrochemical product, plastic waste that is not properly recycled releases methane, a potent greenhouse gas, as it breaks down in landfills or in the environment.²

For industrialized countries, the predominant practice for managing plastic waste has been to shuffle it off to less-developed countries. The United States and other members of the Organisation for Economic Co-operation and Development (“OECD”)³ have been exporting a majority (70 percent) of plastic waste to countries in East Asia and the Pacific region for decades, with China the largest importer of the material until its recent ban.⁴ While plastics exported to these countries are generally intended to be recycled, only about nine percent of all plastic waste ever produced has actually been recycled at the end of its useful life,⁵ and a majority of the plastic waste that is traded globally ends up being disposed in the natural environment, where it remains for hundreds of years or more, causing permanent damage to ecosystems.

The countries that import the most plastic waste are also among the top 20 immediate sources of marine plastic pollution.⁶ Sixty percent of all plastic in the oceans comes from five countries: China, Thailand, Philippines, Vietnam, and Indonesia.⁷ By weight, China contributes

the most to mismanaged plastic waste and plastic marine debris, followed by other East Asian and Pacific countries that are designated as upper-middle income, lower-middle income or lower-income countries.⁸ The only high-income country on the list of the most significant contributors to marine plastic waste is the United States. Against this backdrop, in 2018, China instituted a ban on the import of plastic waste, leaving other countries to absorb an estimated 111 million metric tons of plastic waste by 2030.⁹

A large percentage of discarded plastic ends up in the oceans, flowing from land-based sources in coastal areas of virtually every country, albeit in varying amounts. It is estimated that between 4.8 and 12.7 million tons of plastic waste entered the oceans in 2010 alone.¹⁰ Once released, plastic waste does not respect national boundaries, posing a serious threat to all countries. Even uninhabited islands in the Pacific have been found to be covered in many tons of plastic garbage originating from all over the world.

The damage done by marine plastic pollution is documented by a mountain of research compiled over the past decade. Some 79 peer-reviewed articles on the topic of marine plastic debris were published in 2013 alone.¹¹ News stories and images depicting seabirds and turtles entangled in plastic debris, and whales and other marine species with plastic in their stomachs, are becoming distressingly commonplace.¹²

There is more to the problem of plastic waste pollution than meets the eye, because between an estimated 15 and 31 percent of all of the plastic in the oceans is thought to be in the form of “microplastics”¹³ – plastic particles less than five millimeters in length that can result from the breakdown of larger plastic items or can be intentionally added to consumer products.¹⁴ Since there are no effective means for physically removing microplastics from the ocean, and because microplastics—like other plastics—do not readily biodegrade over time, their release into the

marine environment causes permanent and irreparable damage. In spite of this dire threat, the release of microplastics is expected to increase in virtually every region of the planet in the coming decades.¹⁵

In considering the plastic waste problem, it is helpful to keep in mind that plastic waste comes in many forms. Plastic convenience bags have become the poster child for the problem, and rightfully so, since about a *trillion* of them are used and discarded each year worldwide, with less than five percent recycled, according to the U.S. Environmental Protection Agency (“EPA”).¹⁶ But the plastic items that have come to litter the planet—and pollute the ocean environment—consist not only of bags, but also bottles, bottle caps, straws, container lids, stirrers, and other “single-use plastics.”¹⁷ Moreover, single-use plastics are only the beginning— as described below, plastic containers that are thought to be recycled often are not, and polystyrene is also a significant source of pollution.

Polystyrene is a synthetic material that comes in two forms—foamed (commonly referred to as “Styrofoam”) and solid. Polystyrene is used to create a myriad of everyday items, including disposable clamshells, trays, cups, caps, lids, egg cartons, loose fill, produce baskets, coatings, closures, and insulating materials in construction.¹⁸ In 2017, EPA estimated that 14.5 million tons of plastic containers and packaging were generated in the United States, of which roughly three million tons consisted of foamed polystyrene.¹⁹ Unlike other types of plastic, foamed polystyrene is not amenable to recycling.²⁰ Therefore, foamed polystyrene products, when discarded, are destined to blight the environment for thousands of years.²¹

Microplastic particles (or “microplastics”) give rise to even more troubling issues. These invisible (or virtually invisible) particles often result from the degradation of larger plastic items after they are released into the environment. For example, the sun and strong ocean waves break

down larger items like plastic bottles into microplastics. But such “secondary” particles are not the only sort of “microplastics” posing environmental and public health risks. Two types of “primary” microplastics also merit attention. The first category, microbeads, are rounded or irregularly shaped plastic particles smaller than a pinhead (with some so small that they cannot be seen with the naked eye) that have been added to commercial products, including cosmetics, lotions, cleansers, and even toothpaste, since the 1990s. More than a thousand such microbead-containing products are used for “rinse-off” personal hygiene and cosmetic purposes, and many *trillions* of microbeads have been washed down household drains, traveling through sewers and wastewater treatment plants and into rivers, lakes, and oceans.²² Microbeads are a tiny fraction of the plastic pollution load in the marine environment by weight, but they cause outsized impacts because they are mistaken for food by aquatic micro-organisms and wind up in the food chain. Microbeads have been found in zooplankton, fish, sea birds, and other wildlife,²³ with potential health impacts that are now coming into focus.²⁴

The other significant category of microplastics—“microfibers”—comprise a much greater percentage of the plastic waste problem than personal-care products containing microbeads. Microfibers account for up to 31 percent of primary microplastics released into the ocean, compared with two percent from personal-care products, and they are also contained in the very air we breathe.²⁵ Each year, more than half a million metric tons of these exceedingly small fibers, the equivalent of 50 billion plastic water bottles, enter the ocean due to the shedding that occurs when synthetic textiles are washed in household or commercial washing machines.²⁶ The numbers are staggering: one study found that more than 250,000 microfibers could be released from just one wash of an ordinary fleece jacket.²⁷ Unlike wool and cotton, synthetic fibers do not biodegrade.

Conventional washing machines do not have filters that can trap these microfibers, and wastewater treatment plants are unable to capture them all.²⁸

Although the plastics problem starts with land-based production and waste disposal, a major consequence of these land-based activities is the long-term pollution of the oceans. Moreover, as noted above, international trade, going from industrialized countries to the Global South, has long been an important means of disposing of plastic waste. Thus, what begins as a local problem ends up as a global crisis. Accordingly, plastic waste pollution cannot be addressed effectively by municipal, state, federal, or international governmental bodies acting in isolation; rather, solutions will have to be devised and implemented with the participation of all levels of government—national, subnational, and international.

The primary purpose of this report is to examine the role that state and local laws in New York can play in this world-wide effort. Following this introduction, Part II of this report provides context for that discussion with a summary examination of the existing international legal authority (“hard law”) and non-binding agreements (“soft law”) relevant to plastic waste. Part III then discusses some of the relevant laws and regulations in the United States and in certain states other than New York.²⁹ Part IV turns to existing and potential state and local law in New York. Finally, Part V concludes with recommendations for New York—and policy-makers at all levels of government—as they continue to develop an approach to addressing plastic use and plastic waste.

II. THE INTERNATIONAL ARENA

A. International “Hard Law”

Several international treaties provide some legal authority for addressing plastic waste pollution. Those treaties—and their shortcomings in dealing with plastic waste—are discussed below.

1. *United Nations Convention on the Law of the Sea (“UNCLOS”)*

UNCLOS is the foundational international law on the oceans. While it does not specifically address plastics pollution, under UNCLOS, nation states have an obligation to prevent, reduce, and control pollution of the marine environment of all types, including pollution coming from land-based sources. While UNCLOS is a legally binding treaty, it is limited to actions by nation states against other nation states. Also, the United States is not a party to UNCLOS. Only one decision has been rendered on environmental obligations under the treaty, the South China Sea Arbitration Award in 2016 in a dispute between the Philippines and China. There, the tribunal ruled that China’s practice of building artificial islands on reefs and its failure to control overfishing in the South China Sea violated its obligations to protect the marine environment under Article XII of UNCLOS. However, China refused to participate in the arbitration and ignored the ruling. Given this track record, action under UNCLOS, while theoretically possible, does not appear to provide an effective vehicle for combating marine plastics pollution.

2. *The International Convention for the Prevention of Pollution from Ships (“MARPOL”)*

Annex V of MARPOL bans dumping garbage (and thus plastics) into the oceans, but it applies to ships and not to land-based pollution. The United States is a party to MARPOL and to Annex V of the convention. The U.S. Coast Guard has adopted regulations to implement its requirements, and thus ships, including cruise ships coming into New York City, would appear to be covered sufficiently by federal regulation stemming from the United States’ MARPOL obligations.³⁰

3. *The Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention)*

The Basel Convention, adopted in 1989, regulates transportation of hazardous waste between nation states. In May 2019, the annexes to the Convention were amended³¹ in order to

subject plastic waste to the Convention's rules of trade.³² Thus, the amendments to Annexes II and VIII included certain types of plastic waste that will be recognized as 'hazardous' or 'other waste,' and will require prior informed consent of the importing state.³³ Plastic waste that is not mixed with other regulated categories and has been included in Annex IX will not require prior informed consent.³⁴

The Basel Convention also prohibits trade between a party and a non-party to the Convention.³⁵ Therefore, although the United States has not yet ratified the Convention, it is nevertheless affected by the rules of the Convention and the new restrictions to the transboundary movements of plastic waste.

Notwithstanding the above-mentioned strict rules for international waste trade, the actual impact of the inclusion of plastic waste in the Convention is yet to be assessed, since the amendments will not become effective until January 1, 2021.

