DRAFT NATIONAL STRATEGY TO PREVENT PLASTIC POLLUTION

Office of Resource Conservation and Recovery
Office of Land and Emergency Management
Environmental Protection Agency

AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS COMMENTS

Attention: EPA–HQ–OLEM–2023–0228; FRL–10820–01–OLEM

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Table of Contents

I. Introduction

The American Fuel & Petrochemical Manufacturers ("AFPM") respectfully submits these comments on the Environmental Protection Agency's ("EPA" or "the Agency") Federal Register notice titled "Draft National Strategy to Prevent Plastic Pollution: Request for Public Comment" ("Draft National Strategy").[1] The Draft National Strategy identifies actions the EPA and stakeholders can take to prevent plastic pollution and reduce, reuse, collect, and capture plastic and other waste from land-based sources. Specifically, EPA is requesting comments to assist in the development of a national strategy to "reduce plastic waste and other post-consumer materials in waterways and oceans," as directed by section 301 of the *Save Our Seas 2.0 Act*.[2]

Our comments highlight that EPA, through the Draft National Strategy, must:

- Recognize that plastics are critical to a sustainable future and essential for EPA to achieve their mission to protect human health and the environment,
- Support innovation in all segments of the plastic life cycle and encourage, and not hinder, the shift to a circular economy for plastics, and,
- Acknowledge that plastic production is not large source of the overall plastic pollution and focus on improving post-consumer materials management and infrastructure as required by the *Save Our Seas 2.0 Act.*

II. AFPM Interest in the Draft National Strategy

AFPM is the leading trade association representing the manufacturers of base petrochemicals that are the essential building blocks for plastic products that improve the health, safety, and living conditions of humankind and make modern life possible. AFPM members are committed to sustainably manufacturing the petrochemicals and derivatives for plastics that growing global populations and economies need to thrive, improving and innovating product design and recycling to improve reuse rates, and developing policies and technologies to address plastic pollution.

AFPM members are committed to collaborating with policymakers and other stakeholders to develop sound, risk- and science-based policies to address environmental issues including the adverse impacts of plastic pollution caused by mismanaged post-consumer plastic. AFPM members abide by numerous chemical policies and environmental regulations administered by the EPA and other federal agencies. AFPM members have actively supported, and continue to support, policies designed to protect the environment, decrease emissions, incentivize recycling, and promote research and development in recycling technologies through pilot phases to full commercialization. By supporting such policies AFPM members strive to achieve a truly circular economy that creates, conserves, and circulates value from plastics derived from petrochemicals.

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[1] *See* 88 *Fed. Reg.* 27502, "Draft National Strategy to Prevent Plastic Pollution: Request for Public Comment," EPA–HQ–OLEM–2023–0228; FRL–10820–01–OLEM, published May 2, 2023.
[2] *See* "Save Our Seas 2.0 Act." S.1982. Enacted December 18, 2020.

To prevent plastic pollution, we encourage EPA to embrace policies that enable, and not hinder, a circular economy for plastics that utilizes technologies and strategies to recover post-consumer plastic and transform it back into usable materials. To achieve circularity in the United States, it will require consistent and rational policies that improve waste management, embrace technology and innovation, and incorporate solutions across the entire plastics value chain.

III. Mismanaged Post-Consumer Plastic is a Global Issue

Globally, approximately 3 billion people lack access to basic waste management.[3] While the U.S. may be better situated than many countries when it comes to waste management, the volume of recycled plastics in the U.S. is relatively small (three million tons for an 8.7 percent recycling rate in 2018).[4] AFPM fully acknowledges that plastic pollution, particularly mismanaged waste entering waterways and oceans by littering or illegal dumping, is a global issue of acute importance. To effectively combat plastic pollution, we must address plastic waste leakage at all points in the plastics value chain and accelerate those efforts both domestically and globally. Upstream in the value chain, our members are constantly striving for ways to reduce plastic leakage into the environment and to make the petrochemicals and products our customers produce more easily recyclable. AFPM members are also at the forefront of recycling, pioneering new technologies and improving current ones to recycle more materials.

Sustainable consumption and production and creating well-designed plastic products that enable waste minimization is a key step toward circularity but must be paired with creating universal access to waste collection and environmentally sound waste management. Our members are also partnering with stakeholders in the plastics value chain to accelerate the pace of advancements in recycling and improvements in waste collection.[5] For example, many AFPM members collaborate and participate in consortium-based post-use plastic innovation companies (i.e., Cyclyx and Agilyx) that help provide petrochemical manufacturers reliable access to cleaned and sorted post-consumer plastic that can be used as feedstocks in recycling.[6]

AFPM members also coordinate closely with brand owners (or consumer product companies) to improve designs for easy to recycle products. For example, multiple AFPM members operate design and research labs where petrochemical manufacturers can work with their customers to create products that are more circular. In addition, our members have invested billions of dollars in their own operations and through the "Alliance to End Plastic Waste," a nonprofit organization to help address plastic waste and improve waste management globally, particularly in areas where most of the mismanaged post-consumer plastic enters the environment.[7]

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[3] *See* Global Partners of Plastics Circularity, *"*The Plastics Value Chain*",* Factsheet, Published May 24, 2023.
[4] *See* U.S. EPA *"*Facts and Figures about Materials, Waste and Recycling*",* Accessed July 31, 2023.
[5] *See* Global Partners of Plastics Circularity, *"*Tracking Our Progress*",* Accessed July 31, 2023.
[6] *See* PR Newswire "Houston Recycling Collaboration launches first Cyclyx 10 to 90® program, expanding collection to nearly all plastics in Kingwood, Texas, community", Published December 13, 2022 and "Houston Recycling Collaboration", Accessed July 31, 2023.
[7] *See* "Alliance to End Plastic Waste" and "Closed Loop Partners - Impact" and "The Recycling Partnership", Accessed July 31, 2023.

AFPM recognizes that mismanaged plastic resulting in plastic pollution is a global issue. AFPM member companies' production operations and products are highly regulated and monitored both domestically and globally and our members participate in initiatives above and beyond regulations to combat plastic pollution.[8] AFPM members welcome the engagement of the global plastic stakeholder community in addressing the challenge of plastic pollution. To this end, AFPM and its members are actively participating in a series of negotiations overseen by the United Nations Environment Program ("UNEP") to develop an international agreement that will address plastic pollution.[9] AFPM also participates in a variety of industry and multi-stakeholder groups dedicated to ending plastic pollution and achieving plastic circularity.

AFPM members encourage EPA to develop a national strategy to prevent plastic pollution that recognizes the global nature of plastic pollution. EPA's national strategy should also consider how such a strategy will fit into a potential future global agreement. Furthermore, EPA should support policies both domestically and internationally that enable and encourage circularity as a foundational element of any "National Strategy" to prevent plastic pollution.

IV. Plastics are Critical to a Sustainable Future

Petrochemicals and their derivatives are the building blocks that make plastic products. Plastics are lightweight and efficient materials that enable us to do more with less material, reduce water usage and food spoilage, and help drive down greenhouse gas emissions. Plastic products are critical to renewable energy, public safety, electronics and modern medicine. Plastic products not only enable us to live longer, but they also help us attain a higher quality of life. Plastics derived from petrochemicals provide the American population a high-quality of life and enable our economy to thrive while doing so in a sustainable manner. Globally achieving the United Nations ("UN") Sustainable Development Goals ("SDGs") is not possible without petrochemicals and the plastics derived from them.[10] In developing a National Strategy to address plastic pollution EPA must consider the tremendous benefits plastics provide for a growing domestic and global population as well as their importance in meeting UN SDGs.

a. Enabling Climate Solutions and Renewable Energy

With the mission to protect human health and the environment, EPA has implemented policies that aim to reduce emissions and combat climate change. To bring global attention to rising global temperatures and the impacts of climate change the UN has identified "Climate Action" and "Affordable and Clean Energy" as two of the seventeen SDGs. Meaningful progress

[8] Operation Clean Sweep ("OCS") is a program aimed at controlling plastic resin loss worldwide. Each segment of the industry (resin producers, transporters, bulk terminal operators, recyclers and plastics processors) has a role to play in eliminating resin pellet, flake and powder loss. While consumers are responsible for the proper disposal of the products they use, the plastics industry is focused on proper containment of the products they make to prevent plastic pollution to land or waterways. Accessed July 31, 2023.

[9] *See* United Nations Environment Program "UNEA Resolution 5/14 entitled "End plastic pollution: Towards an international legally binding instrument", Published May 10, 2022.

[10] The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides 17 Sustainable Development Goals. These SDGs recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. Accessed July 31, 2023.

to achieve both the EPA's mission and address the UN SDGs cannot be achieved without plastics as they help drive down greenhouse gas emissions, increase transportation and construction efficiencies, and enable renewable energy technologies such as solar, wind, heat pumps, and many others on the horizon.

Multiple studies have found that the use of plastic packaging and plastic in consumer products can significantly reduce the greenhouse gas emissions when compared to non-plastic alternatives.[11] The outperformance of plastics verses non-plastic alternatives can be attributed to unique physical characteristics of plastics. Plastics are strong and durable yet incredibly lightweight and because of this require much less material to perform similar functions of non-plastic alternatives. The lightweight nature makes plastics and plastics products more efficient to move across the global supply chain. In one recent study, plastics were found to have a lower greenhouse gas ("GHG") impact in 13 of the 14 non-plastic alternative applications analyzed, including both direct (*i.e.*, production, retail transport, and end-of-life disposition) and indirect value-chain emissions (*i.e.*, fuel savings in lighter cars, lower energy consumption in houses insulated with polyurethane, and reduced food spoilage).[12]

Plastics are critical materials in durable items like cars and airplanes and decrease the weight of vehicle components, providing a solution which reduces our fuel use and greenhouse gas emissions. In fact, today's cars on average are made of over 50% plastics by volume but only 10% by weight and the Boeing 787 is made of over 50% composite plastics which offers weight savings on average of 20 % when compared to conventional aluminum designs.[13] Light-weighting is also critical to increasing the fuel efficiency for internal combustion vehicles and battery range of electric vehicles.

Plastics are also solutions in building construction. Improved insulation due to plastic materials helps drive down energy use and keep internal temperatures of buildings more consistent. Plastic materials like foam insulation, house wrap, window frames, caulks and sealants have revolutionized construction and protect against heating and air conditioning losses, which saves energy and reduces greenhouse gas emissions.

Renewable energy and other alternative energy technologies require plastics. Wind turbines have evolved and are increasing renewable electricity generation, led by Texas, Iowa, and Oklahoma.[14] This evolution is mostly due to the ever-increasing length of wind turbine blades, which are made from advanced composite plastics made from petrochemicals. Plastics are integral to the batteries contained in electric vehicles ("EVs"). The electrolytes in EV batteries are polymers like poly(vinylene carbonate) and poly(vinylidene fluoride), which is a

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[11] *See* McKinsey & Company. July 26, 2022. "Climate impact of plastics," p. 4., and Ben Coleman, Randy Waymire, Neil Brown, C. Jason Pierce. June 2020. "LCA carbon footprint summary report for Eastman carbon renewal technology," and Journal of Cleaner Production. Volume 319. October 15, 2021. "Environmental life cycle assessment of the incorporation of recycled high-density polyethylene to polyethylene pipe grade resins," Ioan-Robert Istrate, Rafael Juan, Mario Martin-Gamboa, Carlos Domínguez, Rafael A. García-Muñoz, Javier Dufour.
[12] *See* McKinsey & Company. July 26, 2022. "Climate impact of plastics," p. 10-12.
[13] *See* Visual Capitalist. May 20, 2019. "How Much Oil is in an Electric Vehicle?" And Boeing. "Boeing 787 - From the Ground Up." Accessed July 31, 2023.
[14] *See* US Department of Energy, Office of Energy Efficiency & Renewable Energy "U.S. Installed and Potential Wind Power Capacity and Generation." Accessed July 31, 2023.

solid electrolyte that will revolutionize battery safety in the future. Both are made from the petrochemical building block ethylene. Plastics play a growing role in improving efficiency and cost-effectiveness of solar energy, supplying essential films/sheets that help protect glass and silicon panels from the environment, plus electrical insulators, pipes, valves, and fittings. Advances in plastic solar cells could usher in more affordable, flexible, lightweight, and durable solar energy panels.

b. Ensuring Food Security and Clean Water

Plastics play an essential role in protecting human health by providing access to food and clean water. According to the World Food Program, nearly one-third of food produced for human consumption is lost or wasted globally and this amounts to about 1.3 billion tons per year, worth approximately U.S. $1 trillion. This amount of food waste accounts for approximately 3.3 gigatons of Carbon Dioxide emissions.[15] While this number is staggering it would be even higher if not for plastics.[16] Plastic packaging keeps perishable foods such as meat and bread fresher longer, reducing spoilage and helping curb food waste and its associated GHG emissions.

