



Bringing Circularity

SPE Blow Molding 2021
Conference

October 12, 2021



Get To Know Your Keynote Speaker: Tamsin Ettefagh



Tamsin Ettefagh

**Chief Sustainability Officer
& Vice President of Industry**

- One of the founders of Envision Plastics
- 33 years in plastics and recycling
- PureCycle Technologies since February 2021

PCT continues to join industry organizations that have like-minded values and goals to advance recycling in the United States.

CURRENT MEMBERSHIPS

NEW



NEW



NEW



NEW



NEW



Institute of
Scrap Recycling
Industries, Inc.



The Association of
Plastic Recyclers



SUSTAINABLE DEVELOPMENT GOALS



Timeline of activities that brought us to where we are today.



The U.S. Plastics Pact Targets

The U.S. Plastics Pact will ignite system change to realize a circular economy. By setting the national strategy and coordinating collective action, we will:



Define a list of packaging that is 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.



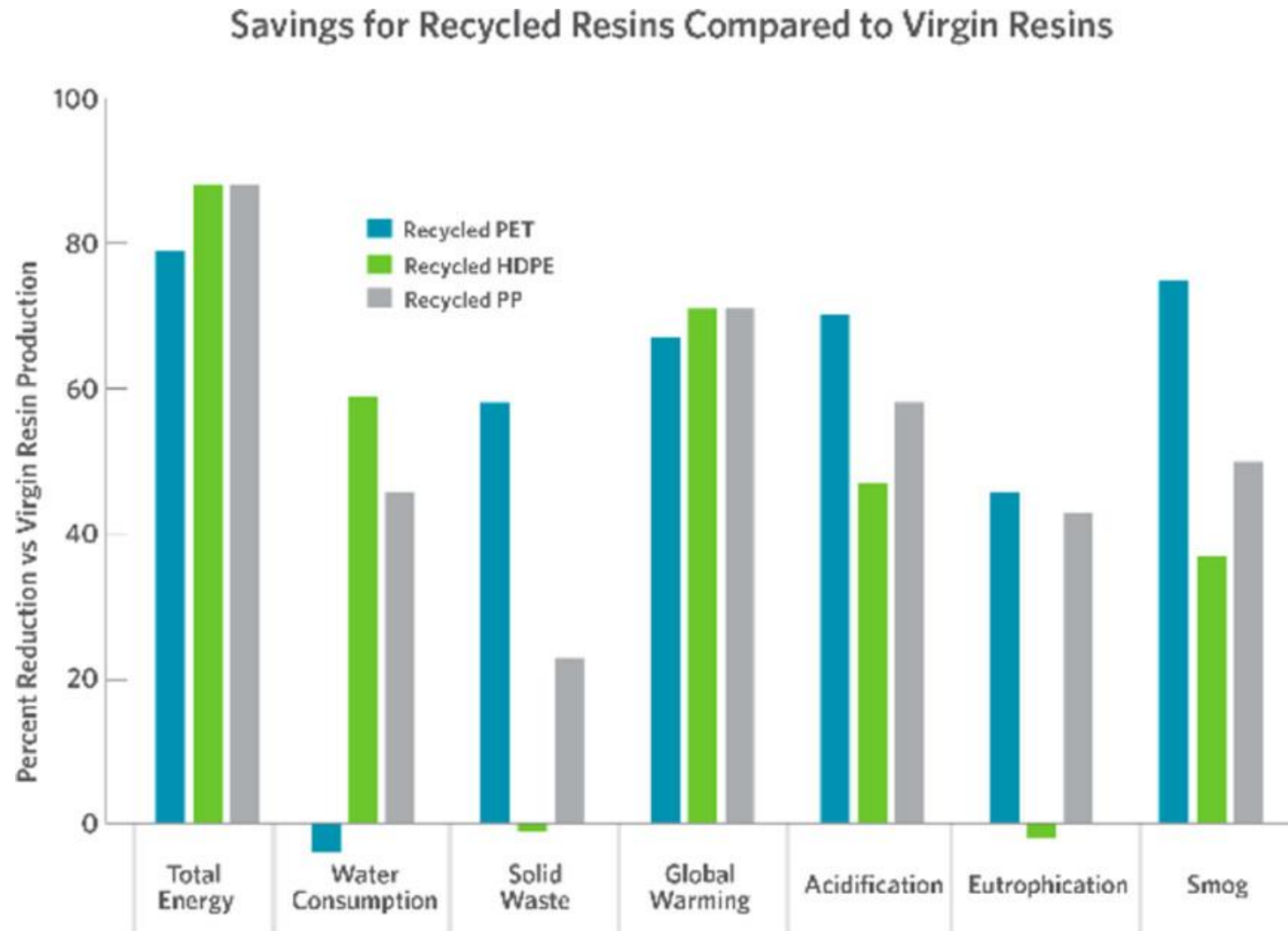
Undertake ambitious actions to effectively recycle or compost 50% of plastic packaging by 2025.