4. *Other Conventions*

Other conventions, such as the Helsinki Convention (focusing on the Baltic Sea), and the OSPAR Convention (focusing on the Northeast Atlantic), deal with land-based source pollution, including plastics, but they are regional only. In addition, there are proposals for an international treaty to address marine plastic pollution directly, which ultimately could lead to a treaty similar to the Vienna Convention for the Protection of the Ozone Layer, which provided the framework for the Montreal Protocol.³⁶

B. International "Soft Law"

International negotiations have produced several non-binding agreements related to marine plastic pollution in recent years:

- The G-7 Ocean Plastics Charter, adopted in 2018, includes comprehensive and laudable goals for reducing plastic use and addressing plastics pollution. However, it suffers

from the fact that adherence to those goals is not binding on the signatories, and the United States and Japan did not sign it.

- In March 2019, countries at a United Nations (“U.N.”) Environment Assembly in Nairobi pledged to significantly reduce the manufacture and use of single-use plastics by 2030. Again, the commitments made in this agreement are not binding on the signatories. The United States spent two weeks in Nairobi watering down the proposals before finally signaling its rejection of the declaration on the final day of the assembly.
- On June 29, 2019, the Group of 20 (“G20”) endorsed the G20 Implementation Framework for Actions on Marine Plastic Litter of the G20 Environment Ministers. While it recognized an urgent need to tackle marine plastic pollution, the negotiators failed to agree on concrete measures or targets for the phase-out of single-use plastics, and its proposed measures are both voluntary and vague.

In sum, existing treaties do not provide the framework needed for a robust international effort to address marine plastic pollution from land-based sources. Moreover, the various non-binding agreements that currently address the issue are a far cry from what is needed to solve a crisis of the magnitude of plastic waste pollution. Under these circumstances—and given the time that will be needed for international negotiations to produce binding commitments—national, state, and local actions present the only near-term opportunity to begin to address the ever-growing problem of plastic pollution.³⁷

C. Measures Taken Outside of the United States

In the absence of any effective international treaty, some progress is being made to address the problem of plastics pollution at the national and local governmental level around the world.

More than 90 countries have adopted full or partial bans on single-use plastic bags. Bangladesh became the first country to impose such a ban in 2002,³⁸ and others followed shortly thereafter, including China, Israel, South Africa, the Netherlands, Morocco, Kenya, Rwanda, Mauritania, Sri Lanka, Papua New Guinea, Vanuatu, Albania, and Georgia.³⁹ Two others, Taiwan and India, also have agreed to ban all single-use plastic by 2030 and 2022, respectively.⁴⁰

Several notable examples of actions taken by countries other than the United States to deal with plastics are discussed below.

1. Asia

China enacted a plastic bag ban in 2008 that included restrictions on the production, sale, and disposal of plastic bags less than twenty-five microns thick for retail purposes, required retail establishments to set up a system for payment for the use of plastic bags, and required that plastic bags list certain notices.⁴¹ While the ban was initially successful in reducing plastic bag use,⁴² enforcement has been inconsistent, with many retailers using prohibited bags, not charging bag fees, and not affixing the required notices on the bags. The ban also does not address other types of disposable plastics packaging, such as that used in online retail.⁴³ China made additional efforts to address plastics pollution in 2018 by adopting the Interim Regulations on Express Delivery, which encourage the use of eco-friendly packaging.⁴⁴ That same year, China implemented its controversial plastics imports ban, cutting off a critical market for plastics recyclables worldwide. While many see the import ban as exacerbating plastic waste problems, others see it as an opportunity for countries to reduce single-use plastics or spark more innovative home-based solutions to deal with this type of waste.⁴⁵

Indonesia is another country that has addressed plastic bag pollution, with a 2016 tax on plastic shopping bags that was implemented in 23 cities.⁴⁶ When these national initiatives were not

renewed, local and provincial governments took matters into their own hands, including in Bali, which banned the use of single-use plastic bags, among other plastic products, in July 2019.⁴⁷

2. *Latin America*

There have been similar efforts to combat plastics pollution in Latin America. In 2018, Chile became the first South American country to enact a plastic bag ban, with a staggered implementation period for major retailers and smaller businesses.⁴⁸ Similar bans and plastic reduction measures have been or are in the process of being implemented in Colombia, Panama, and Costa Rica.⁴⁹ Where national efforts have not gained traction, local governments, including Mexico City, Rio de Janeiro, São Paulo, and Buenos Aires, are implementing their own plastic bag restrictions.⁵⁰

3. *European Union*

France became the first country to ban plastic cups, plates, and cutlery, with the exception of compostable, bio-sourced materials, starting in 2020, and Germany is the latest European Union member to impose a similar ban, effective July 2021, as of this writing.⁵¹ In 2015, the European Union adopted a directive requiring member states to take measures to “achieve a sustained reduction in the consumption of lightweight plastic carrier bags on their territory” (“2015 Plastic Bags Directive”).⁵² Specific targets were set for the reduction in the annual consumption of lightweight plastic bags to 90 bags per person within the member states by December 31, 2019, and to 40 bags per person by December 31, 2025. Building on the success of the 2015 Plastic Bags Directive in bringing about a rapid shift in consumer behavior, the European Union also adopted the Marine Strategy Framework Directive, which requires member states to ensure that, by 2020, marine litter does not cause harm to the coastal and marine environment.⁵³ The Directive on Single Use Plastics and Fishing Gear follows the framework set out by the 2015 Plastic Bags Directive, and provides a legal structure for reducing marine plastic pollution, including banning

certain single-use plastic products for which alternatives exist on the market (*e.g.*, cutlery, plates, straws, stirrers, cups, food and beverage containers).⁵⁴ In addition to the more traditional ban mechanism, the Directive on Single Use Plastics and Fishing Gear also includes an extended producer responsibility component, requiring manufacturers of certain plastic products (*e.g.*, tobacco filters, fishing gear) to cover the cost to clean up litter. The anticipated benefits of this Directive include avoiding emissions of the equivalent of 3.4 million tons of CO₂, avoiding environmental damage predicted to cost \$22 billion by 2030, and saving consumers \$6.5 billion.⁵⁵ The European Union has also employed an incentive program to encourage marine plastics cleanup by providing financial compensation for delivery of waste to ports.⁵⁶ Moreover, the EU Chemicals Agency is considering the health and environmental risks posed by microplastics, and will be issuing an opinion as to whether an EU-wide restriction on intentionally-added microplastics is justified.⁵⁷

On January 1, 2018, the European Commission issued the “European Strategy for Plastics in the Circular Economy,” which among other things aims to achieve the goal of making all plastic packaging in the European market reusable or easily recyclable by 2030.⁵⁸ In order to achieve this goal, the Commission intends to assist member states in adjusting existing rules on “extended producer responsibility” (“EPR”), which have been used in many European jurisdictions to minimize and improve the recyclability of electronic waste, batteries, end-of-life vehicles, and packaging. EPR, which was first introduced as a waste-management tool in Europe 20 years ago, has been defined by the Organisation for Economic Co-operation and Development as “an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle.”⁵⁹ Thus, EPR regulations shift responsibility for the management of post-consumer waste upstream from local governments to the original product

producers, requiring that they (either individually or collectively) bear either financial or operational responsibility for post-consumer waste. EPR rules are typically coupled with economic incentives to encourage producers to factor environmental considerations into the design of their products and packaging.⁶⁰

III. U.S. PLASTIC LAW & POLICY OUTSIDE OF NEW YORK

A. Efforts to Address Single-Use Plastics and Packaging

In addition to the international legal avenues advanced to address the plastic problem, several domestic state and local governments have taken action to address plastic waste.

1. State Initiatives

California imposed a statewide single-use plastic bag ban in 2015.⁶¹ In addition, by January 1, 2021, the California Department of Resources Recycling and Recovery (“CalRecycle”) is required to implement the Sustainable Packaging for the State of California Act of 2018 (“Sustainable Packaging Act”),⁶² which requires the adoption of regulations to determine the types of food service packaging that are reusable, recyclable, or compostable,⁶³ and the development of a list of the types of food packaging that may be used at food service concessions at state-owned or -operated facilities.⁶⁴ The Sustainable Packaging Act expressly provides that it does not preempt local authorities from adopting and enforcing more restrictive takeout food packaging requirements.⁶⁵

In 2019, Hawaii enacted S.B. 522, which created within the Department of Health a plastic source reduction working group to develop a plan for reducing and recovering plastic from Hawaii waste streams and to provide recommendations for encouraging reuse, reduction, recycling, and recovery of wastes.⁶⁶ On or before January 1, 2021, the working group must report its findings and recommendations to the Legislature, “including . . . pilot projects for Hawaii businesses to phase

out single-use plastic packaging, promote reuse, and find sustainable alternatives for packaging, as well as any proposed legislation.”⁶⁷

In 2019, Vermont enacted what is currently the most comprehensive single-use plastics ban in the United States. Vermont S.113 bans the use of bags, straws, stirrers, and expanded polystyrene food-service products, and creates a working group to evaluate other options for reducing the use of such items, including EPR.⁶⁸ The ban became effective on July 1, 2020.⁶⁹ In addition to banning certain single-use plastics, the new law provides that if a store or food-service establishment provides recyclable paper bags at the point of sale, the store or food-service establishment must charge at least 10 cents per bag and may keep any funds collected under this provision.⁷⁰ There are a few exemptions and exceptions from the ban, including the following:

- Food-service establishments may provide single-use plastic straws to customers who request them.⁷¹
- Health-care facilities, including independent living facilities, are exempt from the straw ban.⁷² (The stirrer ban has no equivalent exceptions or exemptions.⁷³)
- Expanded polystyrene food-service products that are used to package raw animal proteins or for foods that are packaged for sale outside of Vermont are not subject to the ban.⁷⁴

As of May 2020, 12 other state legislatures are considering one or more versions of comprehensive bans on single-use plastics. Those states are Arizona, Connecticut, Florida, Indiana, Kentucky, Maine, Massachusetts, New Jersey, New York, Rhode Island, Virginia, and Washington.⁷⁵

A number of states have enacted “straw-upon-request” laws. California enacted a statute in September 2018 that prohibits a full-service restaurant from providing a single-use plastic straw

to a customer unless requested.⁷⁶ A violation carries a penalty of up to \$300 annually depending on the number of violations. The California law also includes a provision stating that nothing contained therein is meant to preempt local governments from adopting and implementing further restrictions. An Oregon statute effective June 2019 prohibits food and beverage providers and convenience stores from providing single-use plastic straws to customers unless requested, although drive-through establishments are exempt from this prohibition.⁷⁷ The Oregon law does not apply to a store that sells plastic straws in bulk, and also allows a store to make single-use straws available in an unattended location, but only if the store does not have space to store straws at the location where employees provide service to consumers. Other state legislatures, including in Illinois,⁷⁸ Hawaii,⁷⁹ Washington,⁸⁰ Rhode Island,⁸¹ and Connecticut,⁸² are considering similar plastic straw restrictions.