Lightweight consumer packaging is critical for food safety and long-distance shipping. Plastic packaging reduces the incidence of pathogen-based disease, thereby benefiting human health and ensuring use efficiencies by significantly reducing food spoilage as compared to alternatives.[17] As an essential component in food packaging, plastics promote food safety and security by preventing food loss, waste, and contamination.[18] Ninety percent of all food products sold across several food categories, including fresh and frozen meat, are packaged in some form of plastic.[19] Plastic packaging is lighter in weight than most alternative materials, which means more units can be transported at longer distances, reducing the number of individual distribution sites, and allowing greater economies of scale for the whole shipping process. This leads to safer and more affordable food for the world.

Plastics also play an essential role in ensuring clean water whether it be plastic piping, including plastic pipes which are replacing lead pipes, or water filters made with stretchable, plastic membranes. Durable plastic pipes can upgrade aging water infrastructure, improve its resiliency, and cut energy use. Plastic pipes are more economical to install and maintain and often can retrofit aging pipes. They can also reduce energy needs by significantly reducing the drag of moving water through non-plastic piping.

c. Fostering Good Health and Well Being

Plastics keep people safe and improve our well-being. Medical personal protective equipment (PPE), syringes, intravenous bags, infusion machines, blood product storage, eyewear, hearing aids, artificial joints and plates as well as other modern medical devices all

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[15] *See Environmental Impact Assessment Review*, Volume 91, November 2021, 106677, Amicarelli, Lagioia, Bux, "Global warming potential of food waste through the life cycle assessment: An analytical review"
[16] *See* World Food Program "5 facts about food waste and hunger." Accessed July 31, 2023.
[17] *See* McKinsey & Company. July 26, 2022. "Climate impact of plastics," p. 4, 18.
[18] *See* Ritchie, H., & Roser, M. September 1, 2018. "Plastic Pollution." Our World in Data. Accessed July 31, 2023.
[19] *See* McKinsey & Company. July 26, 2022. "Climate impact of plastics," p.11.

depend on plastics made from petrochemicals.[20] Disposable hospital gowns, masks, gloves, head and foot coverings, and other items keep our hospital workers and their patients safer.[21] There are few materials that are compatible with the interior of a human body. Infection, blood clotting, and the body's rejection of a medical device are known risks and plastics-derived medical devices and equipment have been proven to address these risks and outperform other non-plastic-derived medical devices and equipment.

In addition to medicine, plastics made from petrochemicals have numerous industrial applications. The hardhats, helmets, goggles, gloves, hearing protection and other PPE that factory and other industrial workers wear are made from lightweight plastics and synthetic rubber materials, all of which are derived from petrochemicals. Kevlar vests and fire-retardant uniforms that protect our first responders and military as well as the helmets and padding that protect athletes are also made from petrochemicals.

d. EPA Must Recognize the Benefits of Plastics

In its Draft National Strategy, EPA only acknowledges "some potential benefits," but caveats that acknowledgement with the limitation "outside of the context of their broader environmental and health impacts."[22] While AFPM understands the Draft National Strategy is designed to address the negative societal impacts of plastic pollution, EPA should be more balanced when talking about plastics and their societal benefits mentioned above. Put simply, we have a plastic pollution problem, not a plastics problem, and EPA needs to clearly articulate this so that the public does not walk away with a skewed perception of the role of plastics in society. EPA should be laser focused on the pollution challenge and address that through post-consumer waste management improvements as identified in the *Save Our Seas Act 2.0*.

As the lead federal agency in charge of U.S. environmental regulation, EPA holds considerable authority and, therefore, statements made in the Draft National Strategy can influence many stakeholders. AFPM firmly believes that EPA could better educate the public, by taking a balanced approach to its characterization of plastics in the Draft National Strategy. EPA should clearly delineate between plastics and plastic pollution and focus the Draft National Strategy on the real issue which is plastic pollution and waste management.

V. General Comments on the Draft National Strategy

AFPM has organized our comments on the Draft National Strategy in four areas 1) general comments, 2) comments on the goals and strategies, 3) comments on the objectives, and 4) answers to EPA next steps. In this section we address our general overarching comments on the Draft National Strategy.

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[20] *See* AFPM Newsroom. April 3, 2020. "COVID-19: Q&A on Petrochemicals Helping Protect Public Health."
[21] Disposable items in hospital settings, many of which are made from polypropylene, have dramatically reduced hospital-borne infections. *See* GE Healthcare. November 22, 2022. "Preventing Healthcare Associated Infections: Disposable Supplies Can Play a Key Role – While Also Reducing Costs."
[22] *See* U.S. EPA Office of Resource Conservation and Recovery. April 2023. "Draft National Strategy to Prevent Plastic Pollution: Part of a Series on Building a Circular Economy for All." EPA 530-R-23-006. p. 5.

a. Elements of The Draft National Strategy are Beyond the Intent of the *Save Our Seas 2.0* Act

The EPA developed the Draft National Strategy to Prevent Plastic Pollution in response to section 301 of the "*Save Our Seas 2.0 Act"* which succinctly instructs EPA to:

> *"…develop a strategy to improve post-consumer materials management and infrastructure for the purpose of reducing plastic waste and other post-consumer materials in waterways and oceans."*[23]

The stated goal in the National Strategy, however, differs from the Congressional direction for developing the Draft National Strategy. Rather than focus on developing a strategy to improve post-consumer materials management and infrastructure, as required, the stated goal in the Draft National Strategy is to "identify actions needed to eliminate the release of plastic waste from land-based sources into the environment by 2040." This change impermissibly broadens the scope of the Draft National Strategy and redirects it away from what is needed, better post-consumer materials management and infrastructure. The Draft National Strategy should be strictly focused on improving post-consumer materials management and infrastructure.

While AFPM agrees that land-based sources can contribute to pollution in waterways and oceans and supports EPA's goal of reducing plastic pollution from land-based sources, the National Strategy goal is much broader than what Congress explicitly mentioned. For example, the draft strategy attempts to address topics like plastic production cuts, emissions reductions, and environmental justice. While these issues are important, they either go beyond post-consumer management or are more appropriately addressed through other EPA programs. AFPM encourages EPA to maintain the focus on improving post-consumer materials management and infrastructure of **plastic waste** and **other post-consumer materials** that are **most likely** to end up in waterways and oceans and not lose site of the Congressional intent when designing and implementing the National Strategy.

b. The Draft National Strategy Must Support Innovation in All Segments of the Lifecycle of Plastics

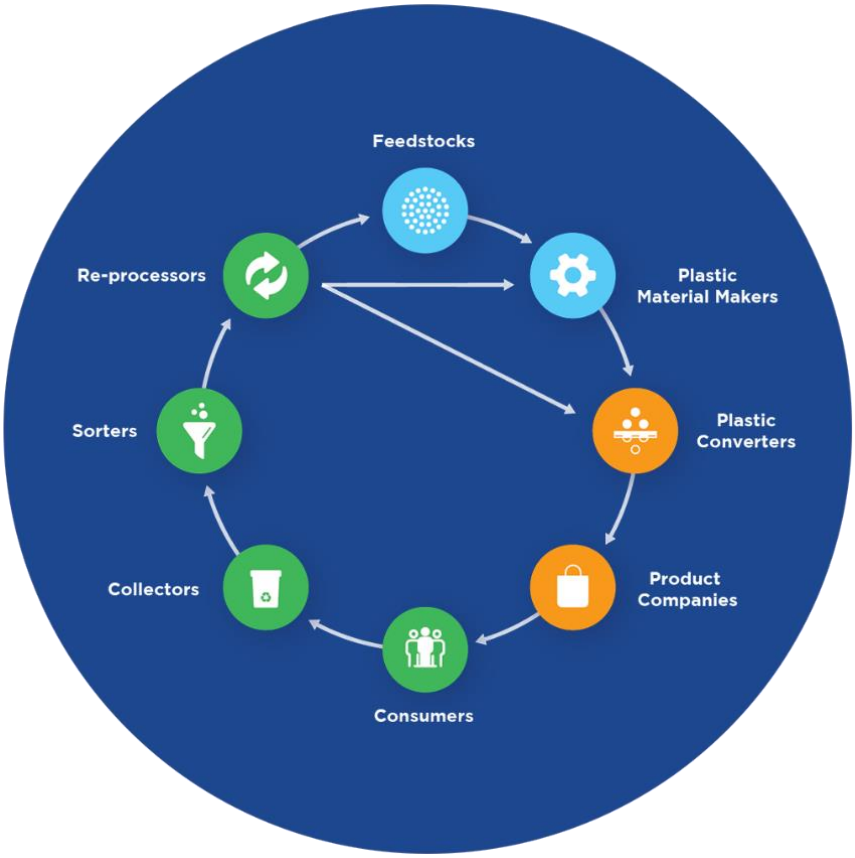
A successful Draft National Strategy must include policies and mechanisms that foster and enable innovation across the entire plastics value chain including product design, manufacturing, refurbishing, remanufacturing, waste management, waste recovery, and recycling. Policies must support and encourage technology deployment and scaling, such as improved waste sorting and advanced and mechanical recycling, to increase circularity of plastics. Such mechanisms can be enhanced and supported through public-private partnerships and blended finance. Policies must not only ensure access and improve waste management capacity in the U.S., but also for all countries, particularly those that have poor waste management systems that account for a large percentage of plastic leakage into the environment.

AFPM members are doing their part, investing in circularity across the globe and partnering with value chain partners to (re)design or incorporate recycled feedstocks into their

[23] *See* "Save Our Seas 2.0 Act." S.1982. Enacted December 18, 2020.

operations. In just the past few years the petrochemical and plastics industries invested in 33 projects that are operational, under construction, or planned to scale up recycling infrastructure globally valued at more than $16 billion.[24] EPA should support the development, scaling, and continued investment in such projects that enable circularity. EPA can do this by developing well-crafted policies that provide regulatory certainty. EPA can also provide a forum to engage all stakeholders, where stakeholders, across the plastics value chain, can learn from each other and develop partnerships.

Figure 1: Stakeholders in the Plastic Value Chain[25]
To achieve a truly circular economy it will require a group of diverse stakeholders working in concert towards a common goal. Figure 1 details the essential stakeholders needed to achieve circularity. Plastics recycling is key to creating a circular economy for plastics, in which plastics are sustainably produced, designed, used, reused, and recycled instead of discarded.



I. Product Design Will be Integral to Plastic Circularity.

Collaboration between product companies, consumer brands, plastic/petrochemical manufacturers, and plastics converters is necessary to design products that are easier to recycle and accepted in waste collection programs and is essential to create a circular economy. AFPM members frequently collaborate with their customers, including consumer brands and durable plastics purchasers, to meet their specific needs. Historically this collaborative process has focused on the development of higher performing, lighter weight, and more sustainable formulations of plastics to meet customer needs.

With demand for recycled content increasing, petrochemical and plastics manufacturers are collaborating with plastic converters and consumer product companies to incorporate

[24] *See* Global Partners of Plastics Circularity, *"*Tracking Our Progress*",* Accessed July 31, 2023.
[25] *See* Global Partners of Plastics Circularity, *"*Our Ambition*",* Accessed July 31, 2023.

circularity into the design of their materials. This includes simplifying packaging design and/or redesigning packaging so that materials are easier to separate, made of a single polymer, or free of colorings to make materials easier to recycle. It could include using novel ways to take the same polymer and give it the physical attributes that were part of a different polymer, forgoing the need to separate the individual parts of the packaging. AFPM members are committed to continuously evolving product design to enable more recycled content, and this should be a key part of a National Strategy.