Average of 30% recycled content or responsibly-sourced bio-based content by 2025.

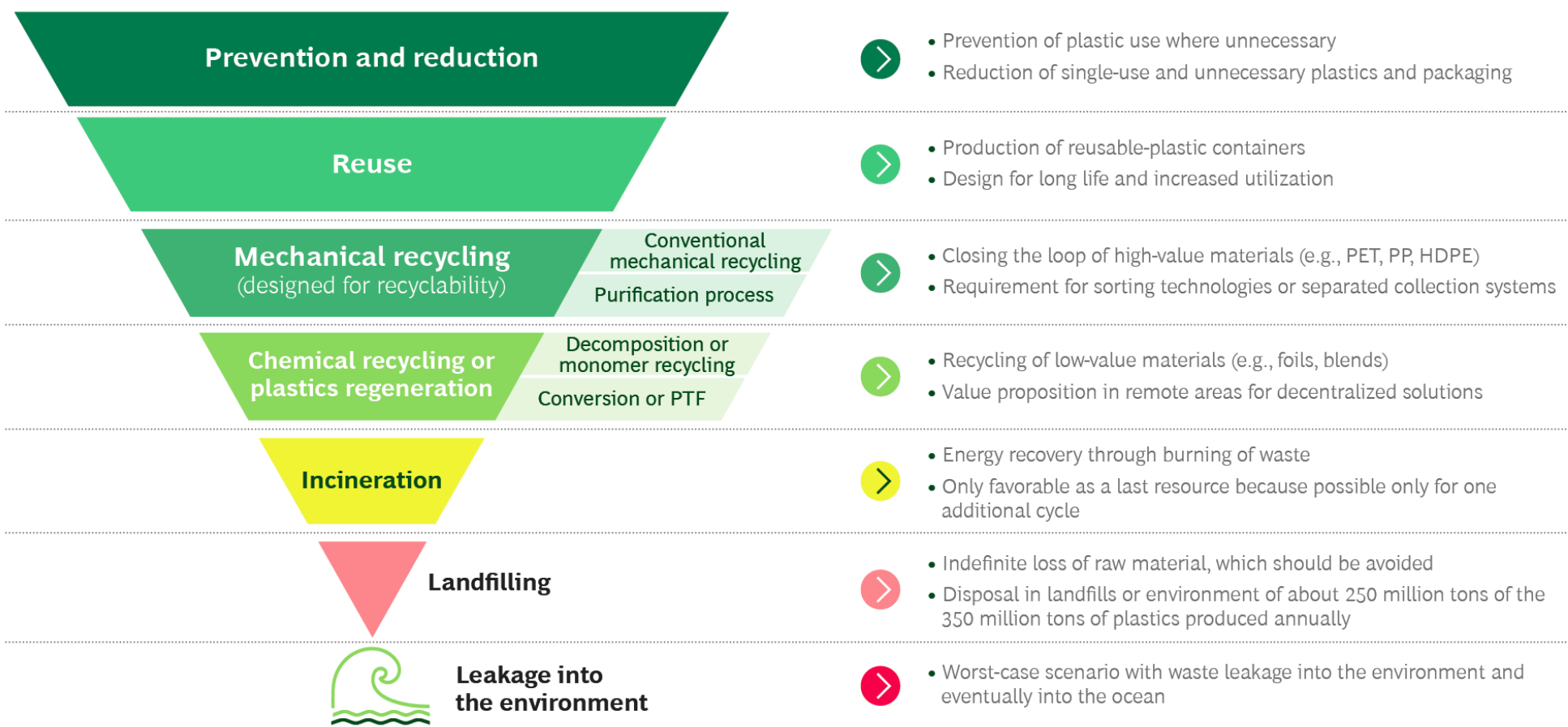
Through these targets, the U.S. Plastics Pact will reduce the use of non-renewable virgin plastics and minimize negative impacts on environment.