To date, no states have enacted EPR laws to shift responsibility from municipalities to producers for managing post-consumer packaging waste, but several states are considering such legislation.⁸³ According to a white paper issued by the Northeast Waste Management Officials' Association ("NEWMOA") and the Northeast Recycling Council ("NERC"), those states include California, Connecticut, Indiana, Maine, Massachusetts, New York, Oregon, Washington State, Washington, D.C., and Vermont.⁸⁴ It should be noted that Maine enacted legislation in 2019 directing the Department of Environmental Protection to "develop legislation establishing an extended producer responsibility law for packaging in the State," which must cover, "at a minimum, materials used to wrap or protect consumer goods, including food and personal-care products, and containers and packaging used in the shipping, storage, protection and marketing of consumer products."⁸⁵

2. *Municipal Initiatives*

Numerous municipalities across the country are also stepping in to regulate single-use plastics. In 2014, Washington, D.C. passed a comprehensive ordinance that restricts the use of “disposable food service ware,” including single-use plastic straws.⁸⁶ The ordinance states that no food service business shall sell or provide food or beverages, for consumption on or off premises, using disposable food service ware unless those products are compostable or recyclable.

Seattle, Washington enacted a law effective July 2018 prohibiting food service businesses from selling disposable food service wares.⁸⁷ San Francisco, California has enacted an ordinance that bans the sale, offer, or distribution of single-use plastic straws in the city, unless the customer specifically requests it.⁸⁸ Miami Beach, Florida has enacted an ordinance preventing city contractors and special event permittees from selling or offering single-use plastic beverage straws in city facilities or on city property.⁸⁹

Some cities have also restricted the sale and use of plastic bottles. In 2014, San Francisco passed the San Francisco Bottled Water Ordinance, which generally barred the sale or distribution of bottled water at events on city property and prohibited city agencies from using city funds to purchase packaged water for their general use.⁹⁰ The ordinance also established policies supporting the provision of clean, free drinking water in public areas, including by providing that capital improvements in parks and other public spaces should include bottle-filling stations, drinking fountains, or potable water hook-ups. Since 2013, San Francisco also has required that new construction that includes drinking fountains also include bottle-filling stations.⁹¹ In addition, as of August 20, 2019, the San Francisco International Airport prohibits the provision or sale of single-use water bottles in plastic or non-compostable paper packaging.⁹² Several municipalities in Massachusetts have adopted measures that restrict the sale of single-use water bottles, including the Town of Concord, which has banned the sale of drinking water in “single-serving polyethylene

terephthalate (“PET”) bottles of 1 liter (34 ounces) or less” since 2013.⁹³ Similar bans have been adopted in other towns in Massachusetts: Sudbury,⁹⁴ Lincoln,⁹⁵ and Great Barrington.⁹⁶

As is apparent from the above sampling, a patchwork of regulation is emerging with respect to single-use plastics at the state and local level. Concerns regarding regulatory confusion have prompted some states to enact statutes preempting local regulation of plastic. For example, the Oregon law noted above includes a preemption provision that prohibits local governments from enacting restrictions that differ from those it imposes. The Texas Supreme Court relied on an analogous statute to rule that the city of Laredo, Texas could not ban plastic bags, holding that the State of Texas’ Solid Waste Disposal Act preempted local regulation of plastics, including plastic containers and straws.⁹⁷ Missouri and Minnesota have passed similar laws preempting local governments’ plastic bag bans.⁹⁸

3. Private Sector Initiatives

Companies in the private sector have pledged or taken action to reduce and/or eliminate the sale, distribution, and use of single-use plastic straws through their operations. Starbucks committed to eliminate single-use plastic straws from its company-operated and licensed stores by the end of 2020.⁹⁹ Marriott International adopted a plan to remove disposable plastic straws worldwide by July 2019.¹⁰⁰ McDonald’s pledged to transition from plastic to paper straws in its United Kingdom and Ireland restaurants and to test alternatives to plastic straws in restaurants globally.¹⁰¹ Walt Disney Company has committed to the elimination of single-use plastic straws and stirrers at all owned and operated properties throughout the world.¹⁰² American Airlines has committed to eliminating plastic straws from its lounges and during onboard beverage services,¹⁰³ while Whole Foods Market has stated that it would eliminate plastic straws from its stores in the United States, United Kingdom, and Canada by July 2019.¹⁰⁴ Royal Caribbean International had

previously utilized a “straw upon request” policy, but went further to commit to the elimination of plastic straws on all of its ships by the end of 2018.¹⁰⁵

B. Efforts to Address Polystyrene

Environmental advocates and legislators have targeted polystyrene, especially in its foamed form, for decades. Some of the earliest attempts to regulate polystyrene began over thirty years ago on the municipal level, in Berkeley, California (food containers)¹⁰⁶ and in Suffolk County, New York (plastic bags and food containers).¹⁰⁷ Since then, municipalities and counties in eleven states across the nation have enacted some type of polystyrene ban, including New York City, Seattle, Portland, Washington, D.C., and San Francisco.¹⁰⁸ California leads the nation with 99 municipalities or counties passing such a ban.¹⁰⁹ As one can imagine, the scope of these bans differs widely from one jurisdiction to another. For example, San Diego limits regulation to service contracts with the city only, while other localities, such as Oakland, require all take-out food packaging to be compostable.¹¹⁰ Regardless of their form, most polystyrene bans have been targeted by legal challenges. Indeed, the early attempt to regulate polystyrene in Suffolk County never even went into effect.¹¹¹ Similarly, New York City’s ban, passed on December 19, 2013, and in spite of the mountain of evidence proving that foamed polystyrene cannot be recycled in an economically and environmentally feasible way, was challenged twice under the arbitrary and capricious standard.¹¹² Those challenges were ultimately rejected years later, in 2018.¹¹³

Maryland and Maine were the first states to pass statewide bans on certain polystyrene products. In Maryland, beginning July 1, 2020, “a person may not sell or offer for sale in the state expanded polystyrene food service products” and “food service business[es] and school[s] may not sell or provide food or beverages in an expanded polystyrene food service product.”¹¹⁴ The law carries a \$250 fine for each offense.¹¹⁵ In Maine, beginning January 1, 2021, “covered establishment[s] may not process, prepare, sell or provide food or beverages in or on a disposable

food service container that is composed in whole or in part of polystyrene foam.”¹¹⁶ A fine of up to \$100 is imposed for each offense.¹¹⁷ In 2019, legislation restricting polystyrene was introduced in several other states, including New Jersey, New York, Michigan, Pennsylvania, Oregon, Massachusetts, Rhode Island, Connecticut, Maryland, Wisconsin, North Carolina, Colorado, Hawaii, Vermont, Montana, and the District of Columbia.¹¹⁸

The private sector has also responded to public demands to phase out polystyrene. Procter & Gamble, Colgate-Palmolive, Target, McDonald’s, KraftHeinz, and Dunkin’ Brands, have publicly committed to polystyrene recycling and reduction policies.¹¹⁹ In fact, McDonald’s pledged to a complete, worldwide phase-out of polystyrene foam cups by 2018, and has pledged to source 100 percent of its packaging from renewable, recycled, or certified sources by 2025.¹²⁰

C. Efforts to Address Microplastics

1. Microbeads

An outcry erupted in the early 2000s as the public became aware of the environmental and potential health impacts of pollution caused by microbeads added to personal-care products. As a result, numerous U.S. states began imposing bans on the production and sale of microbead-containing products shortly after 2010. Illinois was the first state to institute such a ban, and many others (including New Jersey, Colorado, Indiana, Maryland, Maine, Wisconsin, Connecticut, and California) followed suit.¹²¹

Prompted by, among other things, concerns that a patchwork quilt of state regulation was developing, Congress enacted the U.S. Microbead Free Waters Act of 2015 (“MFWA” or the “Act”), 21 U.S.C. § 331(ddd). The MFWA amends the U.S. Food, Drug, and Cosmetic Act to ban certain cosmetic products that contain microbeads. Specifically, the statute prohibits “[t]he manufacture or the introduction or delivery for introduction into interstate commerce of a rinse-off cosmetic that contains intentionally-added plastic microbeads.”¹²² The Act defines a “plastic

microbead” to mean “any solid plastic particle that is less than five millimeters in size and is intended to be used to exfoliate or cleanse the human body or any part thereof.”¹²³ The ban on manufacturing microbead-containing cosmetics went into effect on July 1, 2017, with a ban on introduction of such products into interstate commerce following a year later, on July 1, 2018. The statute preempts state and local bans on the manufacture or sale of rinse-off cosmetics containing plastic microbeads, to the extent those prohibitions are not identical to those in the MFWA.