II. Improved Waste Management is Foundational to Reducing Plastic Pollution and Achieving Circularity.

Creating universal access to collection and environmentally sound waste management is the first step toward circularity. Eliminating plastic pollution is not realistic until we close this gap and create a circular economy where used plastics are no longer perceived as waste, but rather a valuable feedstock. There are many types of plastics, and to effectively recycle materials (through either mechanical or advanced recycling) re-processers and petrochemical manufacturers need clean and sorted waste streams of specific polymers. Innovative technologies and systems are also needed (and are under advanced development) to sort plastics more efficiently and effectively, which is essential to create a circular economy. Sorting and processing post-consumer plastic are challenges, but innovation and the marketplace will help those steps evolve.

The U.S. will never achieve a circular economy until it improves its collection and sorting of used plastic products. Currently there are too many municipalities that have limited or no options for recycling. Most consumers want to and are willing to recycle. A significant challenge for many municipalities is the lack of funding for recycling programs. Collection is a significant policy challenge for recycling and EPA can play a significant role helping to overcome existing obstacles to increased recycling rates. Policies that enable and encourage all types of recycling will send a demand signal that can drive investment in waste management, as post-consumer use plastic would be viewed as a valuable feedstock.

III. Innovations in Recycling Provide an Opportunity to Increase Recycling Rates, Reduce Plastic Pollution, and Achieve Circularity.

Improved waste management is foundational to a circular economy as it can provide sorted and collected post-consumer plastic as a circular feedstock to petrochemical manufacturers and repurposers that then can be recycled into new materials. But waste management alone cannot create a circular economy and EPA needs to fully embrace an all-the-above approach when it comes to recycling technologies utilized. EPA should develop policies that encourage the use of recycling technologies, including advanced recycling technologies like pyrolysis, and avoid sending market signals that could hinder innovation and investment in recycling.

As noted above, in 2018 almost 3 million tons of plastics were recycled in the U.S. accounting for an 8.7 % recycling rate – for comparison, in Europe 32.5% of post-consumer

plastic is recycled.[26] To increase the volume and types of plastics that are recycled, chemists, material scientists, and engineers at AFPM member companies are focusing on the molecular composition of plastics and the potential of engineering processes and chemical reactions to open up a new world of plastic recycling potential—well beyond the traditional mechanical recycling many of us already know.

Advanced recycling (a family of technologies including chemical or molecular recycling) is a scientific process where heat and various catalysts are used to initiate reactions that return plastics to their original monomer building blocks, identical in structure to the original monomers, or as virgin feedstocks. This material can then be used as a substitute for virgin feedstocks. Once plastics are chemically converted back to monomer form, there are a much wider range of options for recycling and reuse. Advanced recycling expands the type and volume of plastics that can be recycled, including materials previously considered un-recyclable.[27]

Advanced recycling, as a complement to mechanical recycling, has the potential to increase recycling rates, help consumer brands meet ambitious recyclability and recycled content targets, reduce plastic pollution, and displace plastics derived from virgin feedstocks. A recent study notes that if existing constraints were resolved, advanced recycling could grow to 20 to 40 million metric tons and meet up to 8 percent of polymer demand by the end of the decade, providing investment opportunities of more than $40 billion.[28] The same study also suggests that while global polymer demand is set to increase over the next decades, embracing advanced recycling has the potential to decrease the use of virgin feedstocks.[29] In the US alone advanced recycling and recovery facilities have the potential to create thousands of jobs for skilled workers, result in as much as $4.3 billion in direct economic output per year and divert over 12 million metric tons of used, recoverable plastics from landfills each year.[30]

The Draft National Strategy and associated EPA actions on technologies utilized in recycling present a tremendous opportunity to foster circularity. That said, EPA can also create regulatory uncertainty and stifle the investment and development of advanced recycling technologies and in turn circularity. For example, recent EPA actions have created regulatory uncertainty on pyrolysis technologies.[31] Pyrolysis, often used for molecular recycling, is a process that uses heat without oxygen to avoid combustion. Pyrolysis breaks apart polymer molecules to form smaller molecules. This process can be repeated over and over with little to no degradation. Pyrolysis can also be used to process mixed post-consumer plastic and make a

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[26] *See* European Parliament. January 18, 2023. "Plastic waste and recycling in the EU: facts and figures."
[27] Learn more about the different types of advanced recycling "Closed Loop Partners - Advancing Recycling's Role in a Circular Economy" and the differences between mechanical and advanced recycling "AFPM Newsroom - Mechanical vs. advanced recycling — what's the difference?" Accessed July 31, 2023.
[28] *See* McKinsey & Company. Chart of the Day. June 16, 2022. "Ramping up recycling."
[29] *Id.*
[30] *See* American Chemistry Council. April 12, 2022. "The Potential Economic Impact of Advanced Recycling and Recovery Facilities in the United States."
[31] *See* 88 Fed. Reg. 36524. "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review; Withdrawal of Proposed Provision Removing Pyrolysis/Combustion Units" EPA-HQ-OAR-2003-0156 /FRL-7547.2-02-OAR. Published June 5, 2023, and 86 Fed. Reg. "Potential Future Regulation Addressing Pyrolysis and Gasification Units ," EPA-HQ-OAR-2021-0382 / FRL-7547-01-OAR Published August 8, 2021.

substance (called pyrolysis oil), which is a mixture of hydrocarbons in the naphtha range.[32] Since the pyrolysis oil is molecularly very similar to naphtha, it too can be directly fed into naphtha crackers to make the same base petrochemicals. The Draft National Strategy provides an opportunity to provide some regulatory certainty in this area of advanced recycling. AFPM urges EPA to view and consider advanced recycling as a solution to plastic pollution and not a problem.

c. The Draft National Strategy Inappropriately Focuses Only on Plastic and Excludes Other Waste Streams

The Draft National Strategy fails to accurately frame plastic pollution in the context of other mismanaged waste. This is important as the *Save Our Seas 2.0 Act* explicitly focuses on not only reducing mismanaged plastic waste but also other post-consumer materials in waterways and oceans. The Draft National Strategy discusses alternatives to plastics, mostly glass, metal, and paper products, but the document lacks context with respect to how much of each material is recycled, how much of each makes it into landfills, the direct and indirect GHG emissions of non-plastic alternatives, and how much of each is discarded as litter. Nor does the National Strategy include available information about the lifecycle environmental impacts of each material. EPA does acknowledge the need to conduct lifecycle analyses of the various materials; however, studies for a variety of materials already exist and those outcomes could be included in the National Strategy.

The National Strategy often points to consumption and waste figures but does not distinguish between managed and unmanaged waste in much of the narrative. The reliance on per capita plastic consumption figures is also concerning. A National Academy of Science, Engineering and Medicine ("NASEM") report on plastic pollution from 2022 (also required by the *Save Our Seas 2.0 Act*), which EPA relies heavily upon for much of the National Strategy's introductory information, provides a more holistic view of the problem in its section on post-consumer plastic leakage into the environment. [33]

The National Strategy mentions the global nature of the plastic pollution problem but does not provide many details on where the problem lies or the root causes of the global problem. It does state that the U.S. contribution is only 10.5 percent of total global post-consumer plastic, which is not even actual leakage into the environment.[34] The National Strategy does provide descriptions of how post-consumer plastic *could* get into waterways and the ocean, but it does not provide much data or region-specific information.

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[32] Naphtha from petroleum refining processes has been used as a feedstock to make petrochemical building blocks (Ethylene, Propylene, Butylene, Benzene, Toluene, and Xylene).

[33] The report estimates that between 1.13 to 2.24 million metric tons (MMT) per year of post-consumer plastic leak into the environment. This figure even includes exported plastic waste that is assumed to be mismanaged by the receiving country. The report estimates the amount that is leaked through litter (0.84 MMT/yr or 2% of plastic waste), the amount that is leaked through illegal dumping (0.14 to 0.41 MMT/yr), and the amount mismanaged by receivers of U.S. plastic waste exports (0.51 to 1.45 MMT/yr). *See* The National Academies of Sciences, Engineering, and Medicine. 2022. "Reckoning with the U.S. Role in Global Ocean Plastic Waste." Washington, DC: The National Academies Press. pp. 65-67.

[34] *See* U.S. EPA Office of Resource Conservation and Recovery. April 2023. "Draft National Strategy to Prevent Plastic Pollution: Part of a Series on Building a Circular Economy for All." EPA 530-R-23-006. p. 6.

To develop an appropriate strategy to combat ocean-bound plastic, a thorough understanding of the source of that plastic product is essential. Without that understanding it will be difficult to identify the right policies and programs to effectively reduce plastic pollution. AFPM urges EPA to reevaluate the underlying data and studies used to support the development of the National Strategy and to use objective data that frames plastic pollution as part of overall environmental pollution in order to have measurable progress against this challenge.

VI. Comments on the Draft National Strategy Goals and Scope

In this section AFPM provides our comments on the Goal and Scope proposed in the Draft National Strategy.

a. Goal of the Draft National Strategy

EPA's stated goal of the Draft National Strategy is to "identify actions needed to eliminate the release of plastic waste from land-based sources into the environment from littering and illegal dumping by 2040. This strategy aligns with, and supports, EPA's National Recycling Goal to increase the U.S. recycling rate to 50 percent by 2030."[35] AFPM supports the ambition of EPA's goal of eliminating the release of post-consumer plastic from land-based sources into the environment and focusing the Draft National Strategy on improvements in post-consumer plastic management and infrastructure is not only the most effective strategy to do so, but also in line with the intent of the *Save Our Seas 2.0 Act*. Further, any dates or targets should be guided by data and robust analysis.

EPA notes the Draft National Strategy "is promoting circular economy policies." The *Save Our Seas 2.0 Act*, the basis for this strategy, defines circular economy as "a systems-focused approach and involves industrial processes and economic activities that are restorative or regenerative by design, enable resources used in such processes and activities to maintain their highest values for as long as possible, and aim for the elimination of waste through superior design of materials, products, and systems (including business models)."[36] AFPM agrees that a key element to achieving this goal is creating a more circular economy for plastic products but believes EPA misses an opportunity to enable a circular economy through clear policies on all types of recycling. AFPM notes that both mechanical and advanced recycling processes clearly align with this definition and therefore should be supported as much as possible by the EPA in the Draft National Strategy.

AFPM members are at the forefront of the circularity movement as innovators and collaborators. Petrochemical companies support research and development on recycling technologies, enter joint ventures and partnerships for advanced recycling and post-consumer recycled feedstock debottlenecking projects, support municipal recycling facility improvements on collection and sorting, and collaborate elsewhere along the value chain on product design. AFPM members have also applied targeted chemistry to enable depolymerization. Advanced recycling is a manufacturing process and pyrolysis processes and depolymerization chemistries

[35] *Id* at 15.
[36] *Id* at 9.

are critical nodes in that manufacturing process. In the past several years, 24 states have passed bills regulating chemical recycling as manufacturing rather than waste management and these actions have provided needed regulatory clarity in those states. But more needs to be done federally and the Draft National Strategy must acknowledge and treat these processes the same as other manufacturing processes in its consideration of voluntary initiatives and policies.

b. Scope of the Draft National Strategy

When discussing the scope of the Draft National Strategy EPA notes the strategy is designed to support a circular economy through plastic recycling but it excludes "processes that convert solid waste to fuels, fuel ingredients, or energy from being considered as a recycling practice in the Draft National Strategy to Prevent Plastic Pollution and the implementation of the National Recycling Strategy."[37] EPA reaffirms that the Agency does not consider activities that convert non-hazardous solid post-consumer plastic to fuels or fuel substitutes ("plastics-to-fuel") or for energy production to be "recycling" activities.

AFPM understands EPA's exclusion of processes that post-consumer plastic to fuels, fuel ingredients, or energy from being considered as a recycling practice. We acknowledge that plastics to fuels is not "recycling" but rather a form of advanced "recovery." Additionally, in the scoping section of the draft strategy, EPA mentions its intention to require testing for impurities of pyrolysis oils that result from advanced recycling processes. Subsequently, in June EPA announced proposed rules under the Toxic Substances Control Act for 18 chemicals made from post-consumer plastic-derived feedstocks that would ensure they are free from unsafe contaminants before they can be used to make transportation fuels.[38]

AFPM will comment on current and future actions separately regarding these proposed rules. AFPM acknowledges EPA's authority to require testing as part of a Premanufacture Notice (submission; however, there are many questions about if and how data would be submitted, how often testing would be required (advanced recycling can be a batch process), how the data would be used by the Agency (a statutory requirement), if the testing is even necessary for carrying out the requirements of the statute, among others. EPA does not require continual testing and submission of data for other manufacturing feedstocks. The Agency states that there are "concerns" about contamination but does not detail the concerns in any meaningful way or identify the origin of these concerns, nor the expertise of those who are concerned.