Carbon and LCA must be drivers in making packaging decisions.



Current Model for Waste Management

EXHIBIT 1 | The Pyramid of Plastic Waste Management

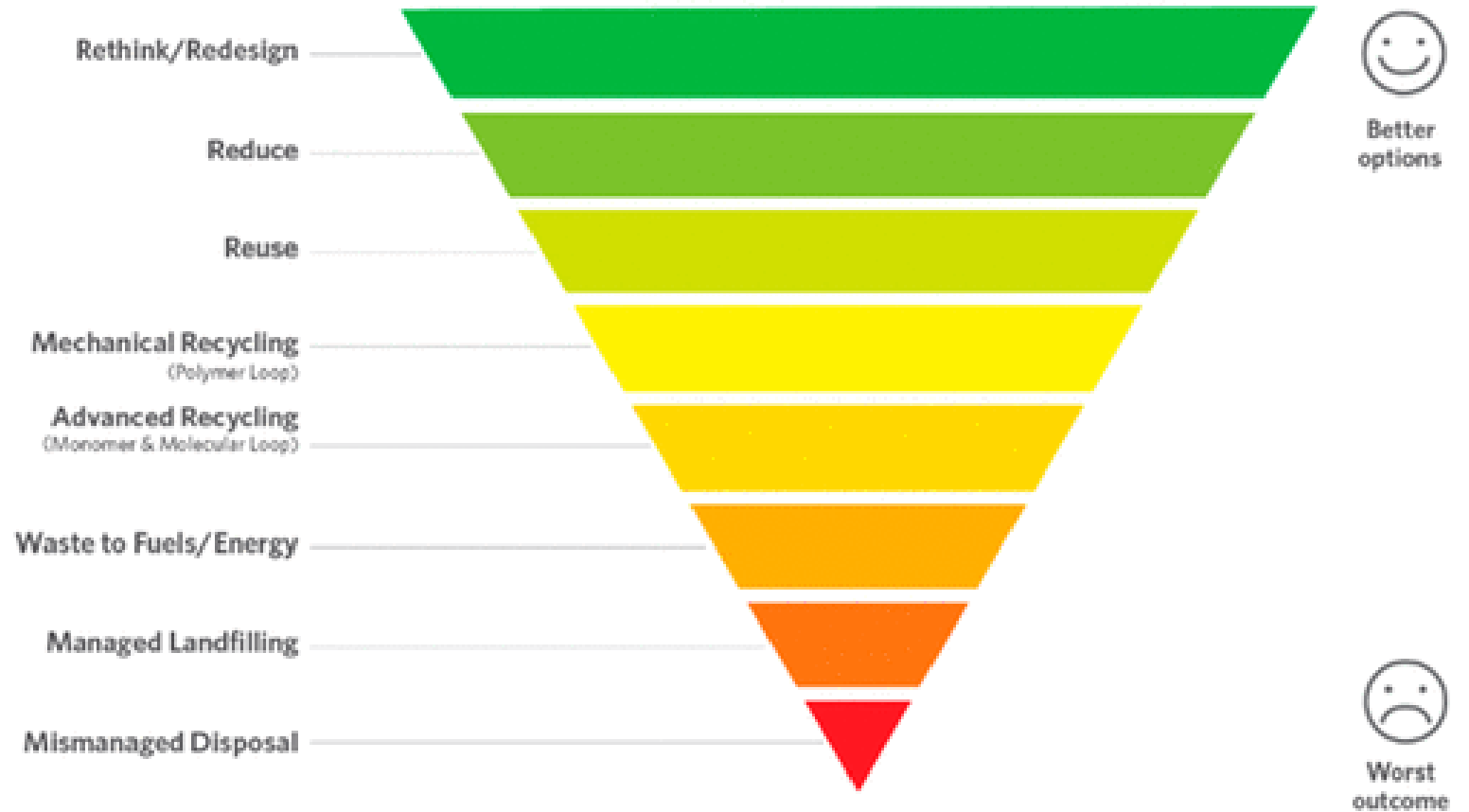


Source: BCG.