The MFWA’s ban does not extend to all products containing microbeads. Rather, it covers only those products that are “rinse-off cosmetics,” such as personal-care products used as exfoliates. Toothpaste is specifically included in the definition of “rinse-off cosmetics” subject to the prohibition. However, the Act does not regulate a large number of other products that contain microbeads but are *not* “rinse-off cosmetics,” including deodorants, sunscreen, and other lotions. The Act also does not regulate non-cosmetic products containing microbeads, such as cleaning and pharmaceutical products.¹²⁴

2. *Microfibers*

In contrast to the congressional action on microbeads, very little governmental action has been taken with respect to microfibers. One exception is Connecticut’s House Bill 5360, which was passed in May 2018, requiring the Commissioner of Energy and Environmental Protection, in consultation with the Commissioner of Consumer Protection, to convene a working group representing the apparel industry and the environmental community to develop a report and a consumer awareness and education program concerning microfiber pollution, including information about best practices for minimizing microfiber shedding in washing synthetic materials.¹²⁵ The working group members included professors, citizen and environmental groups, industry groups and trade associations, and a representative from the brand Patagonia, among others, and the group’s report was made available to the public in January 2020.¹²⁶

A bill now under consideration in California would require the State Water Resources Control Board to identify best practices for clothing manufacturers to reduce the amount of microfibers released into the environment.¹²⁷ Public entities that use laundry systems and private entities that contract with state agencies for laundry services would be required to install filtration systems to capture microfibers that shed during washing. Private entities that use industrial or commercial laundry systems would later be required to install filtration systems to capture microfibers. Another bill pending in California, if enacted, would require labels on clothes made with more than 50 percent synthetic materials to give notice to consumers that they shed plastic microfibers when washed.¹²⁸

Other than these minimal efforts, legislation designed to meaningfully address the problem of microfibers is virtually non-existent in the United States.¹²⁹ However, certain statutes of a more general nature could serve as vehicles for—at the very least—beginning to gain a better understanding of the scope of the problem and how to address it. For example, the Save our Seas Act of 2018, Pub. L. No. 115-265, 132 Stat. 3742 (2018) “require[s] the National Oceanic and Atmospheric Administration (NOAA) to work with: (1) other agencies to address both land- and sea-based sources of marine debris, and (2) the Department of State and other agencies to promote international action to reduce the incidence of marine debris.”¹³⁰ This Act could enable NOAA to work with others in an effort to curb microfiber shedding into the ocean.

The Marine Debris Research, Prevention, and Reduction Act (“MDRPRA”) was enacted to help identify sources of and remove marine debris, and address the adverse impacts of marine debris on the U.S. economy, the marine environment, and navigation safety.¹³¹ Funding under this statute has been made available for projects studying microplastics.¹³² Finally, the Pollution

Prevention Act (“PPA”) of 1990 focuses on ways for businesses, the government, and the public to reduce sources of pollution, although the PPA does not address plastics specifically.¹³³

In the absence of effective governmental action, private-sector companies such as Adidas AG, Hennes & Mauritz AB (“H&M”), and Patagonia, among others, are funding research into how microfibers are created, released, and wind up in the ocean. Among other things, this research has found that more microfibers are shed in the first wash than in subsequent washes, that pre-treating garments before they are sold could help mitigate microfiber shedding, and that garments washed in top-loading machines shed seven times more fibers than front-loading machines. One study found that polyester fleece sheds a stunning 85 times more microfibers than polyester fabric.¹³⁴

H&M is exploring whether clothes can be designed to minimize shedding, and whether there are biodegradable fabrics that could serve as viable substitutes for polyester. Adidas is conducting research to analyze shedding patterns across different materials, which it is sharing with other companies in order to define accepted standards. Other private companies sell garment bags designed to capture microfibers when they are being washed.¹³⁵

IV. PROBLEMS AND PROGRESS IN DEALING WITH PLASTICS IN NEW YORK

A. The Plastics Problem in New York

New Yorkers use a tremendous amount of single-use plastics, and amass millions of tons of plastic waste each year. The quantities generated in New York City alone are illustrative. According to the Mayor’s office, New York City residents generate approximately 36 million pounds of single-use plastic food ware each year.¹³⁶ When the City inventoried its residential waste stream in 2017, recyclable rigid plastics accounted for 7.4 percent of the 3.1 million tons of residential waste,¹³⁷ while plastic bags accounted for two percent.¹³⁸ Film and foam plastic—not including plastic shopping bags and newspaper sleeves—comprised approximately 5.5 percent of

New York City's residential waste stream.¹³⁹ In addition, the City found that household generation of non-bottle rigid plastic waste had increased in 2017 from 2013, to 99.7 pounds per household from 78.7 pounds.¹⁴⁰ In schools, the City found that recyclable rigid plastics made up 6% of aggregate discards, while nonrecyclable plastics made up 8.2 percent.¹⁴¹ Recent data on plastic waste generation at commercial establishments are not readily available, but in 2009, the City found that plastic waste constituted 11% —or 295,000 tons—of disposed commercial waste.¹⁴²

A substantial amount of recyclable plastic waste is not properly sorted and captured for recycling. For example, in 2017, New York City households, on average, improperly disposed of 26 pounds of recyclable non-bottle rigid plastic as refuse each, as well as 10.6 pounds of single-use plastic plates, cups, and cutlery; 1.7 pounds of plastic appliances; 31.6 pounds of bulky and other plastics; and approximately 23 pounds of plastic bottles.¹⁴³ In 2009, *none* of the plastic in the commercial waste stream was diverted from disposal for recycling.¹⁴⁴ These numbers only account for plastic that is processed by the City's waste management system and do not include plastic bottles picked up by individual bottle and can collectors from city streets.¹⁴⁵ Nor do the numbers inform us about the volume of plastic waste in New York City that ends up as litter, potentially polluting lakes, rivers, streams, and the oceans.

Film and foam plastics make up a substantial portion of the contamination of recyclable paper and metal, glass, and plastic materials in New York State.¹⁴⁶ This is highly problematic because film plastic, including plastic bags, can interfere with and cause damage to machinery at materials recovery facilities where mixed materials are separated into their individually recyclable components, sometimes requiring the facilities to shut down temporarily.¹⁴⁷ In surveys of recycling handling and recovery facilities in New York State, New York State Department of Environmental

Conservation (“NYSDEC”) staff learned that the facilities incurred from \$300,000 to \$1 million in extra operational costs each year due to plastic bags.¹⁴⁸

There does not appear to be quantitative information about how much of New York State’s plastic waste is ultimately released into the environment. However, the Plastic Free Waters Partnership (“PFWP”) —a group that works to reduce plastic and microplastic debris in waterbodies in the New York/New Jersey region—focuses on seven types of debris that the group says are consistently found on the shores of the area’s waterways: microplastics, single-use plastic bottles, plastic bags, cigarette butts, single-use take-out containers, plastic straws, and balloons.¹⁴⁹

In addition, New York State—like the rest of the planet—has an alarming microplastic pollution problem. In 2014, the Office of the New York State Attorney General issued a report that described researchers’ findings that concentrations of microplastics in the Great Lakes rivaled the concentrations in the world’s large ocean garbage patches.¹⁵⁰ The highest concentration of plastic in the Great Lakes was 466,305 pieces per square kilometer—greater than the highest concentration in the South Pacific gyre—and the average concentration of plastics per square kilometer (43,157) in the Great Lakes was higher than the average in either the South Pacific or the North Atlantic Gyre. Ninety-eight percent of the plastic in the Great Lakes was microplastic of less than 4.75 millimeters (“mm”), with 81 percent of the plastic pieces measuring less than 1 mm. The study found that spherical microbeads dominated, accounting for 58 percent of all microplastic less than 1 mm. A follow-up study by the Office of the Attorney General in 2015 detected plastic microbeads from personal-care products in the effluent streams of 25 of 34 wastewater treatment plants included in the study, including plants in the New York City metropolitan area.¹⁵¹ In the Hudson River near Manhattan, the Estuary Lab of Hudson River Park found an average

concentration of 578,333 microplastics per square kilometer in the park’s estuarine sanctuary in 2018.¹⁵²

B. Progress in Addressing the Plastics Problem in New York

1. Single-Use Plastics, Polystyrene, and Packaging

(a) State Efforts

Due to efforts over the last eleven years, New York State is emerging as a leader in the battle against the scourge of single-use plastics at the subnational level.

In 2009, New York enacted the Plastic Bag Reduction, Reuse and Recycling Law,¹⁵³ which required certain retail and grocery stores that provide plastic carryout bags to customers to maintain bins to collect used carry-out bags for recycling.¹⁵⁴ This law was expanded in 2015 to require those stores to accept uncontaminated non-rigid film plastic packaging products composed of plastic resins (*e.g.*, dry cleaning bags, shrink wrap, and newspaper bags). The law also established certain recycling recordkeeping requirements for manufacturers of these film plastics products.¹⁵⁵

Approximately thirteen municipalities in New York adopted plastic bag bans or restrictions over the past eight years.¹⁵⁶ In 2016, New York City enacted a law that would impose a five-cent fee on plastic bags. However, on the eve of the law’s effective date in early 2017, the state intervened by placing a moratorium on the imposition of the fee. At the same time, New York State Governor Cuomo organized a task force to study and devise recommendations on plastic bags.¹⁵⁷ The findings and recommendations of the New York State Plastic Bag Task Force were published in a report in January 2018,¹⁵⁸ and within a few months of the report, Governor Cuomo introduced a bill banning plastic bags in New York State.

