



November 4, 2024

Juri Freeman,
Colorado Executive Director
Circular Action Alliance

Delivered via email: juri.freeman@circularaction.org

Dear Executive Director Freeman:

On behalf of the undersigned organizations, thank you for hosting the topic-based consultation sessions over the past few months and providing the opportunity to offer input into the draft program plan proposal.

Specifically, we are writing in support of Circular Action Alliance's (CAA) proposed guiding principle of remaining "technology agnostic" in recognizing varying recycling technologies, which is consistent with the statutory language included in HB 22-1355. Additionally, we support CAA's proposed approach of establishing a framework of verification requirements that aligns with existing third-party post-consumer content (PCR) standards and allows for the use of mass balance as a chain of custody method.

A Complementary Approach

We support the overall goal of the Colorado Extended Producer Responsibility (EPR) program to increase the types and volumes of materials that are recycled through increased access, collection and sortation infrastructure investment. In order to successfully meet the goals of the program, innovative technologies will also be needed.

Mechanical and advanced recycling are complementary approaches to recycling used plastic. Mechanical recycling utilizes technologies that retain plastic's original molecular structure and works well for recycling plastic beverage bottles and milk containers. Advanced recycling works well for plastics that are difficult to sort and process such as flexible films. Advanced recycling

transforms used plastic's chemical structure back to a more basic chemical or molecular component. It creates a virgin-like feedstock suitable for use in several packaging applications including food and medical grade packaging applications.

As producers look to meet the PCR targets laid out in the program plan, alternative processing methods will be essential as manufacturers will need access to recycled materials from a variety of sources. Advanced recycling companies work with sustainability-minded companies and recycling organizations across the plastics supply chain to secure used plastics that would otherwise end up in the landfill or used to create energy. Instead, these hard-to-recycle plastics are converted into raw materials to produce virgin-equivalent plastics and chemical products. These are truly circular, environmentally beneficial solutions that do not combust or burn plastic material.

Innovative Technologies

Advanced recycling technologies focus on creating a circular economy in which used plastics are remade into new plastics that can be remade again and again. These technologies help create high-quality plastics that can even be used in medical, pharmaceutical, and food applications - virtually any plastic product or packaging.

Although technologies vary, some advanced recycling facilities use pyrolysis or gasification, technologies that are deployed in other industries. Both technologies heat used plastics in an oxygen-free environment, which breaks down the solid material into liquid or gaseous raw materials that can be used to remake plastics or feedstocks for other industries.

Not Incineration

Unfortunately, pyrolysis and gasification technologies have been inaccurately described as only waste-to-energy incineration technologies. This language is scientifically inaccurate, inconsistent with the generally accepted definitions of pyrolysis and gasification, and out of step with existing Colorado regulations. This mischaracterization of pyrolysis and gasification should be rejected. While pyrolysis and gasification are versatile processes with many applications, both technologies purposefully operate with no oxygen, unlike incineration which requires sufficient oxygen to create combustion.

Environmental Impact

Advanced recycling has the potential to offer significant environmental benefits, including increased recycling rates, a reduction in the amount of material sent to landfills, and lower GHG emissions compared to virgin fossil-based production.¹

Advanced recycling facilities are subject to federal, state, and local environmental regulations including the Clean Air Act and Clean Water Act. They are also required to obtain state and local permits and subject to monitoring and reporting of various air emissions. Advanced recycling facilities may be subject to fines or other penalties for violating permits or regulations.

A recent review of air emissions² from advanced recycling facilities that use pyrolysis found emissions to be about equal to or lower than those from similar facilities such as food or auto

¹ [Life Cycle Analysis of Conversion of Post-Use Plastic Via Pyrolysis with the GREET Model](#), Argonne National Laboratory, July 2022

² [Comparison of Pyrolysis-Based Advanced Recycling Air Emission to Common Manufacturing Emissions](#), The Good Company, March 2021

making and institutions such as hospitals and colleges. No measurable lead or dioxin emissions were identified in that study.

Key to Meeting Sustainability Goals

Many of the world's largest consumer brands and retailers have made public commitments to use more recycled plastics in their packaging, signaling interest in investing in more circular solutions. In addition, Colorado's program plan will lay out PCR targets that will help further increase interest in recycled plastics. Advanced recycling will be key to helping companies as well as the state meet their sustainability commitments and goals.

How is recycled content calculated?

Mass balance, one of five chains of custody recognized and defined in ISO 22095, is a well-established accounting method used for decades by a wide range of industries, such as Better Cotton, Fair-Trade cocoa, and coffee, to support sustainability claims. Third-party certification is used to track the quantity of recycled materials processed, that it is properly accounted for in products, and that proper claims are made. Mass balance, with certification, can be applied to a variety of recycling processes. Here is how it works:

- **Blending Recycled & Raw Materials:** Advanced recycling breaks down used plastic to the molecular level. These building blocks can be used as-is or co-processed with virgin (primary) fossil resources.
- **Manufacturing Process:** These combined building blocks, with properties and performance now indiscernible from each other, become materials used to create something new, such as food and medical-grade plastic.
- **Verified Recycled Plastics:** Mass balance supports transparency and accurate tracking for recycled materials through an auditable chain of custody accounting methodology. Third-party certification allows companies to credibly communicate the use of recycled/circular attributed content in their finished products.

