

## LCA Executive Summary

Packaging has revolutionized the way we protect, preserve, and deliver essential consumer goods. Consumers, environmental advocates, celebrities, businesses, and others continue to question which packaging is best for our environment.

This report unequivocally shows that when it comes to beverage packaging, the answer is polyethylene terephthalate. Better known as PET.

The National Association for PET Container Resources (NAPCOR), in partnership with Franklin Associates, completed this Life Cycle Assessment (LCA) exploring the environmental impacts of beverage bottles and cans in the U.S. This LCA can be considered an updated and expanded version of a 2009 study by Franklin Associates that compared PET, aluminum, and glass beverage container systems for carbonated soft drinks in the United States. The new results further validate prior findings that PET is the most environmentally friendly beverage container when compared to both glass bottles and aluminum cans in important metrics such as greenhouse gas emissions, energy consumption, and solid waste generation.

This LCA provides fact-based, science-driven evidence to show that PET delivers significant environmental benefits. The careful analysis in the report shows that in the vast majority of instances, choosing PET beverage bottles can support brands' aggressive environmental goals and empower consumers to make the right purchasing decisions. There is a PET packaging option for every situation; if we work together, we can realize the potential of PET plastics to be our packaging of choice and take better care of our planet.

### The Study

An LCA is a scientific method for evaluating the environmental benefits and tradeoffs for the entire life cycle of a product, from its beginning with raw material extraction, through production, use, reuse and recycling (if applicable), and final disposition. Our analysis focuses on containers that account for the majority of U.S. sales volume and looked at the most commonly used beverage containers for carbonated soft drinks (CSD) and still water. The study compared PET plastic, glass and aluminum CSD and still water beverage container systems and was put through a rigorous, independent, and thorough peer review process that verified the methodology and findings over the course of eight months.

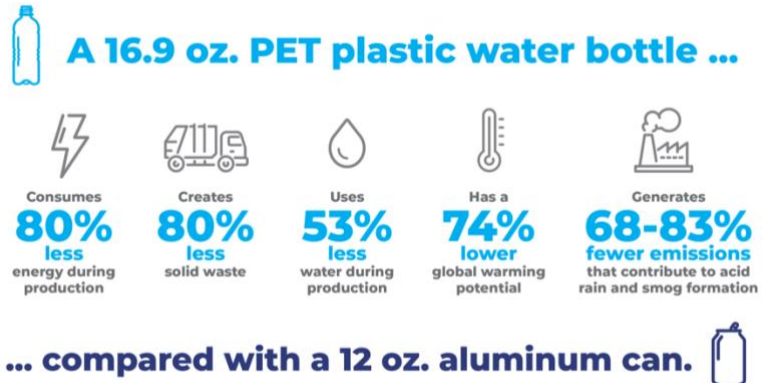
### The Results

The LCA found that PET plastic bottles, when compared to aluminum cans and glass bottles, are significantly more advantageous for the environment as a beverage delivery system. PET bottles are more sustainable and have a lower impact on several key environmental metrics, including greenhouse gas emissions, expended energy, water consumption, smog, acid rain and eutrophication potential. PET bottles are the best beverage container choice for a better planet. LCA results show that glass CSD

bottles tend to have the highest environmental impacts, followed by aluminum beverage cans, then PET bottles.

A PET beverage bottle produces significantly fewer greenhouse gas emissions and requires less energy to produce than its glass or aluminum counterparts. Beyond its beneficial reduction to global warming, PET plastic bottles also create less solid waste, use less water during production and generate fewer emissions that contribute to acid rain and smog. For example, this LCA found that compared with a 12 ounce aluminum can, a 16.9 ounce PET plastic water bottle...

- Consumes 80% less energy during production
- Creates 80% less solid waste
- Uses 53% less water during production
- Has a 74% lower global warming potential
- Generates 68-83% fewer emissions that contribute to acid rain and smog formation



Think about it. If U.S. residents swapped their afternoon can of soda for a PET bottle every day, they would collectively:

- Conserve 1,754 Olympic swimming pools' worth of water per year
- Avoid generating waste equal to the weight of 193,000 elephants annually
- Avoid burning 3.5 billion pounds of coal each year
- Lower CO<sub>2</sub> emissions annually by an amount equal to the carbon sequestered by growing 53 million tree seedlings for 10 years

The environment is better off when consumers choose their beverages in PET...

Compared with a 20 oz. PET Plastic Bottle	Solid Waste Generated	Energy Expended to Create	Global Warming Potential	Emissions Produced That Contribute to Acid Rain and Smog Formation
12 oz. Aluminum Can	3x more	3x more	2x more	2-3x more
12 oz. Glass Bottle	14x more	5x more	5x more	7-10x more

## Conclusion

This LCA provides clear, concise and concrete evidence that in the United States, beverages in PET are the single best packaging solution for truly reducing global warming. Opposing viewpoints are based not on facts but driven by emotions, misinformation, and other financial concerns. PET should be embraced and celebrated for the positive impact that consumers can literally hold in their hands. A PET bottle is 100% recyclable and can be made with 100% recycled content. And, as this LCA shows, the total life cycle of a PET beverage container has less environmental impact than its glass or aluminum counterparts.

This report should serve as the impetus for increased PET packaging among beverage brands, expanded shelf space in retail outlets for products packaged in PET and strong legislation to keep sustainable choices such as PET beverage packaging in use. Further, the accompanying infrastructure to accelerate these changes needs to happen concurrently to drive tangible environmental change. That includes increased recycling rates and capabilities nation-wide.

The plastics industry is dedicated to informing the public and Congress on the need to improve recycling rates to realize the full potential of PET as an environmentally friendly packaging option. We are committed to working closely with our customers and partners throughout the entire supply chain and believe that by working together, we can commit to getting our bottles into the bin and achieve a system that ensures all PET is properly collected and recycled. The full benefits of choosing PET plastic come about when we recycle it. Each and every one of us plays a part in the health of our planet, and we should make every effort to make smart decisions on what products we buy in the store aisles, and what we do with those products after we enjoy them.