In April 2019, New York became the second state in the United States (after California) to adopt a law banning the retail distribution of single-use plastic bags by enacting the New York State Bag Waste Reduction Act (“Bag Waste Reduction Law”), which became effective on March

1, 2020.¹⁵⁹ The New York State Department of Environmental Conservation (“NYSDEC”) developed implementing regulations by adding Part 351, “Plastic Bag Reduction, Reuse and Recycling” to Title 6 of the New York Code of Rules and Regulations in order to ensure effective implementation and enforcement of the laws. However, as of this writing, litigation has been filed to challenge the ban,¹⁶⁰ and NYSDEC has agreed in that litigation to at least two postponements to its enforcement, in light of the COVID-19 pandemic.¹⁶¹

The Bag Waste Reduction Law prohibits the distribution of plastic carryout bags, with limited exemptions, and applies to “any person required to collect tax, store operators, manufacturers, as well as operators of enclosed shopping malls” in the state.¹⁶² Bags deemed “reusable” are not banned. A reusable bag is defined as a bag with at least one handle and made either of cloth or other machine-washable fabric, or non-film plastic washable material, and is durable and designed and manufactured for multiple reuse.¹⁶³ The design and durability standards include a minimum lifespan of 125 uses, a minimum fabric weight of 80 grams per square meter or the equivalent for other non-film plastic bags, and the ability to carry a minimum of 22 pounds over at least 175 feet.¹⁶⁴

The law also requires stores to make available reusable bags to customers for purchase or at no charge,¹⁶⁵ and preempts local laws already banning plastic bags. However, cities and counties are permitted to impose a five-cent paper bag fee at their discretion.¹⁶⁶ Penalties for violation of the law include a warning for the first violation, a \$250 civil penalty for the second violation, and a \$500 civil penalty for any subsequent violation in the same calendar year.¹⁶⁷

Certain categories of bags are exempt from the law, including bags used to package uncooked meat, fish, or poultry, sliced or prepared foods; newspapers for delivery; prescription drugs; and garment bags. In addition, food storage bags, restaurant carry-out bags, trash bags,

prepackaged bags sold in bulk or in individual boxes to a consumer at the point of sale, and bags used to package items from bulk containers, are exempt.¹⁶⁸

In December 2019, Governor Cuomo announced his intention to introduce legislation that would ban the distribution and use of expanded polystyrene foam containers used for prepared foods or beverages served by food service establishments, including restaurants, caterers, food trucks, retail food stores, delis, and grocery stores, and ban the sale of polystyrene loose fill packaging, commonly known as packing peanuts.¹⁶⁹ The ban was enacted as part of the budget legislation in early 2020.¹⁷⁰ The ban—which takes effect in 2022—does not apply to prepackaged food sealed prior to receipt at a restaurant or food service establishment, or to packaging for raw meat, pork, seafood, fish, or poultry.¹⁷¹

New York State has not yet passed a law that directly addresses other single-use plastics. However, there are reportedly more than a half dozen such bills that have been introduced in the current legislative session.¹⁷² One of those bills pending in committee in both the New York State Senate (S.1477-A) and the New York State Assembly (A.90-A)¹⁷³ proposes to amend the Environmental Conservation Law and the General Business Law to impose a prohibition on single-use plastic straws in restaurants.

The bill provides that “[r]estaurants shall only provide single-use plastic straws to customers when explicitly requested by the customer or selected by the customer from a self-service dispenser.” A violation of the law, if enacted, would carry a civil penalty of \$100 for the first violation, \$200 for the second violation committed in a twelve-month period, and \$400 for the third and each subsequent violation within a twelve-month period. A one-year grace period has been built into the bill. Under that provision, a person found to be in violation for the first time within one year of the law’s effective date would be issued a warning and provided with

information about compliance with the requirements of the law. The law also permits restaurants to provide customers with alternatives to plastic straws, including straws made from paper, sugar cane, or bamboo.

This bill is somewhat limited in the scope of the businesses to which it applies. It defines “restaurant” as any diner or other eating or beverage establishment that offers for sale food or beverages to the public, guests, members, or patrons, where the food or beverages are customarily consumed on the premises. This includes a fast food establishment, bar, coffee shop, cafeteria, luncheonette, or short order café. The bill states, however, that the following do not constitute a “restaurant” subject to this bill: sandwich stands, soda fountains, the drive-through portion of a restaurant, drive-in restaurants, or any establishment or portion of a restaurant where food or beverages are customarily consumed off the premises. Another bill (S2307 and A1647) would amend the General Business Law to prohibit food service establishments, food vendors or mobile food service establishments from providing polystyrene disposable food service ware containers to customers for take-away packaging.

Significantly, two bills have recently been introduced into the New York State Legislature, which would put into place EPR programs covering a broad array of containers and packaging.¹⁷⁴ Those bills are currently pending in committee.

(b) Local Efforts

Several localities within the state have made strides towards regulating plastic straws. Suffolk County enacted a plastic straw law that went into effect on January 1, 2020.¹⁷⁵ The law states that food service establishments shall only provide single-use beverage straws or beverage stirrers upon request by a customer, but allows an exemption for service of straws with beverages purchased at a drive-through window or at a self-service beverage station. Suffolk County included

a “reverse preemption” provision in its law, stating that the law shall be null and void on the day that a substantially similar state or federal rule or regulation takes effect. Ulster County also enacted its “Skip the Straw Law,”¹⁷⁶ which requires that single-use plastic straws be provided only upon a customer’s request.

New York City has not enacted a law that places restrictions on the sale of plastic straws, although there have been efforts in recent years in the New York City Council to do so. In 2019, a local law was proposed by Council Member Espinal and sponsored by twenty-seven city councilmembers, which would have banned the sale of single-use straws and beverage stirrers made of plastic or any other non-biodegradable material.¹⁷⁷ New York City also has advanced policies to decrease single-use plastics within its own operations. An April 2019 mayoral executive order directed City agencies to stop using plastic food ware and to replace it with compostable items as needed.¹⁷⁸ The order included an exception for a small amount of single-use plastic items to be made available upon request, in order to provide options for people with disabilities.¹⁷⁹

On February 6, 2020, New York City Mayor Bill de Blasio issued Executive Order No. 54, requiring every City agency to develop and submit to the Mayor’s Office of Contract Services and Mayor’s Office of Sustainability a plan to “(a) eliminate any unnecessary expenditure of City funds for the purchase of single-use plastic beverage bottles in favor of reusable options determined eligible by the City and (b) eliminate the unnecessary sale of single use plastic beverage bottles on City-owned and leased property.”¹⁸⁰ The Order specifies that the goal should be to eliminate unnecessary purchase and sale of such bottles by January 1, 2021.¹⁸¹

2. *Microbeads and Microfibers*

At the time the MFWA was enacted, the New York State Legislature was considering a ban on the sale of personal cosmetic products containing microbeads. However, the MFWA preempted such state-level restrictions.

A New York State Assembly bill (A.1549) first introduced in 2018 would require clothing that consists of more than 50 percent synthetic fiber to be labeled to give notice that the garment sheds microfibers when washed, and requiring such labeling to include, under certain circumstances, recommendations regarding care that would reduce such shedding. The bill remains pending in committee.

C. Legal and Policy Considerations for New York in Developing Plastic Policies.

1. Plastic Bags and Other Single-Use Plastics

While single-use plastics are a scourge to the environment—on the ground, in the water, in tree branches, in stormwater drains, in animals, and even in the air (plastic bags are made from petrochemicals and release methane as they break down in landfills)—their replacements can also be problematic. Moreover, governmental action to ban or restrict access to single-use plastics could have social equity implications and negative economic effects on small businesses.

The environmental impacts of alternatives to plastic bags are illustrative of the broader policy issues associated with restrictions on single-use plastics. While plastic bags contribute more to litter and marine pollution and cause more harm to terrestrial and aquatic wildlife than other shopping bags, along other environmental metrics, plastic bags compare more favorably. Paper bags, for example, are significantly more energy-¹⁸² and water-intensive¹⁸³ to produce, and they are as much as seven times heavier than plastic bags, increasing the fuel consumed (and emissions generated) in their transport from factory to store.¹⁸⁴ Paper bags that are not made from recycled material also require cutting down trees, which has a further greenhouse gas emissions impact. A report from the Danish Environmental Protection Agency found that paper bags must be reused 43 times to equal the environmental impact of a low-density polyethylene (“LPDE”) plastic bag used one time and then re-used as a waste bin liner. The report further found that an organic cotton tote should be reused 20,000 times (the number is a more modest 149 times when accounting only for

greenhouse gas emissions).¹⁸⁵ A British study put these numbers at seven times for paper bags and 327 times for cotton tote bags.¹⁸⁶ The Danish study notably did not include waste impacts in its analysis, while the British study excluded end-of-life composting and recycling; neither study includes impacts from littering. These differences are significant because paper bag use has been shown to increase when plastic shopping bags are banned. For example, when Portland, Oregon piloted a single-use plastic bag ban, paper bag use saw a 491 percent increase.¹⁸⁷

Thus, policies aimed at improving environmental outcomes by banning single-use plastic bags or reducing their use should include measures to limit the environmental impacts of switching to alternative shopping bags. One approach that can be paired with a plastic bag ban, endorsed by the Surfrider Foundation¹⁸⁸ and the New York League of Conservation Voters,¹⁸⁹ is to have retailers charge a five- or ten-cent fee for paper bags or any other shopping bag alternatives. As noted above, New York State modified this approach by allowing individual cities and counties to decide whether to require a five-cent fee for paper bags (all counties are required to implement the plastic bag ban at retail points of sale). New York City has opted to require the fee.¹⁹⁰

Bans on single-use plastic bags can also have equity impacts that should be accounted for in the formulation of legislative policies. In particular, low-income shoppers will be more sensitive to the cost to buy reusable totes or pay for paper bags at the check-out counter. A number of policy approaches could minimize impacts on low-income shoppers. First, state and local governments can exempt special supplemental nutrition program for women, infants and children (“WIC”) recipients and supplemental nutritional assistance program (“SNAP”) recipients from the fee for non-plastic bags, as New York is doing in its plastic bag ban.¹⁹¹ Second, governmental agencies can provide reusable totes to WIC and SNAP recipients, or hand them out more broadly in low-income, predominantly minority, and environmental justice communities. When Washington,

D.C. implemented its bag-and-fee law, it offered reusable bags to residents who requested them.¹⁹² Still, state and local governments need not shy away from plastic bag bans and paper bag fees due to equity concerns. The impacts can be managed through sound policy planning, and some environmental justice groups have strongly advocated for bag-and-fee policies, citing the outsized impacts from diesel trucks and waste processing facilities needed to handle plastic bag waste that disproportionately burden low-income communities and communities of color.¹⁹³

