



CLOSING THE LOOP ON PLASTIC PACKAGING

THE JOURNEY TO 2025

SPEAKERS



Theresa Patton is senior color & additives marketing manager for packaging, US & Canada, for Avient Corporation. Her passion is driving demand for sustainable plastic packaging and supporting the circular economy through solutions that solve for recyclability, lower carbon emissions, and increased PCR content.



Sean Bernhardt is senior research & development manager for Avient Corporation. With extensive experience in plastics additives, Sean is responsible for the Innovation Development team supporting the Color & Additives Americas division of the company.

U.S. PLASTICS PACT TARGETS



Define a list of packaging that is to be designated as problematic or unnecessary by 2021 and take measures to eliminate them by 2025



100% of plastic packaging will be reusable, recyclable, or compostable by 2025



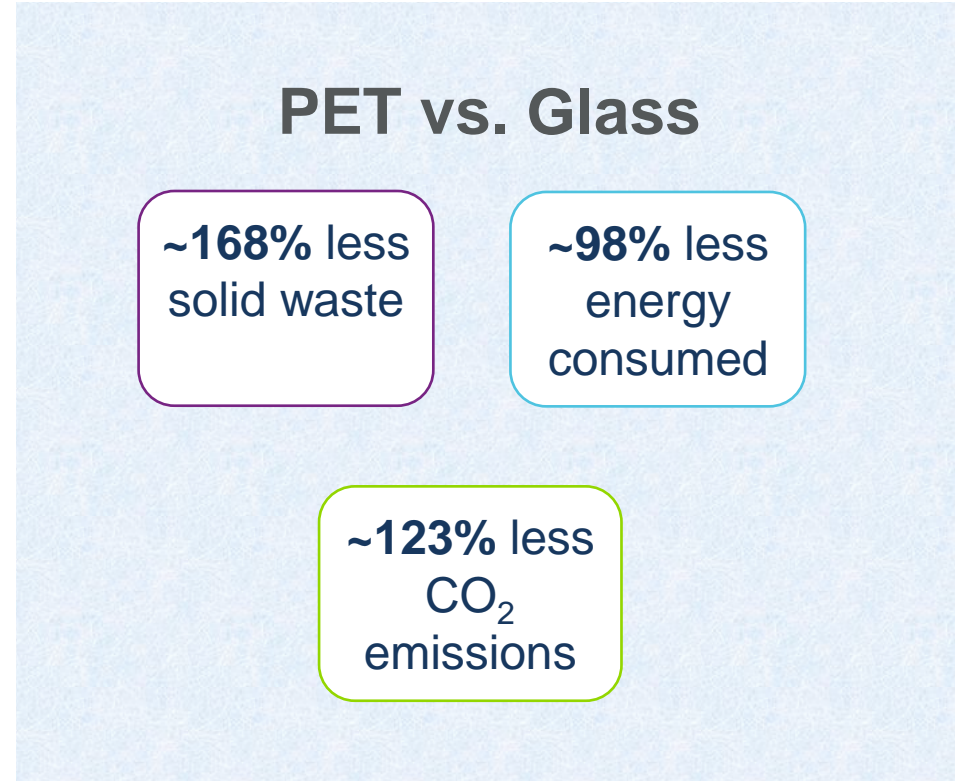
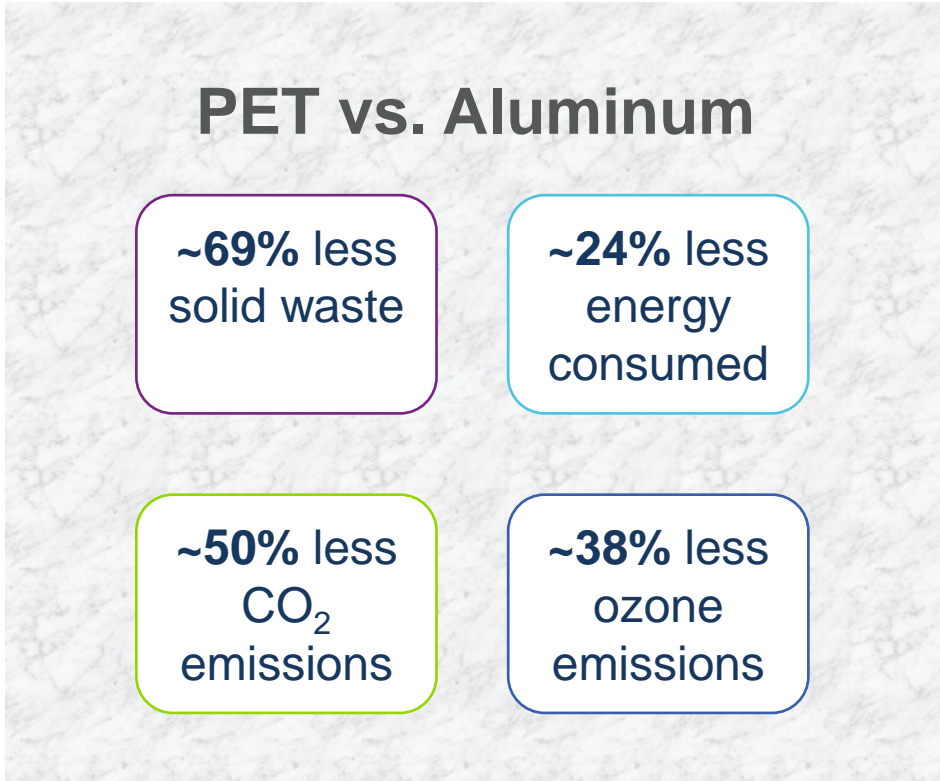
Undertake ambitious actions to effectively recycle or compost 50% of plastic packaging by 2025