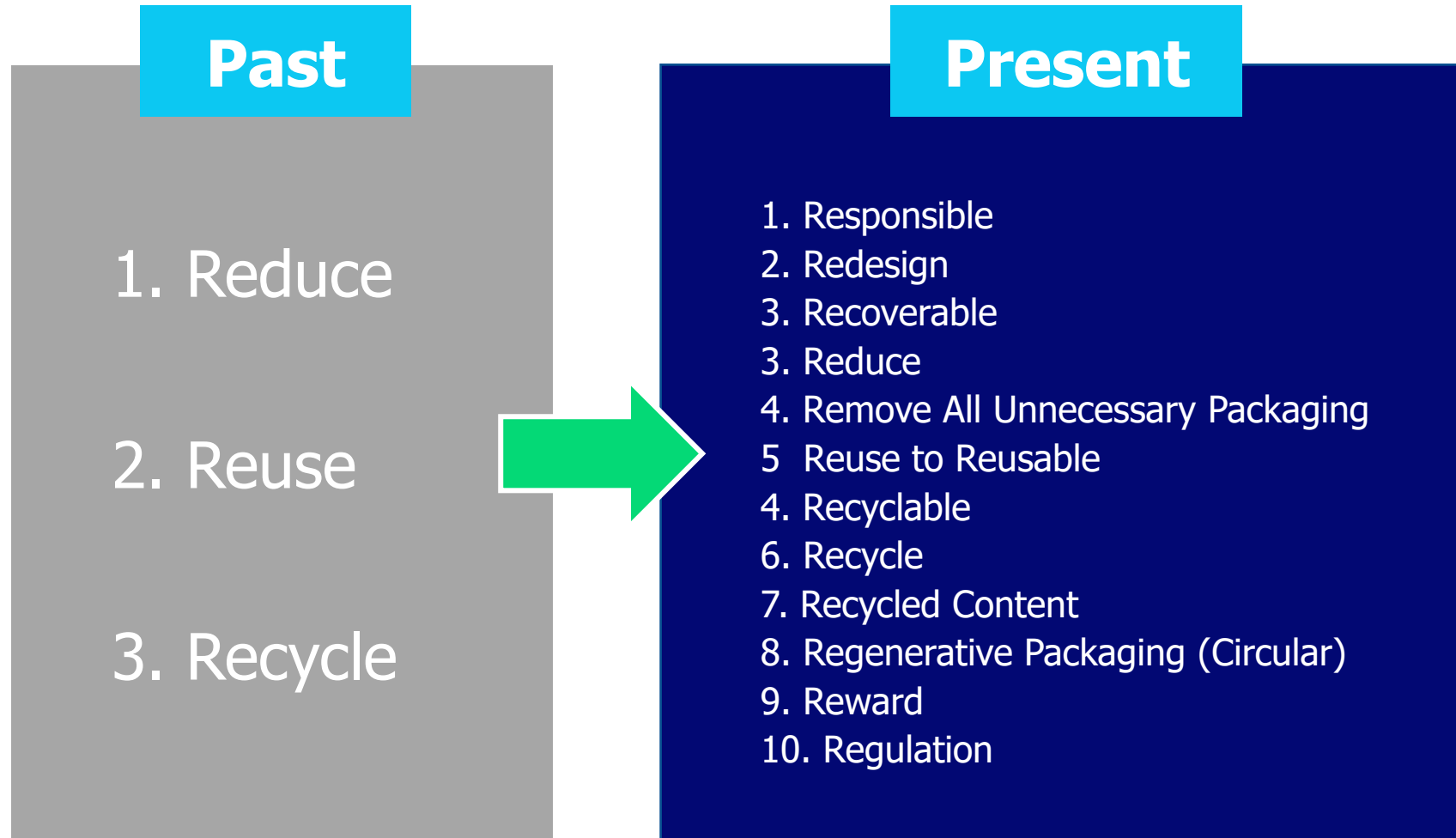
Driving Circularity



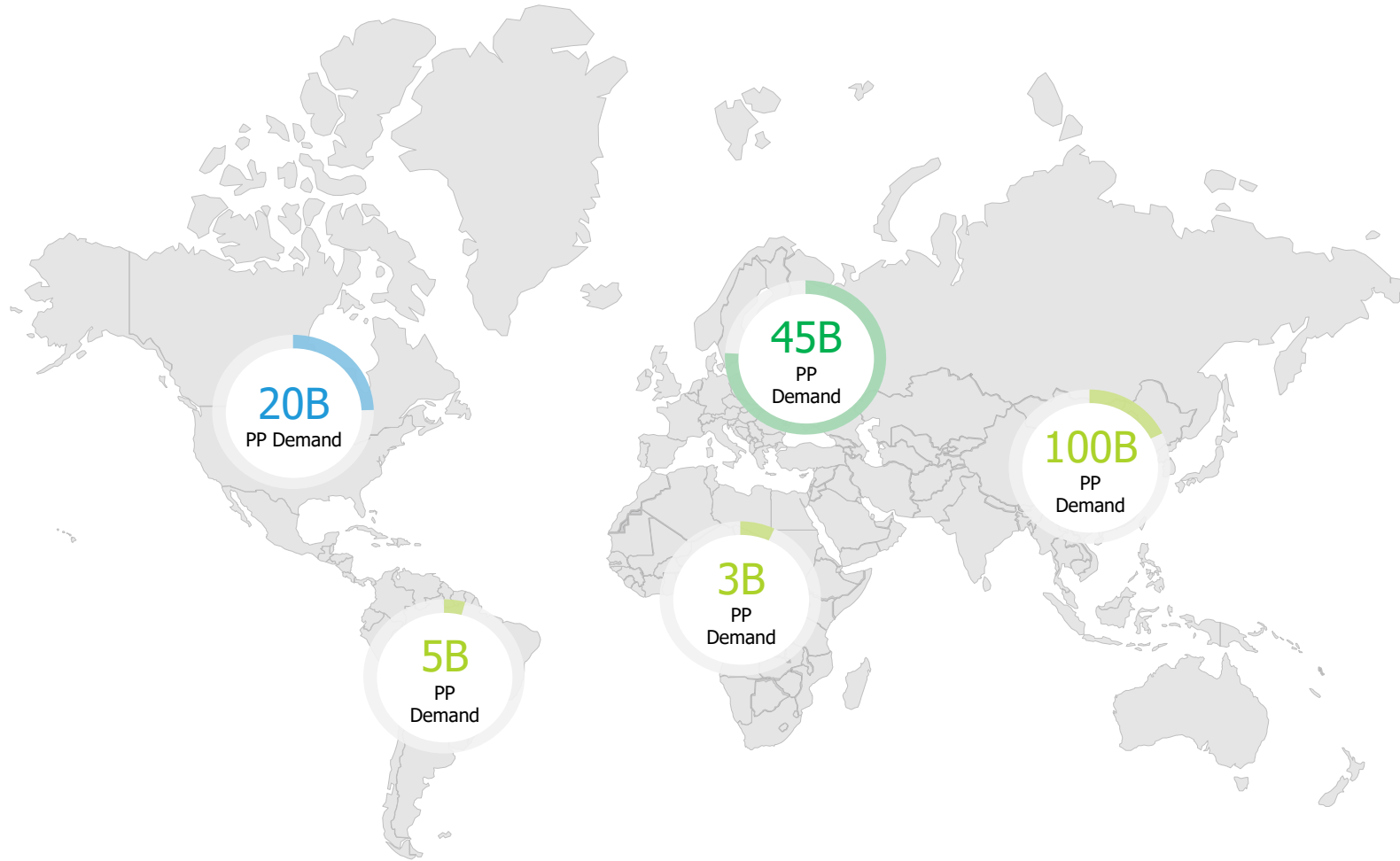
The Zero Waste Hierarchy



The three R's have laid the foundation of what the ten R's should be today.



170+ Billion Pounds of Demand for PP and a Projected 4.8% Average Growth Rate¹



- **North America** – divert from landfills, grassroots campaigns, residue collection, targeted PP collection
- **Europe** – transition from EfW, targeted PP collection, build on government relationships (GB, France) and multinationals
- **South America** - target post-industrial sources (ag bags, rope, etc.), and landfills
- **Asia/Africa** – leverage plastic bank and informal waste picker network

1. IHS 2019 World Analysis Polypropylene - Report

PureCycle brings something new to the Plastics Recycling Industry.

Bringing PP scrap back to a clear FDA-Grade PP from multiple formats,
not through Mechanical or Chemical Recycling.