Another policy approach that can be used to tackle both environmental and equity impacts, as well as to further improve local environmental conditions, is to direct fees from paper or other shopping bags to (a) purchasing and distributing reusable tote bags to low-income and environmental justice communities free of charge, (b) cleaning up local areas that have been impacted by plastic bag and other pollution, particularly in low-income, minority and environmental justice communities, and (c) a state or local environmental fund. Washington, D.C. directed fees to the clean-up of the Anacostia River, “located near one of the district’s poorest black neighborhoods . . . The D.C. method of applying bag fees to river cleanup has created multiple benefits for low-income families in the Southeast portion of D.C. . . . Residents get jobs supporting the river restoration efforts, and school kids now can go on nature field trips funded by the fee.”¹⁹⁴ New York State’s paper bag fee, for the counties that impose it, will be split and directed to purchasing and distributing reusable bags to members of low- and fixed-income communities and to the state’s environmental protection fund, which supports solid waste mitigation projects, parks, recreation and historic preservation, open space, and climate change mitigation and adaptation.¹⁹⁵

The potential environmental issues resulting from a transition from plastic to paper bags arise with respect to other single-use plastics as well. For example, the manufacture of paper straws

involves cutting down trees and energy consumption through producing and transporting paper.¹⁹⁶ Paper straws also are considerably more expensive than the plastic straws they would replace. Moreover, the American Chemical Council continues to publicly advocate for polystyrene as the “environmentally responsible” option, and faults any shift to alternatives as injurious to consumers and small businesses.¹⁹⁷ Specifically, the Council argues that alternatives to polystyrene are more costly and energy-intensive, which then translates to increased prices and a greater carbon footprint.¹⁹⁸ While these points are debated, many governmental bodies are cognizant of the potential increased costs, and assist the transition by rolling out legislation in phases and by directly facilitating communication between small businesses and local suppliers of polystyrene substitutes.¹⁹⁹

2. Policy Considerations Specific to Microbeads and Microfibers

Although enactment of the MFWA was a major step towards resolving the problem of pollution from microbeads generated in the United States, the reach of the statute is limited. As discussed above, the ban imposed by the statute does not extend to consumer products that are not rinse-off cosmetics. Nor does it apply to pharmaceuticals, cleansers or other products that may contain intentionally-added microbeads which—just like those added to rinse-off cosmetics—could find their way into the sewer system and beyond. More research is required to determine whether the MFWA ban goes far enough, and whether additional items should be subject to restrictions or prohibitions.

While the problems associated with microbeads are daunting, those problems are more readily addressed than those posed by microfibers, because microbeads—a fairly new phenomenon—are intentionally added to a finite number of products, and in many instances, there are readily available substitutes that could be as effective in serving the function that microbeads perform.²⁰⁰ The issue of microfibers is another matter entirely because clothing and other fabrics

containing synthetic materials are ubiquitous in modern society. Moreover, clothing made from microfibers is cheaper than clothing made from natural fibers, so issues of equity would arise with regulatory action restricting their availability; and it is not at all clear that the environmental footprint of synthetics is notably worse than clothing derived from natural sources. For example, traditionally grown cotton had the greatest environmental footprint in a study conducted by the brand Patagonia, due to the use of pesticides.²⁰¹ In addition, synthetic clothing may be sturdier and therefore last longer, which may factor into the environmental impact of natural versus synthetic materials.²⁰² Faced with such difficult environmental and equity issues, it is no surprise that legislative action has thus far been limited to labeling requirements. However, as discussed in Section II above, a great deal of activity is underway to find solutions to the microfiber problem, and New York can contribute to that effort, particularly in light of the fact that New York is a hub of the fashion industry.

V. RECOMMENDATIONS FOR NEXT STEPS BY NEW YORK

Society's infatuation with plastic, like our addiction to fossil fuels, has created an environmental crisis that is reverberating across the globe. As with climate change, many of the solutions to this global problem can be found close to home. In addition, and also like climate change, solutions to the plastics problem are multiple and varied. This includes taking a lifecycle approach to plastic, from assessing where plastic manufacturing plants should be sited, to tackling the multiple end-uses of plastics. New York has been a worldwide leader in the fight against climate change and is on its way towards assuming a leading role in addressing plastics pollution. Just as New York has positioned itself as a national leader in the growing clean energy economy, the state should take advantage of this opportunity to be a leader in plastics pollution prevention and become a regional and national leader for plastics waste reduction and recycling. Our recommendations on steps that New York State can take in seizing this role are set forth below.

The recommendations are aimed at stopping plastic pollution at its source—primarily through legislation. Other efforts should be made, including ensuring adequate support, technology, and mechanisms are in place to foster robust recycling of plastics as we move towards a circular economy. Just as New York has done with the Climate Leadership and Community Protection Act and renewable energy jobs, New York State should position itself to be a national leader in the plastics recycling industry and other industries addressing plastics.

New York should also promote and encourage cleanups of its riparian areas, lakes, and shoreline. New York has 2,625 miles of shoreline, including 578 miles in New York City, that should be free of plastic pollution, for wildlife and habitat protection and aesthetic value, and to prevent further plastic accumulation in the oceans. Moreover, the state should not let this plastic degrade further into microplastics and threaten human health. New York has long protected its pristine natural areas and has been a national leader in doing so. The state should make every effort to clean up existing plastic waste and prevent its future accumulation.

These recommendations are meant as an “all of the above” approach; because the plastics problem is omnipresent, it needs to be addressed at different levels using different strategies.

To help implement these recommendations, we urge the formation of working groups to address the full life cycle of plastic pollution in New York and the issues discussed in this report. The working groups should tap experts in their respective fields, including consumer and environmental groups, environmental justice groups, trade groups, and others. The working groups should conduct outreach to solicit policy ideas and offer meaningful opportunities for public input and comments on proposed plastic and plastic waste policies. Policymakers should seek out the input of representatives of environmental justice communities and other community

groups from disadvantaged neighborhoods to inform how such policies might impact low-income and minority residents.

Education must also play a role. While there is growing awareness of plastic pollution generally, a public awareness campaign to inform the public on plastics pollution, and the threats it poses, would complement New York's efforts to remedy the problem.

A. Single-use Plastics

- New York should consider whether it can draw upon the work already accomplished by Vermont, CalRecycle in California, the European Union and other jurisdictions to design a comprehensive, economically responsible, and socially equitable legislative and regulatory approach to eliminate or greatly reduce the use of single-use plastics in the state. In the event it determines, after reviewing the available information, that it is advisable to create a working group to assist in the design of such a program, it should commission such a group, and assure that representatives of the relevant stakeholders are equitably represented.
 - New York should eliminate single-use plastic bottles and single-use cutlery, plates, and straws at state agencies and state colleges and universities.
 - The state should consider incentivizing reusable food ware.
- **Recycling Targets**
 - Just as New York has adopted targets for reducing greenhouse gases, it should adopt aggressive targets for recycling plastics.
 - The state should endeavor to keep the raw material resulting from the recycling of plastic in New York to help grow the economy and create jobs.

- Reusable Bags
 - New York should assure that plastic bag fees are not directed towards a local or state general treasury, but targeted instead towards educational campaigns and providing reusable bags to environmental justice and low-income communities.
 - The state should prioritize environmental justice areas in allocating environmental protection fund fees attributable to paper bag charges.
 - The state should study social equity issues and to what extent and where reusable bags should be made available free of charge.
 - The state should distribute such paper bag fees deposited into the environmental protection fund in a manner reasonably proportional to the amount each county takes in, so that residents can see the benefits of the fees in their own communities.

- Extended Producer Responsibility
 - New York should create a working group to consider: (i) the establishment of extended producer responsibility (“EPR”) programs (which, as discussed above in Section III.C.3, seek to capture externalities by placing shared responsibility for environmental impacts of a product on producers instead of the general public, thereby incentivizing reduction, reuse, and recycling strategies); and (ii) creation of economic incentives to induce industry to develop innovative approaches for the reduction, reuse, and recycling of plastic. The working group should consist of a balanced roster of relevant stakeholders, including state and local officials, industry representatives, NGOs, and community groups. The program should reflect the fact that externalities like producing or using plastics in packaging and delivering

goods—along with all the associated impacts—are a part of the cost of doing business. The working group should consider whether and how:

- ❖ Producers of certain products (packaging, containers, food service products, and paper) should design, manage, and finance programs to collect and process product waste that would normally burden state and local governments.
 - ❖ The state should encourage producers to cooperate with those who produce similar products to realize economies of scale in shared collection and processing of plastic waste, or shared collection of recyclable material for reuse.
 - ❖ Producers should provide financial support for state and local recycling and composting infrastructure and promote awareness-raising measures to reduce waste.
 - ❖ The state should provide incentives to producers to incorporate environmental considerations into the design of their products and packaging.
 - ❖ The state should encourage takeback programs.
- Microfibers
 - As a center of the worldwide fashion industry, and a state with some of the most prominent scientific and technical institutions in the country, New York should take a leading role in the research needed to solve the problem of microfibers. A working group should be established to examine: (i) whether it would be practicable to equip wastewater treatment facilities with additional technologies that would improve

their ability to capture microfibers; (ii) whether, building on the work of EPA's Trash Free Waters Project and others, washing machine technology could be improved to increase the microfiber capture rate; (iii) whether treating synthetic fibers in fabrics could be effective in minimizing microfiber shedding; and (iv) how to develop consumer awareness and education regarding microfiber pollution.

- Microbeads

- New York should determine whether the prohibitions set forth in the MFWA go far enough or should be extended to other products such as non-rinse-off lotions, sunscreens, and deodorants. In doing so, it should consider the environmental impacts of products other than "rinse-off" cosmetics, the function performed by microbeads in such products, whether substitutes are available to serve such functions, and the economic impacts of any extended prohibition. It also should consider the legal validity of such extended prohibitions under the Commerce Clause and principles of implied federal preemption.

The working groups discussed above should be tasked with making recommendations to the Governor within one year, and those recommendations should be subject to public review and comment. New York should consider the recommendations of those working groups in promptly developing legislation to address the problem of plastics pollution.