AFPM members using pyrolysis oil in their operations already require extensive testing as part of quality assurance programs ensuring product quality and protecting their equipment. Any feedstock (circular or virgin) used to make base petrochemical building blocks must be free of contaminants to avoid unwanted chemical reactions that affect the quality of the resulting products. Pyrolysis oil from any source meets the same criteria as all other sources. Ethylene crackers are technically advanced equipment systems that are expensive to maintain and operate. Petrochemical manufacturers will not risk jeopardizing such equipment by introducing contaminants into their systems.

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[37] *Id* at 15.

[38] *See 88 Fed. Reg. 39804*, "Significant New Use Rules on Certain Chemical Substances (23-2.5e)," EPA-HQ-OPPT-2023-0245, FRL-10985-01-OCSPP, published June 20, 2023.

As an analogy, the propylene that comes from petroleum refining is not the same grade as the propylene that comes from a naphtha cracker. The refinery grade must be upgraded (purified) to chemical grade propylene (like that from the naphtha cracker) before it can be further processed into a polymer or other derivative. The same holds true for any feedstock used to make petrochemical building blocks. "Contaminated" feedstocks need to be upgraded before further processing; therefore, testing the pyrolysis oil from the advanced recycling unit and submitting the data to EPA will not yield useful information for the Agency. It will only tell the manufacturers that the pyrolysis oil needs to be upgraded before it is introduced into a cracker to make a product.

AFPM would like to emphasize that advanced recycling, as a complement to mechanical recycling, has the potential to increase recycling rates, help meet ambitious recycled content targets for consumer products, reduce plastic pollution, and displace or augment plastics derived from virgin feedstocks. If EPA's proposed Significant New Use Rules for pyrolysis oils were implemented as written, it would jeopardize the billions of dollars in potential recycling investments expected to be made in the United States during this decade.[39] It would slow the entry of recycled materials into the marketplace at a time when demand far exceeds supply. Furthermore, it will stifle American innovation because it will force players in advanced recycling into EPA's burdensome process for notice reviews and safety determinations for substances that have already been in the marketplace for decades.

VII. Comments on the Draft National Strategy Objective A: Reduce Pollution During Plastic Production

Objective A of the EPA's Draft National Strategy is to "Reduce Pollution During Plastic Production." However, when discussing this objective, EPA goes on to explain that to minimize "the associated environmental impacts of these plastics it is essential to reduce the increasing rates of both plastic production and consumption in the United States and to address pollution that occurs along the life cycle of plastics products." AFPM notes that the explanation does not match the plain language of the Objective A title and is misleading. AFPM urges EPA to reevaluate Objective A and suggests that "Objective A: Reduce Plastic Pollution by Increasing Circularity Throughout the Plastic Lifecycle" would be a better title and focus that would have a more meaningful impact.

AFPM notes that the petrochemical industry is highly regulated when it comes to preventing plastic pollution from entering waterways. In developing a National Strategy, EPA should consider the framework of current regulations and policies that exist under a variety of programs including but not limited to, the Resource Conservation and Recovery Act (RCRA), National Pollutant Discharge Elimination System (NPDES) and Clean Water Act (CWA) paired with voluntary industry programs like Operation Clean Sweep.

AFPM does not believe Objective A should be focused on reducing production and consumption, but rather supporting innovation and increasing circularity in all parts of the plastic

[39] *See* McKinsey & Company. May 16, 2022. "Advanced recycling: Opportunities for growth," By Zhou Peng, Theo Jan Simons, Jeremy Wallach and Adam Youngman. Accessed 7/31/2023.

lifecycle. AFPM supports the goal of reducing pollution during plastic production and member companies operate in compliance with the many local and federal requirements to do so. But plastic pollution during production, and along the early parts of the plastic lifecycle for that matter, are not significant sources of the overall plastic pollution, rather post-consumer management of plastic at the end of its' lifecycle is the real issue. The Draft National Strategy, however, begins with a discussion of production restrictions, product bans, and ways to reduce plastic consumption to reduce pollution which does not focus on the more significant sources of plastic pollution and lack of infrastructure to manage pollution. Congress, through the *Save Our Seas 2.0 Act*, charged EPA to reduce plastic pollution through improvements in waste management and infrastructure, not by eliminating or restricting plastic production.

AFPM does not support intervention in the marketplace through either production caps or polymer bans to reduce pollution. That is like limiting the production of automobiles to reduce highway traffic accidents. The National Strategy should focus on reducing plastic leakage into the environment and not limiting consumer choices. The first Objective of a successful National Strategy should focus on reducing plastic pollution by supporting innovation and increasing circularity in all parts of the plastic lifecycle. This could include mechanisms that foster innovations in product design, waste recovery, waste management, and increasing recycling.

Each Objective in the Draft National Strategy is sub-divided into additional sub-topics and again into further sub-topics. AFPM's response and comments follow.

A1.1 Identify single-use, unrecyclable, or frequently littered plastic products and identify alternative materials, products, or systems with fewer impacts on the environment.

Rather than focusing on eliminating products that Americans depend upon, EPA should focus on enabling circularity and informing consumers of the need to recycle plastics. In Objective A1.1., EPA suggests identifying and then communicating the types of products with adverse environmental impacts that would help shift consumption away from these products. EPA even suggests a "list of single-use, unrecyclable, difficult to recycle, or frequently littered plastic products that may be reduced or eliminated should be developed that can be integrated within company, government, and organizational purchasing policies and procurement guidelines."[40] EPA should reconsider this action, as branding certain products as problematic will not address waste leakage and could have other adverse impacts. Other strategies would be more effective in addressing plastic pollution. Specifically, EPA must first have an independent view of lifecycle impacts of plastics and non-plastic alternatives to avoid any unintended, adverse impacts of policy. Following that analysis, EPA can make more informed decisions. Consumer education will also play a role as well as creating systems that drive market demand for recycling and recycled products.

The factors that EPA is considering for a potential list are very subjective. For example, frequently littered plastics should not be a factor because littering is not material dependent. Because plastics are used more than other materials for food and beverage containers and wraps, it stands to reason that they would be found with greater frequency in litter samples. Before

[40] Id p. 17

plastics became ubiquitous, glass, paper, and cardboard were more frequently littered. Moving away from plastics will only result in different materials being littered. The behavior of littering and lack of infrastructure are the real problems and the material from which an item is made has little to do with a person's choice to litter unless that used item has monetary value. Better access to waste management or development of producer responsibility schemes provides better, and material-independent, mechanisms to effectively combat plastic pollution.

Recyclability should be based solely on scientific factors. The word "recyclable" itself indicates that if a material *can be* recycled, then it is recyclable. Recyclability has changed over time. What is recyclable today may not have been recyclable 20 years ago. The terms "unrecyclable" and "difficult to recycle" are also troubling because placing materials into these categories could stifle advancements in recycling technologies. Companies would be reticent to make the large investments required for advanced recycling for products that appear on a problematic list or branded as "unrecyclable."

EPA suggests a list should include "unrecyclable" or "difficult to recycle" plastics. EPA fails to even propose a definition for these terms, and this is concerning. Science should determine what is recyclable, not the federal, state, or municipal governments. The definitions of what is or isn't "recyclable" should be based simply on technologies existing that allow for a material to be recycled and not on the presence of end-markets or the willingness of municipalities to collect a material.

Creating a list to "guide" government or consumer purchases ventures into the category of government picking winners and losers in the marketplace. In July 2022 the Government Services Administration ("GSA") published a rulemaking regarding single-use plastics and packaging in government procurement. AFPM refers EPA to our comments to GSA on creating such product lists and notes that GSA's approach will not promote a circular economy.[41]

A1.2: Develop a plan to reduce single-use products across the federal government.

AFPM believes GSA, and not EPA, is best situated to address government procurement issues, but EPA should coordinate through the interagency review process with a focus of avoiding the unintended negative consequences of banning certain products.

The use of production restrictions or caps to reduce single-use products could have adverse impacts on the production of certain polymers used in multiple applications / supply chains (single-use and in durable plastics) and this could reverse advancements in sustainability. While EPA suggests that placing limits on the manufacturing of plastics would help stem the flow of plastics into the environment, such production caps risk taking a step backward for the environment, hampering the fight against climate change, and having no discernable effect on increasing plastics recycling, while causing massive disruptions in global supply chains. Production caps would reverse many sustainability advancements. Replacing plastics with other

[41] *See* American Fuel & Petrochemical Manufacturers. GSA-GSAR-2022-0014-1306, (*filed* September 29, 2022, and incorporated by reference hereto). "American Fuel & Petrochemical Manufacturers Comments on the Advanced Notice of Proposed Rulemaking on General Services Administration Acquisition Regulation (GSAR); Single-Use Plastics and Packaging"

materials in multiple applications – cars, insulation, packaging, low carbon energy – would increase greenhouse gas emissions and our environmental footprint.[42] A recent study found that four times more alternative material is needed (by weight) to perform the same function as plastics in many consumer products and packaging. This same study noted, the GHG emissions from plastic products, including single-use plastics, are significantly lower during their lifecycle compared to their alternatives.[43] Plastics also have significantly lower energy, water, and fertilizer inputs than alternative materials such as paper, aluminum, cotton, or glass.[44]

In a 2020 GHG emissions assessment, GHG emissions were lower than paper and metal alternatives in flexible nonfood packaging as well as flexible food packaging.[45] Further, when compared to plastic-enabled mixed materials such as paper milk cartons (with a plastic lid, spout or handle), products made entirely from plastics have similar GHG emission profiles.[46] In approximately 90 percent of applications (when considering both product lifecycle and impact from use), plastics have anywhere between "10 to 90 percent lower GHG emissions than the next-best alternative" material.[47] Moreover, studies show that in the near term, plastic adoption actually promotes decarbonization efforts, especially when food spoilage rates and energy efficiency are factored in.[48]

Plastics also provide benefits to human health and ensure use efficiencies by reducing the rate of food spoilage when compared to plastic alternatives.[49] Plastics are essential components in food packaging that promote food safety and security by preventing food loss, waste, and contamination.[50] Plastic is used ubiquitously in food packaging at a rate that includes 90 percent of all food products sold across several food categories, including fresh and frozen meat.[51] There are few alternatives to plastics in certain food and beverage packaging, specifically caps and closures.[52] AFPM strongly encourages EPA to consider how restrictions on production or bans of plastic products could negatively impact GHG emissions and food security and safety.

A1.3: Create an innovation challenge program to develop alternatives to single-use, unrecyclable, or frequently littered plastic products.

AFPM supports innovation challenges. EPA suggests that an innovation challenge program could promote and encourage the development of innovative alternatives to single-use, unrecyclable, or frequently littered plastic products. EPA notes that Section C of the *Save Our Seas 2.0 Act* establishes the Genius Prize for innovations that prioritizes projects that advance

[42] *See* McKinsey & Company. July 26, 2022. Climate impact of plastics. Retrieved August 16, 2022.
[43] *Id* p.3, 10.
[44] *See* Ritchie, H., & Roser, M. September 1, 2018. "Plastic Pollution." Our World in Data. Retrieved August 17, 2022.
[45] *See* McKinsey & Company. July 26, 2022. Climate impact of plastics. Retrieved August 16, 2022. p.6.
[46] *Id*. at 10.
[47] *Id.* at 2.
[48] *Id.*
[49] *Id.* at 4 and 18.
[50] Ritchie, H., & Roser, M. September 1, 2018. "Plastic Pollution." Our World in Data. Retrieved August 17, 2022.
[51] *See* McKinsey & Company. July 26, 2022. "Climate impact of plastics." Retrieved August 16, 2022. p.11.
[52] *Id*. at 5.

solutions that can help decrease plastic marine debris. In Section A.1.3 of the Draft Strategy EPA discusses the idea of innovation challenges similar to the Genius Prize.