PureCycle's recognition as a leader in innovation in polymers, sustainability, and recycling has garnered global media attention and brought forward multinational partners and customers.



Innovation in Plastics Recycling
November 2017



Best Innovations of 2019,
Sustainability
January 2020



Solar Impulse Efficient Solutions
for **Profitable Climate Solutions**
March 2020



The Plastics Industry Association
announces PureCycle Technologies
as the winner of the 2020
Leadership in Innovation
May 2020







PureCycle in the News

PureCycle in the News articles are embedded in the logo images; A separate article summary can be provided upon request



"This technology, which can remove virtually all contaminants and colors from used plastic, **has the capacity to revolutionize the plastics recycling industry by enabling P&G and companies around the world to tap into sources of recycled plastics** that deliver nearly identical performance and properties as virgin materials in a broad range of applications." – Kathy Fish, P&G CTO

Because each type of plastic is used differently, the recycling method also differs.

Type	Food-Grade Recyclable?
	<div><p>Fully</p><p>Polyethylene Terephthalate The most recycled plastic worldwide. Used for a wide range of consumer products and packaging, especially foods and beverages due to its durability, non-leaching and food safe properties.</p></div>
	<div><p>Case by Case</p><p>High Density Polyethylene Known for durability and strength, has wide uses from reusable water bottles to construction materials to products requiring chemical resistance.</p></div>
	<div><p>None</p><p>Polypropylene A resilient material ideal for a wide range of formats including consumer, household, medical and automotive.</p></div>

There are no other producers of food-grade, virgin quality recycled PP



PURECYCLE™



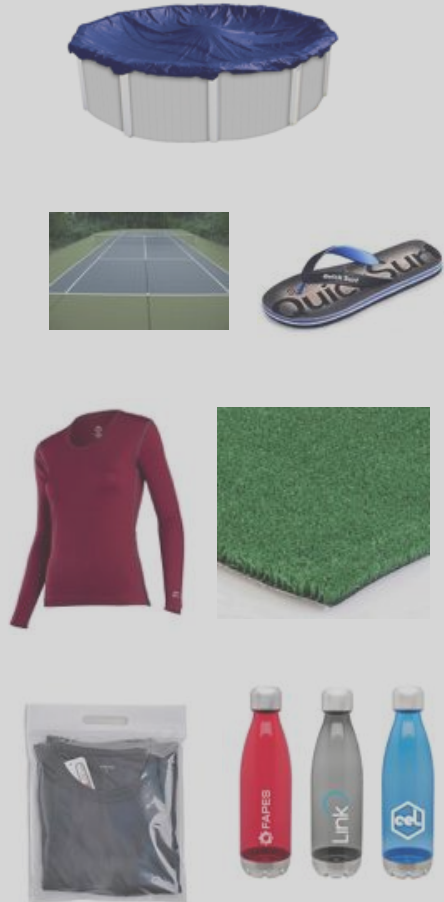
UNTIL NOW

Billions of pounds of Polypropylene feedstocks exist in the market today across all industries; most of these feedstocks are untapped by the market.

Flexible & Rigid Packaging



Sports & Fashion Industry



Medical Applications



Consumer Products



Automotive & Industrial Industry



PureCycle Solvent Recycling Technology

Solvent recycling, by definition: Used plastic is dissolved in a solvent to remove additives, resulting in a purified near virgin plastic. No chemical reaction is created.

PCT uses proven temperature and pressure ranges and a patented process to remove impurities while not chemically altering the polypropylene molecular structure.

Highly energy efficient, using $\frac{1}{4}$ the energy required to produce virgin polypropylene.

Unlike chemical recycling, by definition: A chemical reaction is created, the molecular bonds of used plastic are broken, resulting in molecules (monomers) from which plastics are made.

While there are a range of ways that plastics can be recycled, there are very limited options available for polypropylene today.



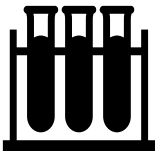
Mechanical

The most common and front-line recycling method performed by solid waste collectors. May include optical sorting, manual sorting, washing, density separation or electrostatic separation, shredding, pelletizing, and/or compounding.