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- ¹ See Ieva Rucevska, Levi Westerveld, and Thirze Hermans, *The Trade in Plastic Waste*, UNITED NATIONS ENV'T. PROGRAMME (2017), <http://www.grida.no/publications/333> (all websites last visited July 22, 2020).
- ² See Sarah-Jeanne Royer, Sara Ferrón, Samuel T. Wilson, and David M. Karl, *Production of Methane and Ethylene from Plastic in the Environment*, PLOS ONE, 13(8), e0200574 (Aug. 1, 2018), <https://doi.org/10.1371/journal.pone.0200574>; see also Lisa Anne Hamilton and Steven Feit, et al., *Plastic & Climate: The Hidden Costs of a Plastic Planet*, CENTER FOR INT'L. ENVTL. L. (May 2019), <https://www.ciel.org/plasticandclimate>.
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- ¹⁶ EPA reports that Americans alone contribute more than 300 billion convenience bags to this total each year. See Marcia Anderson, *Confronting Plastic Pollution One Bag at a Time*, THE EPA BLOG (Nov. 1, 2016), <https://blog.epa.gov/tag/plastic-bags/>.
- ¹⁷ Issues surrounding plastic bottles and containers are keyed to the effectiveness of existing bottle bills and recycling programs. Such issues are not addressed in this report.
- ¹⁸ See Env'tl. Protection Agency, *Product-Specific Data for Containers and Packaging*, <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/containers-and-packaging-product-specific-data#PlasticC&P> (last visited June 21, 2020); Bozena Graca, et al., *Styrofoam Debris as a Potential Carrier of Mercury within Ecosystems*, 21 ENVTL. SCI. POLLUTION RES. INT'L 3 (2014), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3906558/>
- ¹⁹ See Env'tl. Protection Agency, *Product-Specific Data for Containers and Packaging*, *supra* note 18.
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- ²⁸ *Id.*
- ²⁹ It should be noted that this report is not intended to provide a comprehensive inventory of legislative or other initiatives in jurisdictions outside of New York.
- ³⁰ See 33 Code of Federal Regulations (“C.F.R.”), pt. 151.
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- ³³ THE BASEL CONVENTION, Art. 6 (3).

³⁴ THE BASEL CONVENTION, Annex IX.

³⁵ THE BASEL CONVENTION, Art. 4 (5).

³⁶ In terms of universality, the Montreal Protocol is one of the most successful treaties of all time, having been ratified by 197 states, including the United States, and it has made significant progress in closing the ozone hole.

³⁷ It bears noting that the U.N. Environment Assembly (“UNEA”) and the 2017 U.N. Oceans Conference have set into motion enhanced global action on ocean plastics. At the UNEA3 meeting in December 2017, states formed an Ad-Hoc Open-Ended Expert Group (“AHOEEG”) to present options to combat marine plastic litter and microplastics for consideration of member states, experts, and civil society. *See, e.g.*, United Nations, Summary of June 2017 Ocean Conference, <https://oceanconference.un.org/index.php?page=view&type=13&nr=2533> (last visited June 21, 2020).

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⁶⁶ S.B. 522, 30th Leg. (Haw. 2019).

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¹²⁷ See Cal. AB-129, Microfiber Pollution (last amended Mar. 25, 2019), https://leginfo.legislature.ca.gov/faces/billVersionsCompareClient.xhtml?bill_id=201920200AB129 (last visited June 21, 2020).

¹²⁸ Cal. AB-2379, Waste Management: Plastic Microfiber (last amended Apr. 2, 2018), https://leginfo.legislature.ca.gov/faces/billVersionsCompareClient.xhtml?bill_id=201720180AB2379 (last visited June 21, 2020).

¹²⁹ It should be noted that as a theoretical matter, two bedrock environmental statutes could provide authority for governmental action to address plastic waste pollution, including the pollution of surface waters by microbeads and microfibers. Under the Clean Water Act, the discharge of a “pollutant” from a point source into the waters of the United States is prohibited, except as allowed by permit. Plastic waste would fall within the definition of “pollutant” under the statute, and the discharge from a sewer pipe clearly is a discharge from a point source. See 33 U.S.C. § 1362(b) (defining “pollutant”). In addition, an elaborate federal/state program has been established under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901, *et seq.*, for the regulation of solid waste. Nevertheless, it is highly unlikely that the regulatory powers created by these general statutes would be invoked to focus on the problem of plastics in general, or microplastics in particular.

¹³⁰ Morath, *supra* note 7, at 46.

¹³¹ Stephanie F. Wood, *Move over Diamonds – Plastics are Forever: How the Rise of Plastic Pollution in Water Can Be Regulated*, 29 VILL. ENVTL. L.J. 155, 172 (2018).

¹³² *Id.*

¹³³ *Id.*

¹³⁴ Chaudhuri, *supra* note 26.

¹³⁵ *Id.*

¹³⁶ City of New York, *Mayor de Blasio Signs Executive Order to End City Reliance on Single-Use Plastic* (Apr. 11, 2019), <https://www1.nyc.gov/office-of-the-mayor/news/191-19/mayor-de-blasio-signs-executive-order-end-city-reliance-single-use-plastic>.

¹³⁷ See N.Y.C. Dep’t of Sanitation (“DSNY”), 2017 NYC RESIDENTIAL, SCHOOL, AND NYCHA WASTE CHARACTERIZATION STUDY 12 (2018) (hereinafter, 2017 WASTE CHARACTERIZATION STUDY), <https://dsny.cityofnewyork.us/wp-content/uploads/2018/04/2017-Waste-Characterization-Study.pdf>. The amount of plastic shopping bags declined slightly from 2005 to 2013. *Id.* at 14, 15. In 2014, the DSNY commissioner reported that single-use carry-out bags accounted for 1,700 tons of residential garbage each week, or 91,000 tons of plastic and paper carry-out bags each year. See N.Y. State Plastic Bag Task Force, AN ANALYSIS OF THE IMPACT OF SINGLE-USE PLASTIC BAGS: OPTIONS FOR NEW YORK STATE PLASTIC BAG LEGISLATION 4 (Jan. 13, 2018) (hereinafter, PLASTIC BAG TASK FORCE REPORT), <https://on.ny.gov/2RoBY3A>.

¹³⁸ 2017 WASTE CHARACTERIZATION STUDY, *supra* note 137, at 23.

¹³⁹ *Id.* at 33. Film and foam plastic include other wraps, baggies, tarps, bags, and films (45 pounds per household); garbage and recycling bags (41.6 pounds); expanded polystyrene containers and packaging (14.3 pounds); and food/drink pouches (0.6 pounds).

¹⁴⁰ *Id.* at 14, 15.

¹⁴¹ *Id.* at 41.

¹⁴² DSNY, NEW YORK CITY COMMERCIAL WASTE STUDY AND ANALYSIS, 2012: SUMMARY REPORT 39 (2012) (hereinafter, COMMERCIAL WASTE STUDY), https://www1.nyc.gov/assets/dsny/docs/about_2012-commercial-waste-study_0815.pdf.

¹⁴³ 2017 WASTE CHARACTERIZATION STUDY, *supra* note 137, at 24.

¹⁴⁴ COMMERCIAL WASTE STUDY, *supra* note 142, at 40.

¹⁴⁵ See Andy Newman, *Where Rent Is \$13,500, She Lives Off What's Left at the Curb*, N.Y. TIMES (Dec. 26, 2019), <https://www.nytimes.com/2019/12/26/nyregion/collecting-cans-collectors-nyc.html>.

¹⁴⁶ 2017 WASTE CHARACTERIZATION STUDY, *supra* note 137, at 34.

¹⁴⁷ PLASTIC BAG TASK FORCE REPORT, *supra* note 137, at 3.

¹⁴⁸ *Id.*

¹⁴⁹ The Plastic Free Waters Partnership (“PFWP”), Summary of Partnership, <https://plasticfreewaters.org/about/> (last visited June 21, 2020). PFWP evolved out of meetings and workgroups convened by EPA Region 2 during the Obama administration as part of EPA’s Trash Free Waters initiative. *Id.*

¹⁵⁰ N.Y. State Office of the Att’y Gen., UNSEEN THREAT: HOW MICROBEADS HARM NEW YORK WATERS, WILDLIFE, HEALTH AND ENVIRONMENT 3 (2014), https://ag.ny.gov/sites/default/files/microbeads_report.pdf.

¹⁵¹ See generally N.Y. State Office of the Att’y Gen., DISCHARGING MICROBEADS TO OUR WATERS: AN EXAMINATION OF WASTEWATER TREATMENT PLANTS IN NEW YORK (Apr. 2015), https://ag.ny.gov/pdfs/2015_Microbeads_Report_FINAL.pdf. The study tested only for spherical or speckled microbeads, which the study said made up approximately 6% of the 19 tons of microbeads washed down drains in the state every year. *Id.* at 2. The remainder of the microbeads are “irregular” and difficult to distinguish from microplastics created by the breakdown of larger products.

¹⁵² Brooklyn College & Hudson River Park Estuary Lab, *Microplastic Survey 2018*, https://hudsonriverpark.org/assets/content/general/Microplastic_Short_Report_Final.pdf; see also Kevin Krajick, *New York’s Waterways Are Swimming in Plastic Microbeads*, STATE OF THE PLANET, EARTH INST., COLUMBIA UNIV. (Aug. 16, 2017), <https://blogs.ei.columbia.edu/2017/08/16/new-york-waters-swimming-in-plastics/>.

¹⁵³ N.Y. ENVTL. CONSERVATION L. §§ 27-2701 - 2713.

¹⁵⁴ The law applies to stores with over 10,000 square feet of retail space and chains with five or more stores with greater than 5,000 square feet of retail space. N.Y. ENVTL. CONSERVATION L. § 27-2701(6).

¹⁵⁵ *Id.* § 27-2705(4).

