



Advancing Sustainability and Circularity in Durable Plastic Markets

An Industry Roadmap

The **durable plastics** that make up our world provide the **performance, design flexibility, affordability, and longevity** vital to meeting society's needs.



The plastics industry is working hard to eliminate plastic waste in the environment. Across a wide range of market sectors, they are already **working to implement changes to advance sustainability and circularity** and in doing so, are **creating significant value**.

To realize all of this value, durable plastics must be part of circularity solutions, even though they are designed for long-term use and thus are engineered in ways that demand distinct recycling and sustainability approaches.

By 2030, the value of the circular economy could be upwards of

\$4.5 trillion

By 2040, the economic benefits of plastics circularity in the United States could generate annually

\$200 billion

This **industry roadmap** identifies **priorities for advancing the end-of-life (EOL) sustainability and circularity of durable goods** in five key markets.

In doing so, it recognizes the distinction between the different chemistries, use cases, and market structures for non-durable versus durable plastics. It also reflects the unique challenges and opportunities that each market sector (listed below) faces in advancing end-of-life sustainability and circularity.



Automotive



**Building &
Construction**



Electronics



Infrastructure



Medical

Industry priorities for advancing circularity of durable plastics

Automotive Sector

Develop business model supports that allow durable automotive plastics to be recycled economically and responsibly and result in a reliable supply stream for recycled resins

Establish graduated minimum recycled content standards/legislation (including both PCR and PIR resins) for durable automotive plastics to add market predictability, increase the value of recycled plastics, and support consistent feedstock quality for product developers

Demonstrate EOL durable automotive plastic separation methods that facilitate optimum physical and chemical recycling approaches and minimize durable plastic waste from the automotive sector

Support the implementation of right-to-repair legislation to increase the acceptance of reused and refurbished parts from end-of-life vehicles

Establish standardized “design for disassembly and recyclability” methods to provide an automotive design framework for recovering durable plastics

Establish independent, regional durable plastics recycling and compounding centers to facilitate the collection, separation, cleaning, and mechanical/chemical recycling of durable automotive plastics

Ensure automotive recycling approaches pursued in North America align with global standards

Building & Construction Sector

Develop and pilot building-site deconstruction and sorting methods that enable rapid separation of EOL durable plastics by composition and quality to allow sorted plastic to be diverted to the proper recycling stream and reduce contamination across durable materials present in construction and deconstruction projects

Use modular and on-site design techniques in building and construction to incorporate a circular mindset from onset to reduce waste and enable easier EOL reuse and recycling of durable plastics

Encourage other circularity methods beyond recycling in building and construction applications

Research and develop economically and environmentally sound recycling techniques to enable large-scale mechanical and advanced recycling of plastics found in building and construction applications

Educate the sector on and/or incentivize participation in circularity and sustainable building and construction practices for durable plastics

Partner with standards development organizations to develop standards across the building and construction supply chain to establish practical, science-based recycled content standards for durable plastics

Electronics Sector

Support industry-government collaboration to develop and improve product-specific standards and certifications promoting recycling and recycled content in durable plastic components used in electronics

Establish consumer-accessible electronics collection facilities in partnership with OEMs to enable electronics collection and alleviate data management security concerns

Communicate the benefit of advanced recycling to the electronics industry and consumers

Pursue funding opportunities and incentives to expand research and development into durable electronic plastics recycling technologies

Embrace fair and feasible extended producer responsibility (EPR) paradigms requiring producers to pay for the collection, sorting, and recycling of end-of-life durable plastics in electronics

Support voluntary and/or required “Right-to-Repair” programs and/or legislation to encourage EOL design requirements for electronics, supported by new designs that encourage and enable upgradeability to extend the overall product lifespan

Infrastructure Sector

Increase public perceptions and awareness of the benefits of durable plastics in infrastructure by partnering with non-government organizations to document and publicize case studies

Prioritize infrastructure applications that can effectively use durable plastics (especially with recycled content) for early success stories

Establish “Design for Inspectability and Reuse” methods and standards to extend the life of durable plastics in infrastructure applications by improving the ease of repair and/or replacement of durable plastic components

Medical Sector

Support graduated minimum recycled content standards for durable medical plastics to add market predictability and increase the value of recycled plastics

Partner with medical device industry to develop a refurbishment and reuse program that properly recognizes the unique liability considerations of the medical sector

Conduct a deep-dive analysis on the value creation possible with durable plastics circularity in the medical sector, with extensive input from medical value chain participants

Characterize the medical market’s durable plastics EOL material streams and how they will integrate with other EOL durable plastics to form feedstock needed to sustain recycling processes and demand for recycled content

Conduct a recycling pilot program with participation from medical plastics value chain participants to inform the safety and effectiveness of circularity approaches to durable plastics in medical applications

Multimarket Industry Priorities

Expand pilot programs that inform the technical and economic viability of regional separation, sorting, recycling, and compounding approaches for durable plastics

Develop recycled material and component performance standards and part certification processes that support greater acceptance of recycled content in durable plastics

Develop separation solutions and technologies for EOL durable plastics that can distinguish chemical composition and quality and operate cost-effectively at scale

Accelerate the research, development, and demonstration of scalable advanced chemical recycling technologies that can be part of a national circularity infrastructure for durable plastic goods

Advocate for requirements establishing design for durable plastics components and systems that facilitate circularity approaches at end of life

Conduct and compile a database of market-specific standardized lifecycle and technoeconomic assessments to measure the benefits of durable plastic goods

Educate industry stakeholders and the public about available and emerging recycling technologies to help eliminate plastic waste out of the environment

Influence and advocate for pro-circularity policies that enable our industry's ability to continue providing the essential modern-day innovations to meet societal needs in a more sustainable way

As plastics continue to enable durable goods markets to reach their next frontiers, the opportunity to deliver and capture business value through advances in EOL sustainability and circularity has never been greater.

Investing *now* in the implementation of systems and practices that minimize waste, promote reuse, and improve coordination across the value chain has the potential to maximize durable goods' share of the \$4.5 trillion in economic value the circular economy could bring. The plastics industry is ready to work with the automotive, buildings and construction, electronics, infrastructure, and medical sectors to realize this potential and transition toward more sustainable and circular durable plastic goods.

We need your help to realize the EOL sustainability and circularity of durable plastic goods. To get involved in the priority initiatives outlined in this roadmap, contact Gina Oliver at Gina-Marie_Oliver@americanchemistry.com.



Plastics Division