As innovators and collaborators, AFPM members welcome the idea and have relevant experience and expertise; that said, we believe narrowing the scope of the challenge to "development of innovative alternatives to single-use, unrecyclable, or frequently littered plastic products" would undermine the goal of reducing plastic pollution. An innovation challenge should look across the entire value chain and include things like innovation in product design, improvement in waste management (including collection and sorting), and advancements in recycling. EPA can also learn from the U.S. Department of Energy's ("DOE") Strategy for Plastics Innovation which focuses on resources from across the DOE to create a comprehensive program to **accelerate innovations that will dramatically reduce plastic waste in oceans and landfills**. AFPM would also refer EPA to a recent report released by the Alliance to End Plastic Waste to highlight some of the innovations currently taking place across the globe.[53]

An EPA innovation challenge that more closely aligns with the Genius prize goals (*e.g.*, that prioritizes projects that advance solutions that can help decrease plastic marine debris) or more broadly, that rewards advancements and enable a more circular economy for plastics would be more beneficial and have a greater potential impact. AFPM looks forward to learning more about the various types of challenges that the Agency will consider.

A1.4: Identify effective policy tools and approaches to reduce production of single-use, unrecyclable, or frequently littered plastic products.

In Objective A.1.4, EPA notes that policymakers at all levels of government need to understand the impact that various policy tools and approaches have on the production of single-use, unrecyclable, or frequently littered plastic products, as well as the resulting environmental, economic, and social impacts. To this end they suggest that the federal government should conduct a study or literature review to identify effective policy tools and approaches and share the results broadly.

AFPM supports an approach that improves understanding of alternatives to reduce improperly discarded single-use plastics but does not support the production limitations or bans for the reasons discussed above. This review should not just be a literature review but include a review of other governments' actions, policies and approaches as well as industry efforts to reduce plastic pollution. And while the focus of this strategy is plastic, EPA's review should include a review of existing strategies already in use around other post-consumer materials such as paper, metal, glass, etc. This review could assess what worked to raise recycling and reuse rates for those products and apply them to plastics where appropriate.

A1.5: Set a new goal to reduce the production of single-use, unrecyclable, or frequently littered plastic products.

[53] *See* The Alliance to End Plastic Waste. June 2023. "Catalyzing Impact – Progress Report 2022."

AFPM does not support a national goal to reduce production of plastics. Market-based approaches are best to drive circularity. Policy has a role in sending markets signals, but ultimately market-based approaches have proven more successful. The demand for recycled plastics, especially from consumer brands and product manufacturers, far exceeds supply.[54] Consumers are ultimately driving the demand for recycled content in packaging; therefore, marketability is already inherent in recycled plastics throughout the manufacturing supply chain, no matter what the government thinks or does. Consumer product companies are already focused on sustainability, and coupled with consumer demand, have every incentive to increase the content of recycled materials in their product packaging. Increased recycling should be the national goal.

Reducing plastic production domestically will not increase recycling or reduce land-based plastic pollution globally.[55] Facilities produce petrochemicals and resins that go into many plastic products, both durable and single-use products. Blanket caps or restrictions on specific polymers or their precursors will have severe unintended consequences, as a manufacturer can't simply reduce the production of a specific polymer without impacting the many applications for that polymer and the different supply chains that depend on those inputs. For example, ethylene is used not only to make polyethylene, but is also a building block for myriad other organic chemicals that go into hundreds of applications and supply chains. Polyethylene is not only used to make plastic grocery bags, but also artificial hip sockets and military combat helmets and as such restrictions broadly on specific polymers can have wide ranging impacts.[56] As the use of circular feedstocks increases as a percentage of overall production, virgin feedstocks will naturally be replaced in those specific uses.

EPA should consider policies that foster circularity by providing the market with certainty regarding recycling. Well-designed programs that incentivize the reuse of post-consumer items have proven to be successful for other waste materials. A well-designed program must be operated on a net-cost principle and revenues should be reinvested in infrastructure to collect, sort and recycle plastic waste. Such programs enable communities to develop new enterprises utilizing materials that today are viewed as waste. EPA could provide resources and guidance on the elements of a successful program so that communities can develop solutions to post-consumer plastic that create new products, markets, and jobs, leading to local and regional supply chains that consume used plastics. In addition, EPA should embrace all recycling technologies. By doing this industry will continue the rapid investment in such technologies.

A2.1: Increase the availability of data on plastic products produced and perform life cycle assessments to better understand the health, environmental, social, and economic impacts of plastic products and their alternatives.

[54] Closed Loop Partners found that the current supply of recycled plastics meets just 6% of demand for the most common plastics in the U.S. and Canada. See the introduction to their data visualization tool here.
[55] It should be noted that production caps could inadvertently push petrochemical production out of the U.S. and into nations with less stringent environmental and waste management regulations.
[56] Learn more about the wide range of materials and applications derived from petrochemicals that could be impacted with overly broad restrictions at AFPM EMPOWER "What's Made with Petrochemicals?"

The U.S. and global petrochemical and plastics industries are committed to transparency about our products. Objective A2.1 calls on manufacturers to increase the availability of data on plastic products produced and perform life cycle assessments to better understand the health, environmental, social, and economic impacts of plastic products and their alternatives. A wide array of chemicals are added to plastics to ensure their required function and performance, including plasticizers, flame retardants, pigments, antioxidants, stabilizers, antistatic, nucleating agents, and inks. These substances are critical to the function and performance of plastic products. These chemicals are registered and evaluated for safety under domestic chemical management programs by a multitude of agencies and product regulatory systems including EPA, the U.S. Food and Drug Administration, and other agencies.

Global regulations and in the U.S. identify substances of concern and limit specific uses of those substances to mitigate risks to human health and the environment. AFPM supports the establishment of science- and risk-based chemical management systems in all countries as plastic products move globally. AFPM would support the development of a global ingredient transparency database as this would account for global differences in chemical regulation. EPA could support the development of this effort considering chemicals currently in commerce.

Objective A.2.1 also calls on plastic manufacturers to conduct lifecycle analyses of their products. The Draft Strategy also highlights "[s]pecific attention should be given to areas where gaps exist in our understanding of plastic products and alternative materials (e.g., paper, glass, cardboard, metal)." AFPM supports lifecycle analysis of materials but agrees that a gap analysis identifying knowledge gaps may be a reasonable first step. AFPM also notes that is exceedingly difficult for manufacturers to conduct Lifecycle Analysis ("LCAs") for base resins (or additives) that have myriad final applications. To insist on LCAs for all possible uses would be an extraordinary misallocation of resources for manufacturers. AFPM also suggests NASEM conduct any lifecycle or gap analysis.

A2.2: Review, develop, update, and use sustainability standards, ecolabels, certifications, and design guidelines that decrease the environmental impacts of plastic products across their life cycle.

The Federal Trade Commission ("FTC") issued a request for comment on its "Guides for the Use of Environmental Marketing Claims" ("Green Guides") which help marketers avoid making environmental marketing claims that are unfair or deceptive.[57] AFPM refers EPA to our comments to FTC on updating the Green Guides and notes AFPM supports the objectives of the FTC review and believes updates to the Green Guides are warranted given the evolution of the petrochemical industry and the scaling and implementation of new sustainable technologies to improve recycling.

AFPM believes FTC, and not EPA, is best situated to help inform consumers about the recyclability of products, but EPA should coordinate through the interagency review process with a focus of enabling a circular economy for plastics. Ultimately, consumers should be

[57] *See* 87 *Fed. Reg.* 77766, "Guides for the Use of Environmental Marketing Claims," FTC-2022-0077, published December 20, 2022.

accurately informed about the products they buy and be free to decide for themselves what type of products they want to purchase.

A2.3: Review and improve government purchasing criteria to reduce life cycle environmental impacts from plastic products in government purchasing.

As noted above in our comments, AFPM believes GSA should take the lead in addressing government procurement, with EPA in a supporting role.

A2.4: Conduct evaluations to ensure that production facilities within the plastic sector are in compliance with applicable federal, state, Tribal and local regulatory requirements.

The petrochemical and plastics industries are highly regulated. AFPM is concerned that the Draft National Strategy implies that there are issues in plastics production industry (fires, explosions, leaks during production & transit) that are not already captured in existing regulation. Whether it be from an environmental, worker safety, or product safety perspective, the U.S. petrochemical and plastics industries are some of the most stringently regulated in the world.

Numerous statutes and regulations regulate all aspects of plastic production. Petrochemical manufacturers, resin producers and plastic makers are regulated from facility development to operation and expansion. Stringent EPA regulations cover our permitting, emissions, water usage, and handling of waste and more. That said, the objectives under A.2. seem to suggest, with no specific or stated support, that there is a deficiency in the regulation of petrochemical and plastics facilities. Objectives under A.2., including A.2.4, are also duplicative as many of the actions suggested are already underway. Congress has given EPA ample authority under a variety of environmental laws to regulate those facilities and to enforce those regulations. In those statutes, Congress has also given direction on the frequency in which those regulations should be reviewed and updated.

A2.5: Map existing and proposed plastic production facilities, as well as evaluate their environmental justice and public health impacts on neighboring communities.

AFPM members are committed to being a valuable part of the communities in which they operate. AFPM members engage with their community members and neighbors in a variety of ways to ensure concerns are addressed. Regarding manufacturers' efforts to prevent plastic pollution where they operate, AFPM members participate in programs designed to limit plastic leakage into the environment such as "Operation Clean Sweep."[58] Objective A.2.5 suggests that EPA map existing and proposed plastic production facilities, as well as evaluate their environmental justice and public health impacts on neighboring communities.

But some aspects of this objective are duplicative and/or beyond the intent of the *Save Our Seas 2.0 Act* on which the Draft Strategy is based. EPA has already developed an

[58] *See* "Operation Clean Sweep." Accessed July 31, 2023.

environmental justice mapping and screening tool called "EJScreen," so it is unclear if the Agency is suggesting a new tool or simply wider use of "EJScreen."[59] Given this National Strategy is in response to the *Save Our Seas 2.0 Act* mandate, any evaluation related to the National Strategy should be specifically focused on preventing "plastic waste and other post-consumer materials in waterways and oceans." AFPM urges EPA to tailor the scope of the Draft National Strategy to match the Congressional authorization.

A2.6: Develop methods to measure reductions in greenhouse gas emissions from the life cycle of plastic products and alternative materials as part of meeting global, national, and state greenhouse gas emissions goals.

Similar to Objective A.2.5, Objective A.2.6 also expands the scope of the Draft National Strategy to include reducing GHG emissions rather than advance the true goal of that law to reduce plastic pollution through improvements in waste management and infrastructure. Specifically. A.2.6 suggests EPA "develop methods to measure reductions in greenhouse gas emissions from the life cycle of plastic products and alternative materials as part of meeting global, national, and state greenhouse gas emissions goals." Petrochemical manufacturers, resin producers, and plastic makers comply with extensive air regulations and their facilities have air monitoring systems that often go beyond what is required by regulation. While EPA can, and is, addressing GHG emissions in other areas, we believe this strategy should be focused on preventing plastic pollution, the stated goal of the *Save Our Seas 2.0 Act*.

A2.7: Coordinate domestic and international interests to support the development of international standards, including product labelling, to increase the circularity of plastic products.

AFPM and its members are actively participating in UNEP negotiations to develop an international agreement that will address plastic pollution.[60] AFPM members encourage EPA's continued participation in these negotiations as part of the U.S. delegation. In this and other international forums (*i.e.*, Basel), EPA should support policies that enable and encourage circularity as a foundational element of any "National Strategy" to prevent plastic pollution. Given the global nature of the plastic value chain and the plastic pollution issue it is important that we have globally harmonized standards that are ambitious yet implementable, encourage all forms of technology and infrastructure and address consumer behavior through education.

VIII. Comments on the Draft National Strategy Objective B: Improve Post-Use Materials Management

EPA suggests the U.S. "employ more circular approaches to reduce the life cycle environmental impacts of plastic products."[61] While EPA's National Recycling Strategy extensively identified actions to improve the U.S. recycling system, the Draft National Strategy

[59] *See* "EJScreen: Environmental Justice Screening and Mapping Tool." Accessed July 31, 2023.
[60] *See* United Nations Environment Program "UNEA Resolution 5/14 entitled "End plastic pollution: Towards an international legally binding instrument," Published May 10, 2022.
[61] *See* U.S. EPA Office of Resource Conservation and Recovery. April 2023. "Draft National Strategy to Prevent Plastic Pollution: Part of a Series on Building a Circular Economy for All." EPA 530-R-23-006. p. 23.

to Prevent Plastic Pollution suggests further increases in circularity can be achieved by developing:

- Reuse systems for plastic and alternative products,
- Composting systems for certified compostable materials, and
- Increased public outreach and education on proper management.