The Federal Trade Commission (FTC), which has jurisdiction over unfair and deceptive marketing claims, has proposed changes to its Guides for the Use of Environmental Claims ("Green Guides" "Guides")³⁴, which is the first update since 2012. Industry stakeholders have been some of the most vocal proponents for an update to the Guides to encourage the Guides to keep pace with the changing needs of consumers and the increasing environmental commitments made by companies. Considering the last update to the Guides occurred over a decade ago, the existing guidance is not comprehensive of current advanced recycling technologies or mass balance accounting.

The EPA's comment to the FTC regarding mass balance questioned whether the mass balance approach was "widely implemented" or "accepted worldwide" and whether recycled-content claims based only on the amount of recycled plastic that was purchased by the manufacturer rather than the amount used in the product was misleading. It is imperative to highlight that later in the same comment submission, the EPA acknowledged the potential for future alignment with consensus-based standards and third-party certifications for recycled content and the importance third-party certifiers will play in facilitating trade of plastic for recycling. Following EPA's comment letter to the FTC, third-party accounting certifications such as the International Sustainability & Carbon Certification (ISCC+) PLUS have become widely supported, and the

³ Green Guides Review, Matter No. P954501, Environmental Protection Agency. Submitted April 20, 2023. [Regulations.gov](https://www.ftc.gov/enforcement/whistleblower-claims/2023/04/green-guides-review)

⁴ [Guides for the Use of Environmental Marketing Claims \("Green Guides"\) | Federal Trade Commission](https://www.ftc.gov/enforcement/whistleblower-claims/2023/04/green-guides-review)

European Union (EU) has endorsed mass balance accounting as a tool to calculate recycled content.⁵

Separate from the FTC's Green Guides, the EPA operates a voluntary labeling program called Safer Choice that allows manufacturers and brands to use an EPA-approved Safer Choice logo if the product, including its packaging, meets certain environmental standards. Some organizations have mischaracterized EPA's recent update to the voluntary Safer Choice Standard as opposition to the utilization of mass balance to account for recycled content; this assertion is fundamentally inaccurate.⁶

EPA's statement that post-consumer recycled content should be measured by weight (per weight) within its Safer Choice Standard was a direct reflection of the guidance provided within the Federal Trade Commission's current Green Guides.

Mass balance enables the transparent and verifiable accounting of recycled content created through advanced recycling processes. It is crucial that misinterpretations of the EPA's Safer Choice Standard are not utilized to preclude this broadly accepted technology from creating clear and quantifiable accounting for recycled content.

Yields

Pyrolysis-based advanced recycling turns used plastic into pyrolysis oil. That pyrolysis oil is a hydrocarbon feedstock that can displace virgin fossil-derived feedstocks entering a steam cracker to make new hydrocarbon products, including the building blocks for new plastics and chemicals.

Calculating yields of pyrolysis oil to plastic will vary based on multiple factors, including used plastic feedstock, the physical assets at a specific facility, and other factors. As such, it is impossible to assign overarching yield values across an entire industry.

One cannot trace an ethylene molecule back to pyrolysis oil versus virgin fossil feedstock. A hydrocarbon is fungible and can be used in multiple ways and ultimately multiple products. This is why it is important to use a generally accepted tracking process like mass balance to verify claims of plastic derived from circular feedstocks.

Additionally, by using mass balance to assign credit for creating an amount of hydrocarbons from plastic waste (verified via third parties), we give value to used plastics as feedstocks for recycled materials. Which, in turn, incentivizes more investment in a circular economy, helping to divert more used plastics from landfills and keep more crude oil in the ground. This benefits the environment and exemplifies the UN's Sustainable Development Goal 12, responsible consumption and production.

Incorporating a framework of verification requirements that aligns with existing third-party PCR standards and allows for the use of mass balance will ensure used plastics are accurately accounted for in complex manufacturing systems.

We appreciate the opportunity to provide these comments through the consultation process and look forward to continued collaboration as CAA completes its work on the draft program plan.

⁵ [ISCC PLUS – ISCC System](#)

⁶ Safer Choice and Design for the Environment (DfE) Standard. [Environmental Protection Agency](#).

Sincerely,

American Chemistry Council
American Fuel & Petrochemical Manufacturers
BASF
Braskem
Communications Cable & Connectivity Association
Consumer Brands Association
Covestro
EPS Industry Alliance
Federation of the European Cookware and Cutlery Industries
Flexible Packaging Association
INDA, Association of the Nonwoven Fabrics Industry
International Sleep Products Association
LyondellBasell
National Association of Printing Ink Manufacturers
National Confectioners Association
National Electrical Manufacturers Association
Nexus
PLASTICS
Polyisocyanurate Insulation Manufacturers Association
Power Tool Institute
PRINTING United Alliance
Responsible Industry for a Sound Environment
Shell Polymers
The Carpet and Rug Institute
The Toy Association
The Vinyl Institute
Window and Door Manufacturers Association

cc: Jill Hunsaker Ryan, Executive Director, Colorado Dept of Public Health and Environment
Colorado Producer Responsibility for Recycling Packaging Advisory Board