By 2025, the average recycled content or responsibly sourced bio-based content in plastic packaging will be 30%



PET BOTTLE ADVANTAGES ACROSS ENVIRONMENTAL MEASURES



* Preliminary results as of March 2022 comparing 16.9 oz PET, 16 oz aluminum, and 12 oz glass container systems for packaging carbonated soft drinks, base volume unit = 1,000 gal

Source: NAPCOR 2022



Confidential: pending peer review

BENEFITS OF RECYCLING



HDPE, PP and PET

- Replacing virgin resin with recycled plastics reduces total energy consumption by at least 80% and limits emissions by 67% or more



The Association of Plastic Recyclers is an international trade association representing the plastics recycling industry. APR member companies are committed to the success of plastics recycling. Membership spans the entire industry.



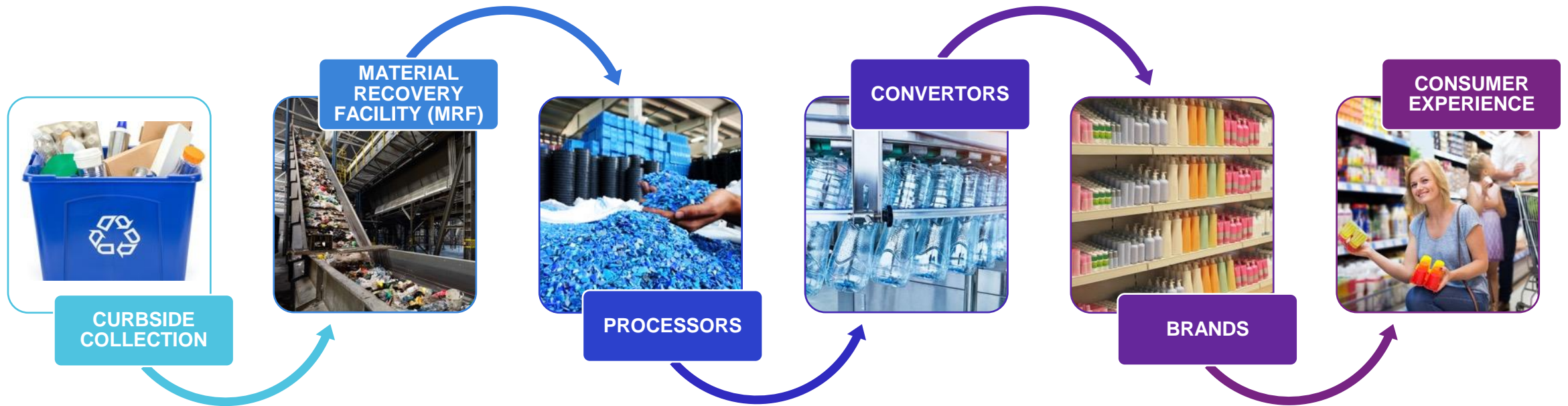
Post-consumer recycled material is the key ingredient to circularity. When consumers put products in the bin, and when companies buy those products back to repurpose them (rather than continually using virgin resin), we build a **more sustainable and less wasteful world.**

- Steve Alexander, APR President



A PACKAGE'S JOURNEY

FROM COLLECTION TO CONSUMER EXPERIENCE



MRF SORTING CHALLENGES

- Dark colors
- Secondary finishes
 - Painting
 - Plating
- Labels / sleeves / adhesives
- Metal components



PCR PROCESSING CHALLENGES

- Contaminated resin bales
- Reduced mechanical properties due to multiple heat histories
- Barriers / contaminants / adhesives cause discoloration and specks
- Rheology control / IV and melt flow variability

THE MAKING OF A BOTTLE

FROM START TO START AGAIN



THE MAKING OF A BOTTLE

FROM START TO START AGAIN



COLOR CHALLENGES

- Dark / light / inconsistent
- Yellowing
- Occlusions
- Hazy



PHYSICAL PROPERTY CHALLENGES

WITH PCR

- Slower throughput
- Higher scrap
- Poor mold release
- Inconsistent rheology
- Thermal instability
- Reduced mechanical properties
- Contamination
- Dimensional instability
- Incompatibility of multiple resins
- Odor



CHALLENGES BRANDS FACE

- Package performance
- Managing package cost
- On-shelf presence
- User experience



HOW CONFUSING IS IT FOR CONSUMERS?