AFPM provides further comment on the Objectives in each subsection below.

B1: Conduct a study of the effectiveness of existing public policies and incentives upon the reuse, collection, recycling, and conservation of materials.

AFPM believes that effective plastic waste management is foundational to developing a circular economy for plastics. Furthermore, this should be the area upon which the National Strategy places its greatest emphasis because it is the area in which EPA has identified littering and illegal dumping as major reasons for plastic pollution and can be the most effective. Through education EPA can drive public behavior. Objective B.1 calls on EPA to conduct a study of the effectiveness of existing public policies and incentives upon the reuse, collection, recycling, and conservation of materials. AFPM fully supports this endeavor and suggests focusing this study be focused on what constitutes a successful well-designed program that incentivizes the reuse of post-consumer items.

Well-designed programs that incentivize the reuse of post-consumer items can be a powerful tool to address various types of waste and have been proven to be successful. Such programs require producers to manage the entire life cycle of the products they manufacture and are designed to fund the recovery, reuse, and end-of-life processes of the products producers create, especially in terms of hard-to-recycle goods. A functioning and successful program monitors progress towards targets and goals for recycling rates and ensures success by funding the necessary infrastructure to make that happen. Furthermore, a successful program is modifiable and material neutral with the end goal of keeping all waste out of the environment.

AFPM supports EPA efforts to study programs that incentivize the reuse of post-consumer items and other incentive programs for the reuse, collection, recycling, and conservation of materials. AFPM notes that there is considerable literature in this area as well as experience and examples of other post-consumer programs which could be a source of information on what works and what does not. EPA should also consider consumer choice as an element of such a study or review.

B2.1: Provide funding to communities to create and implement plans to facilitate reuse that have a greater need for support.

AFPM believes this objective could be contingent on the results of the study in Objective B.1. Further, any funding commitments should be tied to, and supported by the study. AFPM notes that successfully developed post-consumer programs must be self-sustaining and make the need for outside funding unnecessary.

B2.2: Research and identify obstacles to reuse and propose innovative, viable solutions.

A successful study on the effectiveness of existing public policies related to the reuse and recycling of post-consumer materials must identify obstacles to implementation. AFPM believes objective B2.2 should be incorporated into the study in Objective B.1 and thus this objective is premature.

B.3: Facilitate more effective composting and degradation of certified compostable products.

The Draft National Strategy notes that certified compostable products can replace plastic products in some cases but, composting programs and infrastructure are not readily available across the United States, and not all composting facilities accept or can effectively process certified compostable products. EPA then devotes Objectives B3.1 – B3.6 to policies and actions related specifically to compostable products. AFPM members predominately focus on manufacturing petrochemicals, polymers, and plastics and not compostables, therefore we have no comments on these objectives.

B.4.1: Increase awareness and availability of public and private sector funding for improvements to recycling and collection programs, and strategies for accessing this funding.

AFPM supports objective B4.1. As EPA correctly notes effective collection of waste materials decreases the leakage of plastic products into the environment and Objective B.4. is focused on solid waste collection. Grants, including those authorized by the *Save Our Seas 2.0 Act*, can be used to support improvements in local post-consumer materials management and infrastructure and recycling programs and to assist local authorities in making improvements to municipal waste management systems. Funding support for communities where recycling collection rates may be low, specifically in rural populations or in economically disadvantaged communities, can have a positive impact on the reduction of mismanaged post-consumer plastic. EPA has the opportunity to be a valuable resource for communities looking to access both public and private sector funding for waste management improvements.

B4.2: Fund research, development, demonstration, and deployment of technologies and processes that ensure that collected waste enters and stays in the waste management system.

AFPM generally supports research, development, demonstration, and deployment of technologies and processes that ensure that post-consumer plastic is collected and stays in the waste management system detailed in B4.2. That said, the Draft National Strategy is unclear where this funding will come from or on the specific focus. AFPM suggests EPA provide further details on the proposed source of funding and purpose.

B4.3: Develop guidance and recommendations for efficient, cost-effective, and locally appropriate solid waste collection techniques.

Objective B4.3 suggests EPA provide guidance and recommendations for efficient, cost-effective, and locally appropriate solid waste collection techniques that encourage proper disposal and prevent loss, including recommendations for bin placement, bin containment

systems, and bin labeling. AFPM supports the development of such guidance along with guidance and best practices informed by the study in Objective B1 towards a circular economy that includes plastic.

B4.4: Perform an environmental justice assessment for non-hazardous solid waste management facilities, including recycling facilities, incinerators, landfills, and chemical recycling facilities, and for other emerging or novel processes.

Under Objective B.4.4, EPA would perform an environmental justice assessment for non-hazardous solid waste management facilities, including recycling facilities, incinerators, landfills, and chemical recycling facilities, and for other emerging or novel processes. Specifically, EPA is doing this study to discourage or disincentivize any technologies or processes that: (i) increase air pollution; (ii) increase the generation of hazardous wastes; (iii) fail to use a circular economy approach that is restorative or regenerative by design; or (iv) maintain or increase pollution in communities that are already overburdened.

Through Executive Order 14008 and EPA's stated focus on environmental justice the assessment of non-hazardous solid waste management facilities, including recycling facilities, incinerators, landfills, and chemical recycling facilities is already being conducted through permitting new or expanded facilities.[62] AFPM believes its' inclusion here is duplicative.

As noted earlier in these comments, EPA should be encouraging and not hindering technologies that enable circularity. Pyrolysis and gasification are essential manufacturing technologies that advanced recycling facilities and petrochemical manufacturers use to convert post-use plastic into feedstocks that can be transformed into polymers and manufactured into high-quality plastics with the same or similar physical properties as virgin materials. AFPM refers EPA to our previous comments on the issue of pyrolysis and gasification.[63] The National Strategy must acknowledge and treat these processes the same as other manufacturing processes. While AFPM does not oppose environmental justice assessments and analysis of these processes, we urge EPA to act expeditiously and avoid actions that cause regulatory uncertainty like the withdrawal of a related rulemaking associated with EPA's Other Solid Waste Incineration Units Review.[64]

AFPM also notes that a recent RCRA program, the Community Engagement and Technical Assistance Program ("CETA") can address community concerns by supporting opportunities for community engagement and technical assistance; facilitating transparent and open communication; and providing the information and tools to make informed decisions. CETA also empowers communities with environmental justice concerns to make independent judgements about environmental matters that impact their lives.[65] Using this existing engagement

[62] *See* The White House. "Environmental Justice." Accessed July 31, 2023.
[63] *See* American Fuel & Petrochemical Manufacturers. EPA–HQ–OAR–2021–0382; FRL–7547–01–OAR, *filed* December 23, 2021. "Comments on Potential Future Regulation Addressing Pyrolysis and Gasification Units."
[64] *See* 88 *Fed. Reg.* 36524, "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review; Withdrawal of Proposed Provision Removing Pyrolysis/Combustion Units," EPA-HQ-OAR-2003-0156 / FRL-7547.2-02-OAR, published June 5, 2023
[65] *See* US EPA 530-F-23-003. June 2023. "Resource Conservation and Recovery Act Community Engagement and Technical Assistance Program."

pathway, could more expeditiously advance the National Strategy rather than creating an alternative choice for the public that could dilute engagement and input.

B4.5: Assess the social costs of plastic waste (including litter cleanup) and how those costs could be reduced via reduction/prevention solutions.

Under Objective B.4.5 EPA would assess the social costs of plastic pollution (including litter cleanup) and how those costs could be reduced via reduction / prevention solutions. AFPM requests additional details on this proposal as it is unclear what specifically this objective is proposing and how it differs from other elements of the Draft National Strategy. In addition, EPA should not limit an assessment to just the social cost of plastic pollution but also social benefits of plastics and social benefits in the form of jobs associated with circular economy for plastics. Further, EPA should not limit the assessments just to "reduction / prevention solutions" but also consider "reuse" and "recycling" solutions.

B4.6: Explore the development of an accredited, voluntary third-party certification program for plastic recyclers to increase the safe and effective management of plastic recyclables in the United States.

AFPM supports both B4.6 and B4.7 as they seem to work in tandem and support needed chains of custody to ensure the validity of recycled content claims. Specifically, EPA plans to explore the development of an accredited, voluntary third-party certification program for plastics recyclers to increase the safe and effective management of plastic recyclables in the United States. AFPM also supports certification programs and technologies, such as ISCC+ and blockchain that can track the molecules and chemicals used in products along the value chain, including their end-of-life disposal and recycling, to facilitate proper management.[66] AFPM suggests EPA engage the business community as there are programs in development that could be used or serve as a model for a new program.[67]

B4.7: Standardize measurement and increase data collection.

In B4.7, EPA calls to standardize measurement and increase data collection in conjunction with Objective E ("Standardize measurement and increase data collection") of EPA's National Recycling Strategy. To help end additional plastic pollution and accelerate a circular economy for plastics, we need actions by all stakeholders that are measurable and uniform. Standards definition and terminology are key to ensure accurate tracking and reporting of progress towards circularity goals. AFPM supports this initiative but encourages EPA to engage stakeholders across the post-consumer materials value chain to help develop meaningful and standardized definitions, terminology, and measurements.

[66] *See* International Sustainability & Carbon Certification. "Leading the Transition to a Circular Economy and Sustainable Bioeconomy."
[67] *See* Plastics Today. Plastics Today Staff. August 12, 2021. "Blockchain Traceability for Recycled Plastic Waste Revealed," and Bloomberg. Chris Malloy. March 18, 2021 "Even Garbage Is Using Blockchain Now."

B5.1: Identify effective ways to increase public understanding of waste reduction, materials reuse, and composting options.

Consumers play a pivotal role in determining how plastic products are used and disposed of, and to this end EPA Objective B.5 is focused on messaging and consumer perception. EPA's focus in the draft document should be to prevent plastic pollution per the *Save Our Seas Act 2.0* and focus on items in EPA's direct regulatory charge. This focus should extend to EPA's communications effort to increase awareness of waste reduction, materials reuse, and composting options.

It should be noted that the recycling infrastructures differ so greatly across the U.S., and something deemed "recyclable" in one city or town may not be in a vast number of other locations, regardless of whether the material is scientifically able to be recycled. Put another way reasonable accessibility to end-markets should not determine what is "recyclable", science should. That said, much of waste management is local, therefore EPA may want to focus their efforts on best practices and guidance that local municipalities can use to increase post-consumer material collection, reuse and recycling as well as communicate potential programs and funding options for these municipalities to use.

B5.2: Increase awareness among businesses of the FTC's "Green Guides".

As noted above, AFPM believes FTC, and not EPA, is best situated to help inform consumers about the recyclability of products, but EPA should coordinate through the interagency review process with a focus of enabling a circular economy for plastics. EPA also can promote awareness of the FTC guidelines but should not focus considerable resources on this as they are widely used and understood by the business community. Ultimately, consumers should be accurately informed about the products they buy and be free to decide for themselves what type of products they want to purchase.

With respect to the FTC Green Guides, AFPM supports the goal of preventing misleading environmental marketing claims and filed comments on this docket. AFPM also supports certification programs that use science-based approaches, such as mass balance, to make it easier for consumers to recognize legitimate claims. AFPM finds troubling, however, the statement that an item cannot be considered recyclable "unless recycling facilities for those products are available to a substantial majority of consumers."[68]

B5.3: Review plastic resin identification codes to determine if changes are needed to reduce confusion around the recyclability of plastic products.

Regarding plastic resin identification codes, recyclability should be based on science and technology, not on the decisions of municipalities or recycling centers or other end markets. For instance, polystyrene is fully recyclable; in fact, it is one of the first materials to successfully undergo molecular recycling at commercial scale. For some inexplicable reason, many

[68] U.S. EPA Office of Resource Conservation and Recovery. April 2023. "Draft National Strategy to Prevent Plastic Pollution: Part of a Series on Building a Circular Economy for All." EPA 530-R-23-006. p 28.

communities do not collect polystyrene or recycle it. This has led to confusion by the public over recyclability because polystyrene used to be collected and recycled. The same holds true for glass containers. Although they are not plastic, it is still a relevant example of confusion among consumers. Many communities no longer pick up glass containers, even though they are fully recyclable. In the end, plastic resin identification codes should be permitted on materials that are capable of being recycled.