Chemical

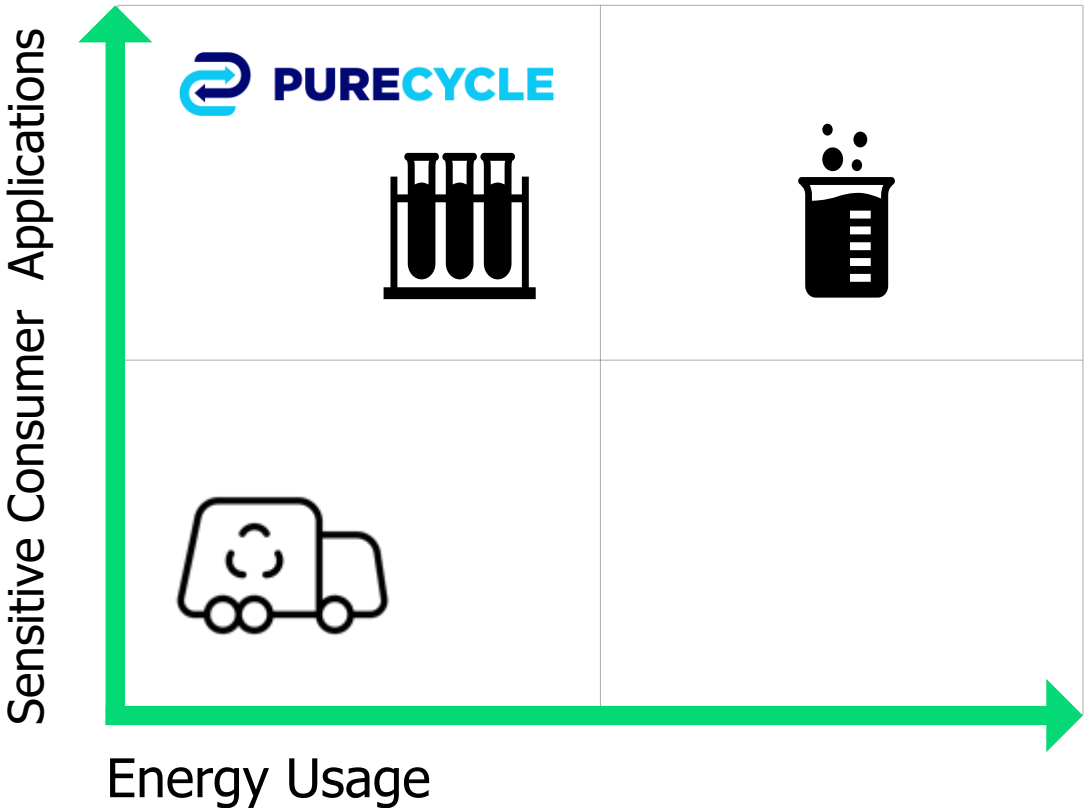
A chemical reaction is created, the molecular bonds of used plastic are broken, resulting in molecules (monomers) from which plastics are made.



PureCycle Solvent-Based Purification Process

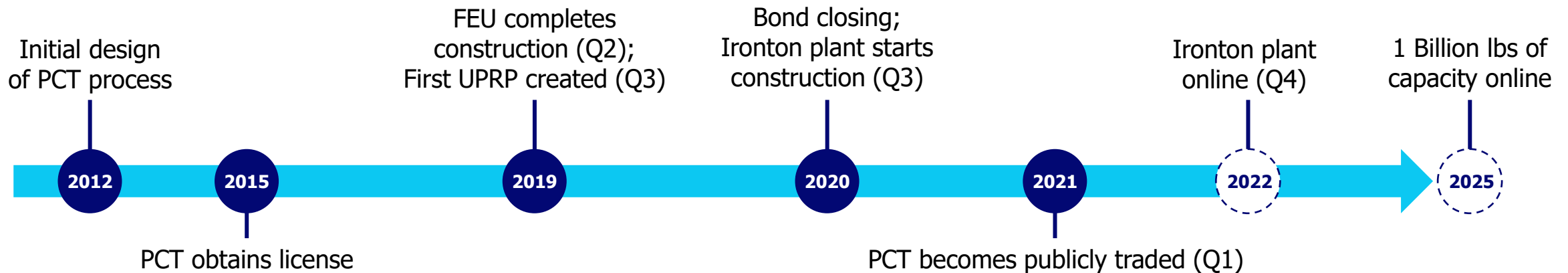
Used plastic is dissolved in a specialized solvent to remove additives, resulting in a purified, near virgin plastic. No chemical reaction is created.

