

Improving Environmental Outcomes at the State Level Through Sustainable Materials Management



State environment officials are always looking for better solutions to help achieve their environmental goals. Government leaders can improve sustainability by promoting sound policies that look holistically at the use of materials. By examining more broadly the value of materials, the concept of waste can be altered and perhaps even abandoned.

This is particularly true for plastics. Although plastics are invaluable to modern life — they're used to produce everything from bicycle helmets and child safety seats, to the packaging that keeps our food fresh and wholesome — people have questions about their impact on the environment.

But recent life cycle studies demonstrate the environmental benefits of plastics. While all materials impact the environment, plastics used in many consumer goods typically produce less waste, use less energy and create fewer greenhouse gas emissions than alternatives.

Too often, state waste policies assess the environmental impact of materials such as plastics through a very narrow lens, assuming recycling is the primary gauge of sustainability. Now, leading authorities are taking a holistic approach to measuring the environmental performance of plastics. They are also encouraging increased plastics recycling and incentivizing small business owners and entrepreneurs to develop dynamic, market-based solutions to capture the value inherent in plastics — rather than dumping them in landfills.

Understanding Sustainable Materials Management

This more holistic approach to environmental management is known as Sustainable Materials Management (SMM) — a method

that uses life cycle analysis to measure environmental impacts across the entire life of a package or material. SMM takes into account the material, energy and water used across the entire lifespan of a product, from manufacturing to transportation to end of life.

SMM is especially useful in helping states evaluate and address the growing use of plastics because it switches the focus from weight-based recovery goals (recycling rates) to broader environmental goals. As an example, lightweight plastic packaging uses very little material and plays a key role in protecting and safely transporting goods, which reduces waste, material and energy use, and greenhouse gas emissions. SMM considers all the impacts of the packaging, from manufacturing and transportation to solid waste disposal, not just its ability to be recycled.

When viewed holistically, plastics and plastic packaging typically compare favorably to alternatives. A 2016 study by Trucost found that the environmental cost of using plastics for consumer goods and packaging was nearly four times less compared to using alternative materials to do the same job — a difference of \$139 billion versus \$533 billion annually.¹

SMM provides a clearer picture of the environmental impact of materials, from beginning to end of life. While some communities believe minimizing certain uses of plastics may reduce waste, embracing SMM and adopting a broader view of sustainability provides a more insightful measure to evaluate environmental benefits and progress toward environmental goals. Policies that restrict the use of various plastics based on single attributes (recycling rates, biodegradability, etc.) can harm efforts to improve sustainability. The U.S. Environmental Protection Agency (EPA) and states such as Oregon and Minnesota are rapidly moving toward SMM.

Recycling & Recovery: Key Components of Sustainable Materials Management

While SMM changes the way we think about measuring environmental impacts of materials such as plastics, recycling and recovery still play an integral role in improving sustainability. Plastics recycling in particular has grown rapidly over the past few decades. The amount of plastics recycled has increased every year since the 1990s. In fact, the volume of recycled plastics has doubled since 2009.² Recycling plastics (or any material) helps reduce waste and energy use, and further lowers greenhouse gas emissions. Recycled plastics are turned into new products such as automobile parts, packaging, clothing and more, which creates positive economic outcomes and manufacturing jobs. According to the EPA, more than 3,700 businesses in the U.S. are involved in recycling plastics.³

Despite these benefits and trends, too many plastics still end up in landfills instead of being recycled or converted into energy. This suggests a good opportunity for states to improve their environmental outcomes by managing the disposition of post-use plastics.

By taking the following four actions, states can help increase the amount of plastics recycled.

1. Embrace voluntary plastics recycling programs and tools.
2. Leverage large national partnerships for grants, loans and technical assistance.
3. Advocate for sensible, broadly supported recycling policies.
4. Treat non-recycled plastics as valuable materials for conversion to fuels and chemicals.

Embrace Voluntary Plastics Recycling Programs & Tools

Budgetary constraints can be an obstacle to innovation and program improvement. Fortunately, existing voluntary programs and tools can help communities increase plastics recycling.

➔ The **Wrap Recycling Action Program (WRAP)** is a national public awareness initiative that works to increase recycling of valuable plastic film, such as commercial shrink wrap, packaging pillows, grocery bags, dry cleaning film and the packaging wrap often used for consumer goods such as toilet paper and paper towels.

There are more than 18,000 locations (primarily grocery stores) in the United States that accept these bags and wraps. By implementing WRAP, communities can reduce plastic film that is misplaced in the curbside collection program while also providing valuable recycled feedstock for new products like plastic lumber, bags and other items.

Several states and cities are using free WRAP tools to educate their residents about properly recycling plastic bags and wrap at participating area grocery and retail stores. For example, North Carolina implemented a WRAP campaign after officials found that residents in Mecklenburg County were placing plastic bags and wraps in curbside recycling bins, causing equipment damage at the local materials recovery facility. A survey of county residents found that only half were aware certain plastics shouldn't

Tips for Adopting Sustainable Materials Management

Oregon's Department of Environmental Quality (DEQ) has made sustainable materials management (SMM) a core part of its mission.