¹⁵⁶ The New York municipalities include: Town of East Hampton; Village of East Hampton; Hastings-on-Hudson; Larchmont; Village of Mamaroneck; New Castle; New Paltz Village; Patchogue Village; Rye; Southampton Town; Southampton Village; Long Beach; and Suffolk County. See PLASTIC BAG TASK FORCE REPORT, *supra* note 137.

¹⁵⁷ See Jesse McKinley, *Cuomo Blocks New York City Plastic Bag Law*, N.Y. TIMES (Feb. 14, 2017), <https://www.nytimes.com/2017/02/14/nyregion/cuomo-blocks-new-york-city-plastic-bag-law.html>.

¹⁵⁸ See PLASTIC BAG TASK FORCE REPORT, *supra* note 137.

¹⁵⁹ N.Y. ENVTL. CONSERVATION L. §§ 27-2801 - 27-2809.

¹⁶⁰ See, e.g., *Poly-Pak Indus., Inc. et al. v. State of New York, et al.*, Sup. Ct. N.Y. Cnty., Index No. 02673-20, <https://www.courtsenews.com/wp-content/uploads/2020/03/Plastic-Bag-Ban.pdf> (last visited June 21, 2020).

¹⁶¹ See N.Y. Dep’t of Env’tl. Conservation, *Bag Waste Reduction Law*, <http://www.dec.ny.gov/chemical/50034.html> (NYSDEC has agreed not to take any enforcement action until at least 30 days after it gives notice, which may be given only after June 15, 2020).

¹⁶² 6 N.Y.C.R.R. pt. 351-1.1(b), https://www.dec.ny.gov/docs/materials_minerals_pdf/part351rvsdexptrmsfinal.pdf (last visited June 21, 2020).

¹⁶³ *Id.* at pt. 351-1.2(n).

¹⁶⁴ *Id.*

¹⁶⁵ *Id.* at pt. 351-2.2.

¹⁶⁶ N.Y. ENVTL. CONSERVATION L. § 27-2805.

¹⁶⁷ *Id.* § 27-2807(1).

¹⁶⁸ 6 N.Y.C.R.R. pt. 351-1.2(f), *supra* note 162.

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- ¹⁶⁹ N.Y. State, *Governor Cuomo Unveils 5th Proposal of 2020 State of the State: Banning the Use of Single-Use Styrofoam Food Containers in New York State* (Dec. 17, 2019), <https://www.governor.ny.gov/news/governor-cuomo-unveils-5th-proposal-2020-state-state-banning-use-single-use-styrofoam-food>.
- ¹⁷⁰ N.Y. L. ch. 58, pt. PP (2020) (codified at N.Y. ENVTL. CONSERVATION L. §§ 27-3001–27-3009).
- ¹⁷¹ N.Y. ENVTL. CONSERVATION L. § 27-3005.
- ¹⁷² Alexander C. Kaufman, *New York’s War on Plastic*, CITY & STATE N.Y. (Dec. 11, 2019), <https://www.cityandstateny.com/articles/policy/energy-environment/new-yorks-war-plastic.html>.
- ¹⁷³ See N.Y. S.B. S1477A (2019-2020 Leg. Sess.), <https://www.nysenate.gov/legislation/bills/2019/s1477>; N.Y. A.B. A90A (2019-2020 Leg. Sess.), <https://www.nysenate.gov/legislation/bills/2019/a90>.
- ¹⁷⁴ See N.Y. S.B. S7718 (2019-2020 Leg. Sess.), <https://www.nysenate.gov/legislation/bills/2019/s7718>; N.Y. A.B. 09790 (2019-2020 Leg. Sess.), https://nyassembly.gov/leg/?default_fld=&leg_video=&bn=A09790&term=2019&Summary=Y.
- ¹⁷⁵ See SUFFOLK CTY. CODE ART. III §§ 700-13 – 700-23 (L.L. No. 20-2019, Apr. 9, 2019), <https://ecode360.com/34268036> (last visited June 21, 2020).
- ¹⁷⁶ See ULSTER CTY. L.L. 2-2019, <https://ulstercountyny.gov/sites/default/files/Local%20Law%20No.%202%20of%202019%20-%20Plastic%20Straw%20Regulation%20in%20Restaurants%20-%20FINAL%20CLEAN.pdf> (last visited June 21, 2020).
- ¹⁷⁷ N.Y. City Council, Int. No. 936 (2018), <https://legistar.council.nyc.gov/ViewReport.ashx?M=R&N=Text&GID=61&ID=3103349&GUID=FFCB5AE1-E02A-4A5E-9309-E0414B4B0026&Title=Legislation+Text> (last visited June 21, 2020).
- ¹⁷⁸ City of N.Y., Office of the Mayor, Exec. Order No. 42 (Apr. 11, 2019), https://www1.nyc.gov/assets/mocs/downloads/pdf/Executive%20Order%2042_Single%20Use%20Plastics%20Signed.pdf.
- ¹⁷⁹ *Id.*
- ¹⁸⁰ See City of N.Y., Office of the Mayor, Exec. Order No. 54 (Feb. 6, 2020), <https://www1.nyc.gov/assets/home/downloads/pdf/executive-orders/2020/eo-54.pdf>.
- ¹⁸¹ Governor David Paterson issued a similar executive order in 2009, which directed executive agencies to develop and implement a plan to eliminate the expenditure of State funds to purchase bottled water. See Governor’s Exec. Order 18 of 2009, [https://govt.westlaw.com/nycrr/Document/187b1d64161b411deb0798ecb9f231953?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/nycrr/Document/187b1d64161b411deb0798ecb9f231953?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)&bhcp=1). A report issued in 2019 “continues to document that the executive agencies covered by Exec. Order 18 have virtually eliminated the purchase of bottled water.” See N.Y. Office of Gen. Servs. & N.Y. Dep’t of Envtl. Conservation, *Greening New York State: Seventh Progress Report on State Green Procurement and Agency Sustainability, Fiscal Year 2017-18* 41 (2019), https://ogs.ny.gov/system/files/documents/2019/05/fy2017-18finaleo4progressreport_0.pdf.
- ¹⁸² See, e.g., Suzie Cave, *Carrier Bags – Environmental Impact*, NORTHERN IRELAND ASS. 4 (Apr. 7, 2014), <http://www.niassembly.gov.uk/globalassets/documents/raise/publications/2014/environment/8314.pdf>.
- ¹⁸³ *Id.* at 3.
- ¹⁸⁴ Yunhai Xiong, *How Banning Plastic Bags Could Help New York Mitigate Climate Change*, STATE OF THE PLANET, EARTH INST., COLUMBIA UNIV. (May 9, 2019), <https://blogs.ei.columbia.edu/2019/05/09/banning-plastic-bags-climate-change/>.
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- ¹⁸⁶ Dr. Chris Edwards and Jonna Meyhoff Fry, *Life Cycle Assessment of Supermarket Carrier Bags: A Review of the Bags Available in 2006*, U.K. ENV’T AGENCY (Feb. 2011), at 47, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291023/scho0711_buan-e-e.pdf.

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- ¹⁸⁷ Portland Bureau of Planning & Sustainability, *Promoting Reusable Checkout Bags in Portland: One-Year Report* (Oct. 3, 2012), <https://www.portlandonline.com/shared/cfm/image.cfm?id=419069> (last visited June 21, 2020).
- ¹⁸⁸ Surfrider Foundation, *The Latest Plastic Bag Laws and Maps* (Oct. 10, 2019), <https://www.surfrider.org/coastal-blog/entry/the-latest-plastic-bag-laws-and-maps>.
- ¹⁸⁹ Mikey Lampel, *After New York State Bans Plastic Bags, Local Governments Decide Whether or Not to Charge a Fee for Paper Bags*, N.Y. LEAGUE OF CONSERVATION VOTERS (Apr. 25, 2019), <https://nylcv.org/news/after-new-york-state-bans-plastic-bags-local-governments-decide-whether-or-not-to-charge-a-fee-for-paper-bags>.
- ¹⁹⁰ N.Y. CITY LOCAL LAW 100 (2019), <https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3917691&GUID=CEACB88C-E6E9-4CB4-A7EF-0772C7972008&Options=&Search=>.
- ¹⁹¹ N.Y. ENVTL. CONSERVATION L. § 27-2805(3).
- ¹⁹² Wash., D.C. Dep’t of Energy & Env’t, *Bag Law FAQs*, <https://doee.dc.gov/page/bag-law-faqs>.
- ¹⁹³ See Eddie Bautista, et al., *Time to Cut the High Cost of the Free Plastic Bag*, GOTHAM GAZETTE (May 4, 2016), <https://www.gothamgazette.com/index.php/opinion/6316-the-high-cost-of-the-free-plastic-bag> (“A whopping 91,000 tons of plastic bags are hauled on diesel trucks for processing at transfer facilities clustered in industrial waterfront neighborhoods, including North Brooklyn, Sunset Park, and the South Bronx. Our communities, more than all others in New York, suffer the noxious fumes and noise pollution, the traffic congestion and unsafe streets, the high rates of asthma and respiratory problems, and the general neighborhood blight caused in part by our city’s love affair with this icon of disposable convenience. Faced daily with these burdens, low-income New Yorkers of color already know the high cost of ‘free’ plastic bags.”).
- ¹⁹⁴ Brentin Mock, *Free Shopping Bags Have Already Cost the Poor Too Much*, CITYLAB (May 5, 2016, 6:56 P.M. EDT), <https://www.citylab.com/solutions/2016/05/why-new-yorks-underserved-communities-deserve-a-plastic-bag-fee/481554/>.
- ¹⁹⁵ N.Y. State. Fin. L. § 92-s.
- ¹⁹⁶ Annie Lowrey, *The Case Against Paper Straws*, THE ATLANTIC (Aug. 20, 2019), <https://www.theatlantic.com/ideas/archive/2019/08/paper-straws-wont-stop-climate-change/596302/>.
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- ²⁰⁰ See Dauvergne, *supra* note 22.
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