96%*

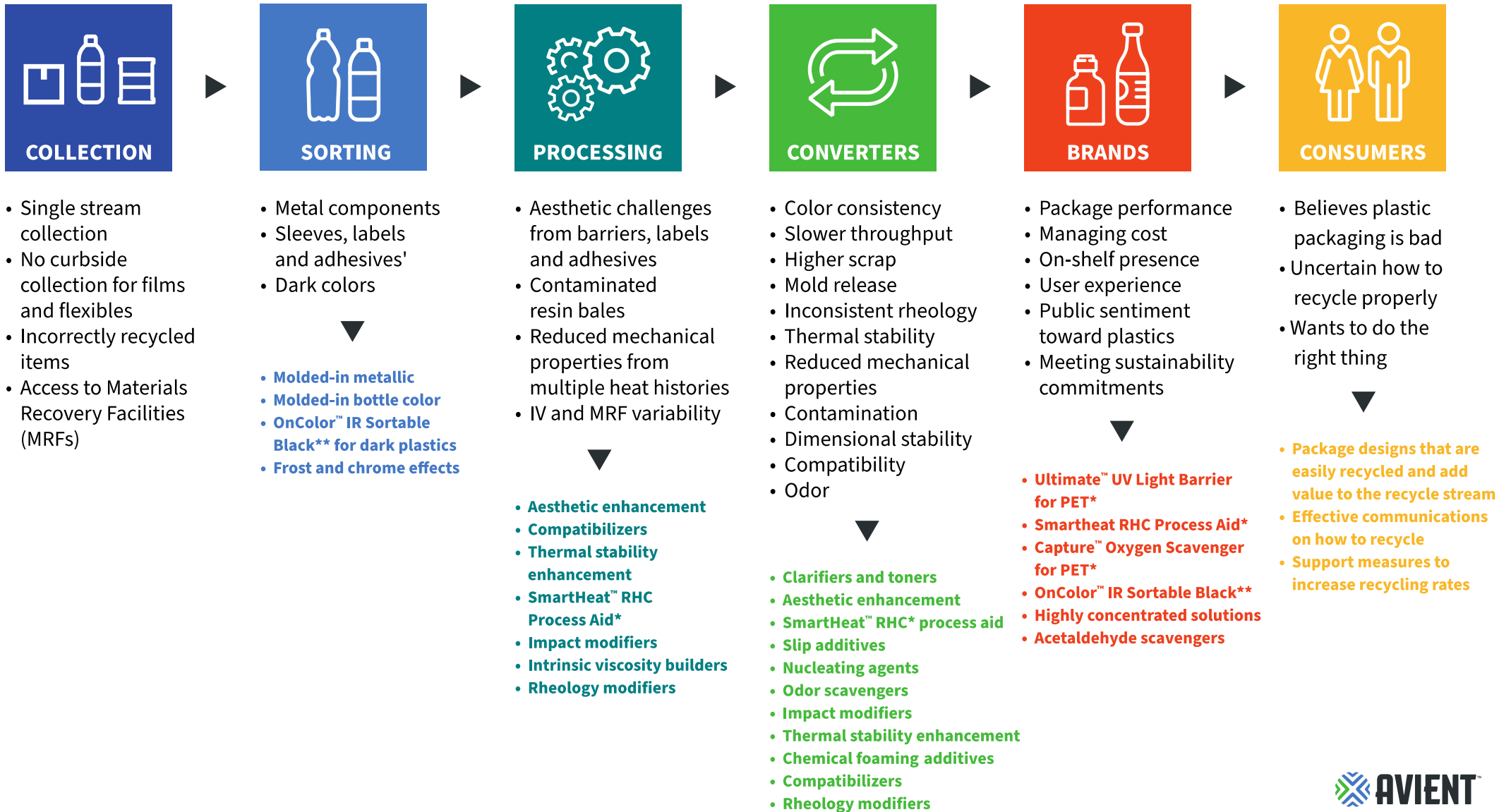
of consumers say they find recycling confusing – in fact more confusing than...

- Doing their taxes
- Building IKEA furniture
- Understanding the opposite sex

INCREASING CONSUMER CONFIDENCE IN RECYCLING

- Design packages that are easily recycled and add value to the recycle stream
- Effectively communicate how to recycle
- Continue to support measures to increase recycle rates in communities

ISSUES IDENTIFIED THROUGHOUT THE RECYCLING PROCESS



*APR Critical Guidance Recognition

**Passed APR testing protocol



AVIENT

ABOUT US



8,700
employees
worldwide



35,000+
solutions



\$4.8 billion
in sales



\$17.5 million
donated
since 2007



115
facilities in
35 countries

OUR SUSTAINABILITY MISSION

ENABLE OUR CUSTOMERS' INNOVATION AND SUSTAINABILITY GOALS THROUGH WORLD CLASS PRODUCTS AND SERVICES AND EXCELLENCE IN THE FOUR CORNERSTONES OF:

PEOPLE

PRODUCTS

PLANET

PERFORMANCE



QUESTIONS?

THANK YOU FOR YOUR TIME

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