David Allaway, a policy analyst for the DEQ, says the agency has launched several initiatives to advance SMM. For example, Oregon supported a pilot project that reduced pre-consumer food waste at two corporate cafeterias by 47 percent and reshaped one of its grant programs to give preference to reduce and reuse projects like material reuse stores and edible food rescues. Additionally, the state is supporting workforce development for its local reuse and repair industries, such as a program that trains workers in deconstruction, a more sustainable alternative to traditional demolition.

Allaway says other states can follow Oregon's example, too.⁴ Here's how:

➔ **Be clear with your definitions:** Allaway says some agencies have taken the old waste management hierarchy of "reduce, reuse, recycle" and rebranded it as SMM. The true concept of SMM actually entails a much broader approach. States can use the EPA's definition as a starting point. "Get clear on what it is you're talking about and be precise in your terminology. It's about the whole life cycle, not just the end of it," Allaway says.

➔ **Look at the big picture:** States that only consider the solid waste system are not looking at the big picture. For example, discontinuing curbside recycling to conserve energy in the collection fleet doesn't take into account the overall net benefit of this effort.

"If you look at the big picture, you find that when you collect those recyclables, including aluminum, plastic and paper, and you send them off to markets and they get used to make new products, they save far more energy than you expend collecting and transporting them," Allaway says.

➔ **Be thoughtful about your goals:** Goals signal to the public what matters, and setting the wrong ones can thwart a state's sustainability efforts. For example, some states have adopted landfill diversion goals, which can be counterproductive. "Landfills are only a small part of the problem, relative to the environmental impact of producing these materials," Allaway says. "We've never advanced recycling as a way to save our landfills — it's always been about conserving resources and reducing pollution. Since we started with that shared understanding and goal, sustainable materials management was a very natural next step."

➔ **Find allies in unexpected places:** Oregon has partnered with a broad

range of allies to achieve its vision. For example, it recently launched a partnership with the Oregon Concrete and Aggregate Producers Association in order to provide all concrete producers free access to a tool that produces an environmental product declaration for each of their concrete mixes. The declaration addresses the life cycle environmental impact of these materials and helps to create a market for government agencies and developers interested in purchasing low carbon concrete. The state also partnered with AARP to increase Oregon's stock of smaller houses, which are more attractive to seniors and have less of an environmental footprint.

While Oregon is working to increase and improve recycling, Allaway says all these efforts show that SMM is about much more than just recycling. "If the goal is to conserve resources and reduce pollution, then recycling is a fine approach, but sustainable materials management is even better," he says. "It gives us more tools, more opportunities, more approaches and more potential to achieve the very same goals."

be placed in curbside recycling bins.⁵ North Carolina launched its WRAP campaign in Mecklenburg County in September 2016 with plans to expand throughout the state in 2017.

Other states are following suit. For instance, Connecticut plans to launch its statewide campaign in early 2017. “Recapturing and recycling more plastic bags and flexible film packaging material will reduce solid waste disposal costs, reduce the contamination of other materials contained in single-stream recycling bins and create jobs right here in Connecticut,” said Robert Klee, commissioner of the Connecticut Department of Energy and Environmental Protection.⁶

➔ State and local recycling professionals can leverage the free **Plastics Recycling Terms & Tools** found at recycleyourplastics.org.⁷ Developed by a large coalition of plastics recycling advocates, the Terms & Tools are designed to increase the amount and variety of plastics recycled by reducing confusion about which plastics are collected for recycling.

The EPA has adopted key aspects of the Terms & Tools in its state reporting requirements, so state recycling professionals will find that the use of the Terms & Tools can streamline future reporting.

➔ **Recycle Grocery Rigid Plastics** is a voluntary program led by the Association of Plastic Recyclers (APR) that promotes in-store collection and recycling of rigid plastics and the recovery of high-density polyethylene and polypropylene trays, pails and covers. These materials are widely used in grocery store bakeries, as well as seafood and pharmacy departments. Research indicates that grocery stores have at least 350 million pounds of these materials that can be recycled.⁸

Leverage National Partnerships for Grants, Loans and Technical Assistance

National partnerships are viable funding sources for communities that are tight on resources but looking to improve their recycling programs.

➔ **The Recycling Partnership** is a non-profit organization that utilizes public-private partnerships to improve local recycling programs. Brands, converters, materials manufacturers and recyclers fund the effort.

