

PLASTIC PLAYS ESSENTIAL ROLE IN REDUCING GREENHOUSE GAS EMISSIONS



“Break Free” Act Undermines Greenhouse Gas Reductions

America's Plastic Makers are committed to providing solutions to address plastic waste and climate change. The “Break Free” Act would undermine these efforts because it restricts U.S. manufacturing of an essential material needed to help cut greenhouse gas emissions: plastic. Public policy should ensure that plastic's significant contributions to reducing greenhouse gas emissions can be fully realized.

Plastic Is Part of the Solution

To combat climate change, multiple sectors of the U.S. economy must drive down greenhouse gas emissions: building/construction, vehicles, power generation, waste management, food production, consumer goods and more. All of these sectors and others rely on plastic to help reduce greenhouse gas emissions.

However, the “Break Free” Act restricts plastic manufacturing in the U.S., which would inhibit the ability of these sectors to meet climate goals. The “Break Free” Act also limits new technologies that would enable more plastic to be recycled.

We need modern, advanced materials such as engineered polymers and polymer composites – aka plastic – to help combat climate change. Restricting the manufacture and use of plastic will undermine our nation's ability to meet its greenhouse gas emission reduction goals.

How Plastic Helps Reduce Greenhouse Gas Emissions

The examples below demonstrate some of the ways plastic helps reduce greenhouse gas emissions... and how restricting plastic would be a step backward in combating climate change.

“Lightweighting” Our Cars

For decades, Congress has mandated improved automobile fuel efficiency. As a result, our nation's carmakers have turned more and more to durable, lightweight plastic to decrease the weight of car parts, which reduces our fuel use and greenhouse gas emissions. In fact, most of today's cars are made of about

50% plastic by volume but only 10% by weight. As the U.S. Department of Energy notes: “A 10% reduction in vehicle weight can result in a 6% - 8% fuel economy improvement.”¹ Lightweighting is also critical to increasing the range, and therefore public acceptance, of lower-carbon electric vehicles.

Energy Efficiency in Our Homes and Buildings

Our homes and buildings use nearly 40% of our nation's energy. To drive down energy use, and in turn greenhouse gas emissions, newer construction practices rely heavily on energy-saving plastic building materials that improve insulation performance (R-value) and limit unwanted airflow. Plastic building products – foam insulation, house wrap, window frames, and caulks/sealants – play crucial roles in sealing a building envelope against heating and air conditioning losses. A study of insulation found that, compared to alternatives, foam plastic insulation “significantly increases the insulation R-value of walls, and therefore saves energy and reduces GHG emissions.”²

Advanced, Lightweight Wind Turbines

For wind power to expand as a low-carbon energy source, our nation needs a growing supply of highly advanced, strong yet lightweight wind turbine blades, some of which are longer than a football field. Most modern turbine blades are made from various lightweight plastic composites, such as fiberglass (a mix of glass fibers and plastic) and carbon fiber-reinforced plastic. To drive down greenhouse gas emissions further, engineers continue to look for new ways to create lighter, more efficient blades, most of which involve modern polymer composites/plastic.

Innovative Solar Power

Plastic is playing a growing role in improving the efficiency and cost effectiveness of solar energy. Today's solar panels rely on multiple plastic innovations, such as plastic films/sheets that help protect glass and silicon panels from the environment, plus electrical insulators, pipes, valves and fittings. However, advances in developing plastic solar cells could make solar energy more affordable, flexible, lightweight and durable... innovations that must be encouraged in the U.S. through effective public policies.

Recycling More Plastic

Recycling used plastic further reduces greenhouse gas emissions by replacing the need to extract natural resources, transport them long distances and turn them into feedstocks for making plastic... and the greenhouse gas emissions associated with that process.^{3, 4} The "Break Free" Act would stymie advanced recycling technologies that can dramatically expand the types and amounts of plastic recycled. Restricting recycling would result in increased greenhouse gas emissions and impede goals to end plastic waste.

Reducing Food Waste

The number one material headed to landfills today is no longer paper – it's food. And with food waste comes an enormous amount of greenhouse gas emissions. The United Nations estimated that if food waste were a country, it would be the third largest emitter of greenhouse gases, behind China and the United States.⁵

Plastic packaging helps extend the useful life of our food, which helps reduce greenhouse gas emissions (e.g., methane) from food waste. For example, wrapping a cucumber can double or

triple its fresh life. Growing a cucumber results in 450 times more greenhouse emissions than the lightweight plastic wrap that helps protect it from spoiling.

Reducing the Environmental Footprint of Packaging

In addition to helping cut down on food waste, use of plastic packaging also significantly reduces greenhouse gas emissions compared to alternatives. Because plastic packaging is strong yet lightweight, it allows us to do more with less material than alternatives – nearly four times less on average – which results in lower greenhouse gas emissions.

As one study found: "Plastic packaging usually provides the same function with significantly less material... in most cases this leads to less production energy and [greenhouse gas] emissions."⁶ Like other studies, it found that using alternatives to plastic packaging would result in 2.7 times more greenhouse gas emissions.

Another study found that "if all plastic bottles used globally were made from glass instead, the additional carbon emissions would be equivalent to powering around 22 large coal-fired power plants. This is equivalent to the electricity consumed by a third of the UK."⁷ Just for bottles.

Reducing the Environmental Footprint of Consumer Goods

Consumer products also contribute to greenhouse gas emissions. Studies find that consumer goods made with strong yet lightweight plastic help reduce greenhouse gas emissions compared to many alternatives. A study looked at a wide variety of consumer goods (such as clothing, toys and electronics) along with packaging and found that alternatives to plastic would increase greenhouse gas emissions by 2.5 times.⁸



¹ [Lightweight Materials for Cars and Trucks](#), U.S. Department of Energy, Vehicle Technologies Office

² [Plastics Energy and Greenhouse Gas Savings Using Rigid Foam Sheathing Applied to Exterior Walls of Single Family Residential Housing in the U.S. and Canada – A Case Study](#), Franklin Associates, A Service of McLaren/Hart, 2000

³ <https://archive.epa.gov/wastes/conserve/tools/payt/web/html/factfin.html>

⁴ <https://www.ineos-styrolution.com/news/Greenhouse-gas-emissions-halved-predicts-life-cycle-assessment-of-recycled-polystyrene-from-INEOS-Styrolution>

⁵ <http://www.fao.org/3/i3347e/i3347e.pdf>

⁶ denkstatt, [The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe](#), 2011.

⁷ [Examining Material Evidence: The Carbon Footprint](#), Imperial College of London, 2020

⁸ [Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement](#), Trucost, 2016