B6.1: Support the Basel Convention.

The Basel Convention requires parties to control the transboundary movements of certain materials and hazardous wastes covered by the treaty, and to take measures to prohibit certain exports if parties have reason to believe the exports would not be managed in an environmentally sound manner. Plastic scrap and waste amendments were adopted by Parties to the Basel Convention in 2019 to control exports and imports of most plastic scrap and waste. As a result of these changes, transboundary movements of most plastic scrap and waste to countries party to the Convention are allowed only with the prior written consent of the importing country and any transit countries, a process known as prior notice and consent.[69] The amendments took effect on January 1, 2021. The recent plastic waste amendments have restricted the United States' ability to trade post-consumer plastic and scrap unless the U.S. has a bilateral trade agreement (under Article 11) allowing the transboundary movement of non-hazardous post-consumer plastic and scrap (The U.S. has other Article 11 agreements with Canada, Mexico, Costa Rica, Malaysia, and the Philippines).

Given the growing importance of the movement of post-consumer plastic as a potential feedstock for mechanical and advanced recycling processes, the Basel convention plays an even larger role in global plastic pollution discussions. AFPM supports increased engagement globally by the EPA on how to address the movement of post-consumer plastic, particularly to enable circularity including through the Basel Convention. This will become particularly important as UNEP's global agreement on plastic waste to the marine environment progresses.

B6.2: Encourage environmentally sound management practices to support protection of human health and the environment.

AFPM encourages EPA to identify ways to enhance practices to ensure that environmentally sound management of scrap and recyclable materials can benefit circular economy approaches. This should specifically include consideration of advanced recycling as an environmentally sound management practice and determination when processed, sorted, cleaned, bailed plastic waste ceases to be subject to trans-border movement restrictions under the Basel Convention. Regarding advanced recycling as an environmentally sound management practice, lack of recognition domestically could place the U.S. at a competitive disadvantage to other nations and regions who have embraced these technologies. Further, a clear understanding and global agreement on when processed, sorted, cleaned, bailed plastic waste ceases to be a waste would help the movement of post-consumer plastic and help view it as a valuable commodity as

[69] *See* "International Agreements on Transboundary Shipments of Hazardous Waste." Accessed July 31, 2023.

opposed to waste. Both these actions would send demand clear signals to industry to continue investing in recycling technologies.

IX. Comments on the Draft National Strategy Objective C: Prevent trash and micro / nano-plastics from entering the waterways and remove escaped trash from the environment.

Under Objective C, EPA notes that it is necessary to prevent littering and to ensure that trash (including plastic) and micro / nano-plastics do not enter waterways. EPA cites actions including implementing programs to reduce littering and illegal dumping; installing trash-capture technologies to collect and remove trash from stormwater, wastewater, and surface waters; and increasing street sweeping to remove trash before it is carried by stormwater or wind into waterways. In general, AFPM supports the high-level action under Objective C, with EPA assuming the following tasks:

- Identifying policies and compliance assurance actions that effectively prevent trash / micro / nano-plastics from getting into waterways or removing such waste from waterways once it is there,
- Funding research, development, deployment, and maintenance of existing and new technologies that capture micro/nano-plastics in stormwater and wastewater,
- Exploring the possibility of a national tracking and reporting plan that would produce estimates of the amounts, types, and locations of materials that enter waterways or oceans, and
- Supporting the development of Best Management Practices regarding microplastics and effluent.

Currently, EPA along with other federal agencies have policies and programs under the CWA that are designed to prevent trash/ micro / nano-plastics from getting into waterways and EPA Objective C1 is focused on addressing waste in waterways.

C1.1: Conduct analyses on the cost, effectiveness, and equity of policies / programs addressing the problems of litter, illegal dumping, and unintentional spillage of trash, in particular in disadvantaged and vulnerable communities.

Throughout the Draft National Strategy EPA suggests elevation of existing programs and policies, and under Objective C.1.1, EPA specifically suggests an evaluation of litter, illegal dumping, and unintentional spillage of trash. AFPM supports continued evaluation of programs to ensure effectiveness and better understanding as it relates to environmental justice concerns previously proposed in subsection A.2.5 earlier. Like other evaluations suggested, this evaluation can provide EPA with an understanding of the effectiveness of the existing program and uncover areas that may need to be improved to achieve program and policy goals.

C1.2: Explore expanded use of CWA authorities to significantly reduce trash loadings into waterways.

Under Objective C1.2 EPA suggests the need to explore expanded use of CWA authorities to significantly reduce trash loadings into waterways. As written, this is overly broad and unclear. AFPM points out current regulations and voluntary efforts have gone a long way to reduce industry releases into waterways. AFPM notes that in 1990, the EPA developed permitting regulations under NPDES to control stormwater discharges associated with eleven categories of industrial activity. As a result, NPDES permitting authorities, which may be implemented either by the EPA or a state environmental agency, issue effluent discharge and stormwater permits to control runoff from these industrial facilities. Two sectors include plastics, synthetics and resins manufacturing in addition to rubber and miscellaneous plastic products. Requirements include the development of a stormwater pollution prevention plan ("SWPPP") and implementation of best management practices ("BMPs") to minimize exposure of potential pollutant sources to stormwater, including plastic materials. Furthermore, as previously mentioned Operation Clean Sweep is a long-established program that has developed BMPs and elicited strong commitments from multiple manufacturers.

There is no need to explore expanded CWA authorities, rather EPA could utilize current authorities and prioritize the use of current CWA programs to include plastic pollution. EPA already does this, for example, NPDES permits issued by the EPA typically contain conditions prohibiting the discharge of floating solids. AFPM also notes that the Organic Chemicals, Plastics and Synthetic Fibers ("OCPSF") Effluent Guidelines and Standards are already addressed in current guidelines and are frequently reviewed. EPA should only explore expanded authority if the analysis proposed in Objective C.1.2. identifies deficiencies in the current programs or if BMPs developed under Operation Clean Sweep would prove beneficial being required.

C1.3: Provide technical assistance to include new or improved trash reduction / removal actions and provisions in watershed plans, stormwater management plans, area management plans, and other related plans.

AFPM supports EPA providing technical assistance for improved trash reduction / removal actions and provisions in watershed plans, stormwater management plans, area management plans, and other related plans. EPA correctly notes that communities that are already overburdened may need further support to incorporate effective trash mitigation actions into existing plans based on findings in objective A2.5. EPA could provide guidance, and/or a framework, and this could work in tandem with similar suggested guidance for establishing potential product stewardship schemes.

C2.1: Identify and address potential barriers to installing and maintaining effective trash and micro / nano-plastic capture systems.

EPA notes that installing and maintaining effective trash capture technologies in waterways or as part of wastewater and stormwater conveyance systems requires understanding financial, technical, and environmental factors such as capital and operational costs, installation and maintenance needs (including the need for training), device siting, hydrology, ecological impacts and other variables that may potentially affect the amount of trash captured. As such

they suggest a review of these factors to identify potential barriers for more effective source reduction efforts. AFPM supports this effort.

C2.2: Fund research, development, demonstration, deployment, and maintenance of existing and new technologies and processes that capture trash or micro/nanoplastics in waterways, stormwater, and wastewater.

As with other mentions of increased funding, the Draft National Strategy is unclear where this funding will come from or on the specific focus. Throughout the Draft National Strategy, AFPM suggests EPA provide further data on the proposed source of funding and clearly define the purpose.

C3.1: Explore the possibility of a national tracking and reporting plan that would produce estimates of the amounts, types, and locations of materials that enter waterways or oceans.

In this objective, EPA suggests a system for measuring and monitoring loadings of trash, especially plastic waste, in U.S. waterways would be helpful to support the development of effective and targeted mitigation strategies. AFPM finds the description of this proposal vague. We would urge EPA not to single out post-consumer plastic and explore ways to provide a materials neutral look at trash entering waterways. In addition, we suggest if EPA pursues this, they explore the "feasibility" not the "possibility" of a national tracking and reporting plan as this effort would likely be complex and could yield misleading or inaccurate results. EPA can look to Chapters 5 and 6 of the NASEM 2022 report on plastic pollution for guidance.[70] In addition EPA could look at build on the National Oceanic and Atmospheric Administration Marine Debris Program.

C3.2: Evaluate opportunities for using more precise modeling approaches to establish a baseline for the amounts and types of materials that escape into U.S. waterways and oceans.

EPA notes that "some researchers have already developed models that could be used to estimate the amounts of various types of trash that escape into waterways, but the accuracy of these models could be improved with more refined modeling approaches." Unfortunately, EPA does not present what models they are referring to, and that said improvements of such models could be beneficial. AFPM would not oppose such a review but would suggest such a review be conducted with transparency to all stakeholders to maximize learnings and engagement and consider all types of materials that escape into U.S. waterways and oceans. We also encourage EPA to solicit NASEM to continue research on the "Physical Transport and Pathways to the Ocean," as outlined in Chapter 4 of the NASEM 2022 study and referenced in the EPA Draft National Strategy.[71] Lastly, AFPM urges EPA to work with all stakeholders to ensure the validity and reliability of the data collected and modeling systems used to encourage expeditious use of a data-driven set of solutions.

[70] *See* The National Academies of Sciences, Engineering, and Medicine. 2022. "Reckoning with the U.S. Role in Global Ocean Plastic Waste." Washington, DC: The National Academies Press. pp. 89-140.
[71] *Id* at pp. 77 - 88

C3.3: Disseminate information on trash assessment protocols and the appropriate usage of these protocols.

AFPM supports EPA using communication channels to educate stakeholders about available assessment protocols, including information about the appropriate usage for each protocol and how data from different protocols might be effectively used. Stakeholders should be encouraged to use trash assessment protocols as a standard part of their cleanup and trash capture efforts to inform potential interventions. We also encourage EPA to continuously evaluate the accuracy of such protocols.

C4.1: Develop messaging and educational materials about the nature and impacts of trash pollution and what targeted audiences can do to help address the problem.

As a complement to Objective B5, which focuses on education on proper waste management, EPA suggests there is a need for public outreach education efforts to reduce littering and illegal dumping and EPA Objective Section C4. is focused on messaging and consumer perception, increasing public awareness of the impacts of plastic products and other trash in waterways.

While in the context of B5, AFPM has suggested EPA defer to FTC, in the case of Objective C4 we believe there is a role for EPA to play in educating the public on littering. AFPM generally supports the efforts under C.4.1 – C.4.3, but EPA's public awareness focus should be on littering and not illegal dumping. The behavior of individuals illegally dumping trash is unlikely to be swayed by a public awareness campaign. AFPM notes that EPA does not address enforcement against those illegally dumping and suggests there may be an opportunity for EPA to address enforcement against illegal dumping in the Draft National Strategy. The best way to prevent discharges of litter, including plastics, is to enforce the existing, robust waste management regulations. Properly managed plastic waste does not wind up in the ocean.

C.4.2: Research and disseminate information on successful outreach and education practices and programs to motivate positive behavior change.

As stated AFPM generally supports the efforts under C.4.1 – C.4.3, but EPA's public awareness focus should be on littering and not illegal dumping.

C.4.3: Conduct campaigns using known best practices to raise public awareness of the trash pollution problem and encourage behavior changes that reduce trash pollution.

AFPM generally supports the efforts under C.4.1 – C.4.3, but EPA's public awareness focus should be on littering and not illegal dumping. EPA could provide materials noting the fines and penalties for illegal dumping or encourage states and regions to ramp up enforcement on illegal dumping.

C5.1: Conduct research and disseminate information on the sources, transport, fate, concentrations, impacts, and remediation of microplastic pollution.

The petrochemical and plastics industries support global research programs that develop and apply real-world, science-based approaches and test methods to learn more about the potential impact of microplastics on human health and the environment. Through projects like the "Microplastics Advanced Research and Innovation Initiative," information on these research activities and specific research projects will be shared with the broader scientific community.[72] Through the regional research programs the plastics industry is supporting complementary areas of microplastics research to address any critical knowledge gaps. The petrochemical industry also supports participation in certified programs (i.e., Operation Clean Sweep) to help prevent plastic materials in the value chain from entering the environment in the first place.