In one example, The Recycling Partnership granted \$550,000 to the city of St. Paul, Minn., to purchase new, larger-sized recycling carts for 78,000 households and support community outreach regarding the change in service. City leaders expect that the move from single-stream bins to single-stream carts will improve convenience for citizens and heighten their sense of duty. “We anticipate a 15 percent increase in participation and a 35 percent increase in tons collected,” said Kris Hageman, environmental coordinator for the city’s public works department.⁹

➔ Communities also can apply for funding through the **Closed Loop Fund**, a social impact initiative that is investing \$100 million to increase recycling of products and packaging. The Closed Loop Fund provides zero-interest rate loans to cities and below-market rate loans to companies to improve their

recycling infrastructure. This funding allows companies to test innovative recycling solutions and cities to address a critical need without moving money from other programs.

Advocate for Sensible, Broadly Supported Recycling Policies

Current debates on recycling policy have focused too much on shifting costs and instituting punitive measures that often are not aligned with sound environmental practices. Rather, states can align policy around legislation and regulations that build or strengthen the recycling infrastructure.

States can begin by setting voluntary recycling goals and making sure they are realistic. For example, Indiana legislators set a goal to recycle at least 50 percent of the state’s municipal solid waste. While the original bill called for meeting this goal by 2019, lawmakers later realized this was not achievable because they had no insight into the current recycling rate.¹⁰ Setting arbitrary goals does not advance sound policy when there is no baseline measurement.

Oregon, which currently has a 19 percent plastics recycling rate, has been careful to implement sensible recycling policies. The state conducted a robust recycling assessment and used the analysis to create 10 focus areas — including grocery and restaurant rigid plastics, commercial film recycling and dry waste recovery — that together have the potential to increase plastics recovery statewide by 36,000 tons per year.¹¹ Oregon’s effort could serve as a roadmap for other states that want to move from a traditional waste management approach to one that emphasizes sustainability.

States also can increase recycling access for commercial businesses and new multi-family dwellings by providing grants and technical assistance, permitting new recycling infrastructures and giving communities a blueprint for establishing a recycling plan. Part of these plans could include “pay-as-you-throw” (PAYT) legislation, where residents are charged based on the amount of trash they dispose of and thus have an incentive to recycle more. The EPA notes that PAYT is “an effective tool for communities struggling to cope with soaring municipal solid waste management expenses” and that communities with these programs have seen a significant increase in recycling and waste reduction.¹²

Treat Non-Recycled Plastics as Valuable Materials for Conversion to Fuels & Chemicals

While not all plastics today can be economically recycled, they still retain value. Plastics-to-fuel technologies can convert non-recycled plastics into transportation fuels and other petroleum-based products through a process known as pyrolysis. This enables states to capture this source of domestic energy and keep these valuable materials out of landfills.

Some experts estimate that if the U.S. leveraged plastics-to-fuel technologies to convert all its non-recycled plastics, the country could produce 5.7 billion gallons of transportation fuel annually — that’s enough to power 9 million cars. These technologies also have an economic impact: America could support nearly 600 plastics-to-fuel facilities, which could generate 39,000 jobs and \$9 billion in economic output.¹³

However, because the technologies are fairly new, most states incorrectly treat these conversion technologies as regular waste disposal rather than manufacturing. This hinders the efforts to site, permit and deploy these technologies.

States can modernize their policies by updating regulations and permitting processes to embrace innovative recycling technologies and position plastics-to-fuel technologies on the same level as renewable energy technologies that boost domestic energy and positively impact local economies.

For example, the state of Ohio in 2011 updated its solid waste policies to regulate waste-to-fuel conversion facilities differently than solid waste facilities. Ohio's environmental agency recognized that solid waste has potential economic value and positioned the state to take advantage of an opportunity to better utilize materials as an alternative fuel source. Ohio now has a full-scale plastics-to-fuel facility.¹⁴

Some localities also are asking for opportunities to take advantage of conversion technologies that are stymied by outdated state policies. In September 2016, Los Angeles County's Solid Waste Management Committee sent a letter to California's Department of Resources Recycling and Recovery (CalRecycle) asking for reforms to restrictive waste laws and regulations so that private businesses would be encouraged to develop these projects in California. "Conversion technologies have been stifled by antiquated and unscientific legislative and regulatory barriers," the committee noted.¹⁵

Conclusion

To continue benefiting from the sustainability contributions of plastics — and to build on those contributions post-use — states can choose from a variety of steps outlined above, often with relatively little heavy lifting. These policy and legislative updates

The Impact of Plastics-to-Fuel

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TO POWER 9 MILLION CARS!

will help states further contribute to sustainability, increase recycling and recover the energy in plastics. While states can pick and choose among these updates, these changes would be most effective when integrated and implemented together.

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Endnotes

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The American Chemistry Council's Plastics Division represents leading companies dedicated to providing innovative solutions to the challenges of today and tomorrow through plastics. Advances in plastics are helping Americans save energy, reduce greenhouse gas emissions and decrease waste. Because plastics are such a valuable resource, the Plastics Division is leading efforts to "reduce, reuse, recycle and recover," including through outreach, education and access to advances in recycling technology. To learn more, please visit plastics.americanchemistry.com/Sustainability.