AFPM supports the efforts under Objective C.5 but urges EPA to conduct this work in concert with various global and regional projects and in consultation with industry, as much progress has been made in this area.

C5.2: Support the development of management practices and technologies to remove microplastics (including microfibers) from effluent and waterways.

AFPM supports this effort and again notes that BMPs associated with Operation Clean Sweep can help address this area.

C5.3: Develop definitions for micro/nano-plastics and standardized methods for their collection, extraction, quantification, and characterization.

AFPM refers back to C5.1 on this issue and further notes that given the global nature of this issue any standardized definitions for micro/nano-plastics and standardized methods for their collection, extraction, quantification, and characterization should be harmonized internationally.

X. Comments on U.S. EPA Next Steps

EPA has noted they will continue outreach and engagement during the comment period and during finalization of the strategy. EPA has asked the public to consider several key questions when reviewing and commenting on the Draft National Strategy. In this section AFPM addresses those questions.

Which actions are most pivotal and would have the greatest positive impact at the local, regional, national, and global levels? Which actions can best protect human health and environmental quality? Which actions are most important to address environmental justice and climate change? What are the key steps and milestones necessary to successfully implement the actions in the draft strategy?

Locally / Regionally: Improved waste collection, sortation, and processing of post-consumer plastic is arguably the most significant challenge to reducing plastic pollution. Without enhanced collection, most recyclable items will end up in a landfill; or, worse, end up being leaked into the environment. Improved waste management is foundational to a circular economy

[72] *See* International Council of Chemical Associations. "Microplastics Advanced Research and Innovation Initiative." Accessed July 31, 2023.

as it can provide sorted and collected post-consumer plastic as a circular feedstock to petrochemical manufacturers and repurposers that then can be recycled into new materials. This can help petrochemical and plastic manufacturers supply consumer brands with recycled feedstock enabling them to meet ambitious recyclability and recycled content targets.

Eliminating plastic pollution is not realistic until we close this gap and create a circular economy in which used plastics are no longer perceived as waste, but rather a valuable feedstock. Enhanced opportunities for collection of post-consumer plastic waste are also important to address environmental justice and minimize littering and illegal dumping. Plastic recycling should be for everybody and not just those communities that can afford it.

Nationally: Policies must support and encourage technology development, deployment and scaling, such as improvements in collection and sortation and advanced and mechanical recycling, to increase circularity of plastics. EPA should develop policies that encourage the use of recycling technologies and avoid sending market signals that could hinder innovation and investment in recycling. EPA and all stakeholders, including the public, must reorient our thinking around post-consumer plastic by redefining its value through incentivizing it as a valuable feedstock, not as a waste to be disposed of.

The US needs massive infrastructure investments in waste management systems and both mechanical and advanced recycling if we want to improve our low recycling rates and meet ambitious recycling content goals. Our industry is responding and in just the past few years the petrochemical and plastics industry have made investments in 33 projects that are operational, under construction, or planned to scale up recycling infrastructure globally valued at over $16 billion.[73] Increasing our capacity to mechanically recycle plastic and adding advanced recycling, as a complement to mechanical recycling, has the potential to increase recycling rates and potentially displace plastics derived from virgin feedstocks and EPA providing regulatory certainty in this area can enable that.

Globally: AFPM supports the United Nation's ambition to eliminate additional plastic pollution and encourages EPA to continue to push for an ambitious, but implementable agreement.[74] To get there, we need to accelerate a circular economy where plastic is sustainably reused or recycled instead of discarded, enabled by a global agreement that unlocks industry innovation and global investment in plastics circularity. A global agreement must include essential elements that:

- Recognize the tremendous societal benefits of plastics while fully considering the lifecycle impacts of alternatives,
- Unlock innovations across the plastics value chain to enable a truly circular economy, and
- Provide nations flexibility in the manner in which they address their unique challenges through the use of National Action Plans supplemented by global standards and metrics.

[73] *See* Global Partners of Plastics Circularity, *"*Tracking Our Progress*",* Accessed July 31, 2023.
[74] *See* G7 Climate, Energy and Environment Ministers Communique, 2023.

In addition, global recognition of advanced recycling as an environmentally sound management practice and updates to the Basel Convention that recognize processed, sorted, cleaned, bailed post-consumer plastic as a feedstock would enable circularity.

Lastly, AFPM also supports the transparency of plastics additives currently in commercial use, which protect proprietary formulations, so that consumers can make informed purchases and producers can avoid knockoffs in regions with less stringent regulatory requirements. A web-based clearinghouse for the different additives and their functions, along with links on the individual substances to find further information, would go a long way to educate the public about additives and the purpose that they serve.

Key Steps and Milestones: EPA has already taken the first and most essential step, which is developing a Draft National Strategy. AFPM supports this effort and appreciates the opportunity to comment. Another key step is the lifecycle analysis of plastics and their alternatives. Many future decisions will depend on this information, so this should be one of the initial steps and can even be made before the National Strategy is finalized. Public meetings or working groups on different objectives would also permit a deeper dive into some topics. All milestones should be centered on the goal of the *Save Our Seas 2.0 Act*, which Congress has clearly defined.

What are the most important roles and/or actions for federal agencies to lead?

Plastic pollution, particularly mismanaged post-consumer plastic entering waterways and oceans, is a global issue of acute importance and thus we believe the Federal Government, including all relevant agencies, should collaborate to address this problem at a global level. AFPM is encouraged by the U.S. government's leadership at the UNEP negotiations to develop an international agreement that will address plastic pollution. AFPM encourages EPA with the U.S. State Department and other federal agencies to continue to work towards a global agreement that will accelerate the transition to a circular economy where plastic is sustainably reused or recycled instead of discarded / disposed of. These efforts will be enabled by a global agreement that unlocks industry innovation and global investment in plastics circularity.

Federal agencies should take a convening role to bring stakeholders together for open, public discourse on all aspects of the Draft National Strategy. Trust among stakeholders will never be realized without inclusive public discussions. Federal agencies should also play an intermediary role for funding to enhance collection activities, especially for less advantaged communities. Federal agencies should also lead the effort to have the National Academies conduct a full lifecycle comparative analysis of plastics and their alternatives.

Is your organization willing to lead an action or collaborate with others to implement the actions? What factors would your organization consider when determining whether to lead an action?

AFPM is willing to support the creation of a multistakeholder partnership to establish an open, public dialogue on advanced recycling, which would place the discussion in the public realm and tackle outstanding issues in a transparent manner. This forum could include a series of

moderated public meetings in a roundtable format, with representation from a variety of stakeholders, comprised of technical and policy experts, complemented with observers and opportunities for public comment. AFPM would consider our specific expertise, resources, and time constraints when determining leading an action.

What are potential unintended consequences of the proposed actions that could impact communities considered overburdened or vulnerable, such as shifts in production or management methods?

As noted in our comments, achieving the UN SDGs is not possible without petrochemicals and the plastics derived from them. Plastic products are critical to renewable energy, public safety, electronics, food safety and longevity, and modern medicine. Plastic products not only enable us to live longer, but they also help us attain a higher quality of life. In developing a National Strategy to address plastic pollution, EPA must consider the tremendous benefits plastics provide for a growing global pollution and their importance in meeting UN SDGs.

Limiting production of plastics precursors would affect a myriad of manufacturing supply chains that depend on the derivative substances made from base petrochemicals, such as ethylene, propylene, butylene, benzene, toluene, and xylenes. The number of potentially affected supply chains would be in the thousands because most finished goods depend on chemical substances derived from base petrochemicals. The likely result would be another exodus of finished goods manufacturers moving to countries that do not restrict production of manufacturing inputs.

The proposed focus on limiting plastic production in Objective A would divert time and resources away from the most pressing problem area, which is collection of used plastic items. This also does not address the behavioral problem of littering and illegal dumping. Monetizing—placing a value on post-consumer plastics— could spur growth in underdeveloped, disadvantaged communities and / or provide more jobs with increased waste management infrastructure for collection and sortation. Disadvantaged communities will continue to have limited access to recycling.

Production caps and / or banning single-use plastics would limit material and product choices in areas such as emergency services, disaster recovery, military readiness, hospital hygiene, and other vital public services. Those services depend on disposable plastics for economical mass distribution, enhanced hygiene, and the ability to shift quickly from one activity to another without worrying about how to sanitize utensils and containers.

What key metrics and indicators should EPA use to measure progress in reducing plastic and other waste in waterways and oceans?

AFPM suggests EPA host a forum on this issue of measures, metrics, and data collected focused on all pollution, not simply plastic. This could solicit input and assess the value of given data points. In addition, such data will likely be informed by UNEP discussions on a global

agreement. Ultimately, any data collected should feed into national action plans or global reporting related to plastic pollution.

What criteria should processes meet to be considered "recycling activities" (e.g., "plastics-to-plastics outputs are 'recycling' if these processes reduce the life cycle environmental impacts in comparison to traditional mechanical recycling")?

The criteria to be labeled a "recycling activity" should be simple and straightforward. A "recycling activity" should be any activity that takes a waste and converts it for an additional product or application use. This would include both mechanical and advanced recycling. Artificially pitting these technologies against each other is not helpful. Post-consumer plastic management requires multiple solutions and mechanical and advanced recycling will work together as a complementary approach to tackling plastic pollution in a meaningful way. Each method should stand on its own technical merits. Technologies change and should be allowed to evolve. Prematurely labeling a recycling technology as "better" or "worse" than mechanical recycling could serve as a disincentive for investment in future technologies.

True circularity is limited by the number of times a material can be recycled before degradation prevents further recycling. The goal is the ability to recycle a material over and over with little to no degradation. Advanced recycling, including the use of pyrolysis processes, approaches true circularity all the while expanding the types of plastics that can be recycled, creating a higher-quality feedstock and increasing the number of times a material can be recycled.

Are there other actions that should be included in the strategy? Should EPA expand the scope of the strategy to include sea-based sources? Should specific types of plastic products be targeted for reduction or reuse in this strategy?

AFPM believes EPA should focus on land-based sources primarily and defer to NOAA and international organizations to addressed sea-based sources.

The National Strategy should only focus on actions related to post-consumer plastic collection and recycling and not attempt to favor any materials over others. EPA does not have a base set of lifecycle information from which to make informed decisions on the impacts from different materials, so it would be premature to attempt any actions on reduction or consumption. Should an independent lifecycle analysis point to non-plastic alternatives as superior to plastics, then EPA could consider restrictions but those still should be based on specific application or use and not be focused on specific polymers.

Do you have any additional information or recommendations for EPA regarding these or other proposed actions in the draft strategy?

AFPM would like to reinforce that industry and other stakeholders are taking great steps to combat plastic pollution. In just the past few years, the petrochemical and plastics industry have made investments in 33 projects that are operational, under construction, or planned to scale

up recycling infrastructure globally valued at over $16 billion.[75] We are partnering with the investment community to de-risk circularity projects and provide access to financing and capital for such projects. AFPM members are partnering with the waste management industry to ramp up cutting edge infrastructure investments, (e.g., Blockchain Artificial Intelligence, Robotics). AFPM members are working with their customers and are committed to continuously evolving product design to enable more recycled content packaging redesign. The petrochemical and plastics industry participates in voluntary efforts like the Alliance to End Plastic Waste and Operation Clean Sweep aimed at eliminating plastic pollution.

The footnotes found throughout these comments provide additional information on a variety of topics raised for consideration. AFPM is committed to educating policymakers and the public about advanced recycling and plastic recycling in general. This places policymakers in a unique position to further understanding of the manufacturing supply chain and how base petrochemicals are used as building blocks to make thousands of different products. AFPM will continue to work in a collaborative manner to achieve the goals of a circular economy.

XI. Conclusion

AFPM appreciates the opportunity to submit comments on the Draft National Strategy and supports its fundamental goals. EPA has an incredible opportunity to address plastic pollution by enabling a circular economy. A successful National Strategy to Prevent Plastic Pollution is one where; used plastics become inputs for circular plastic production, products are designed with circularity in mind, and policies enable innovative technologies across the full life cycle of the plastics value chain.

Sincerely,

Rob Benedict
Vice President
Petrochemicals and Midstream
American Fuel & Petrochemical Manufacturers

[75] *See* Global Partners of Plastics Circularity, *"*Tracking Our Progress*",* Accessed July 31, 2023.