Polypropylene Applications

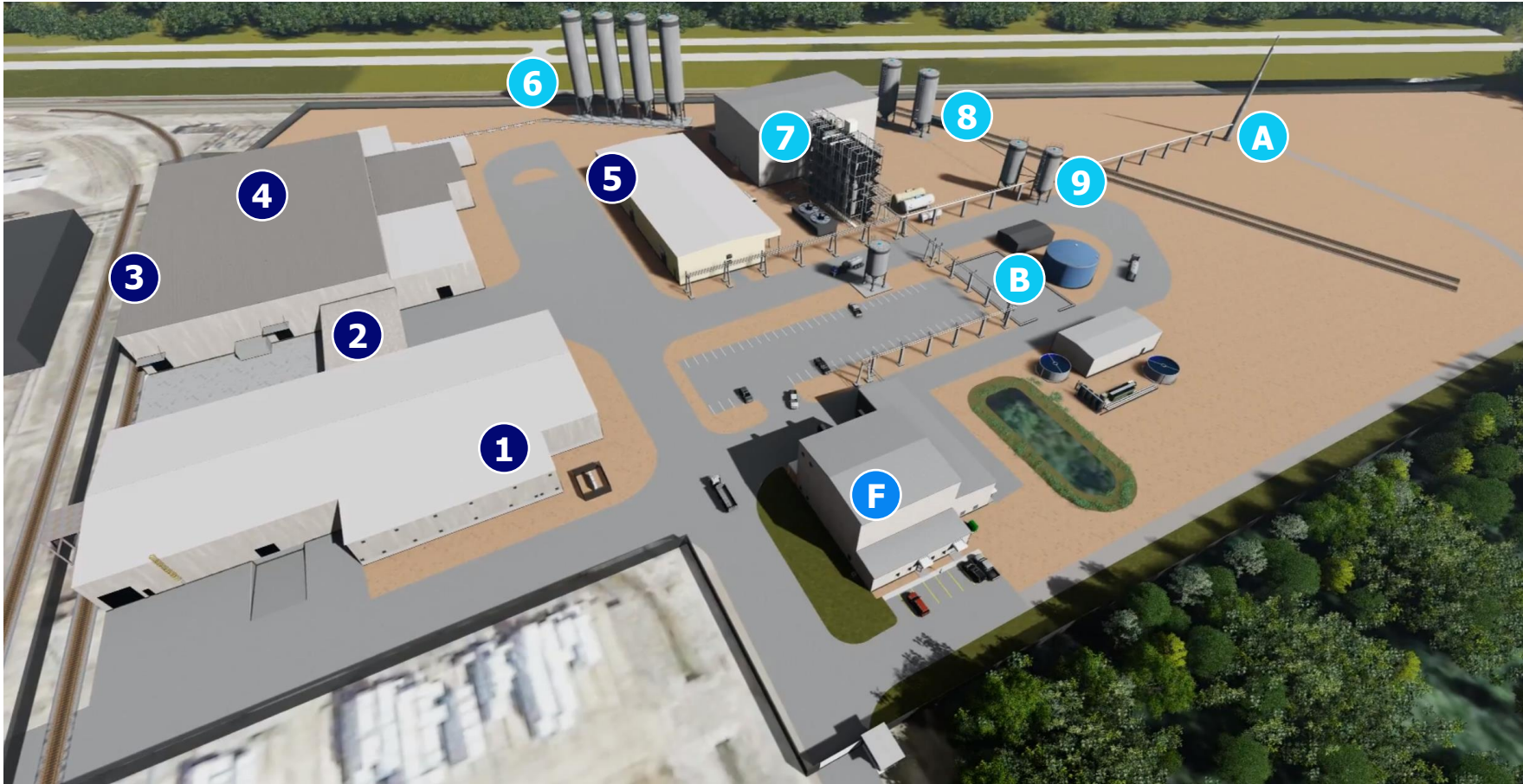


PureCycle's mission: provide recycled polypropylene that can be used interchangeably with virgin resin without compromise

- Technology developed by P&G and globally licensed to PCT
- PureCycle's first plant will be operational in 2022 and will produce over 100 million pounds of UPRP polypropylene annually
- PureCycle's unique purification process is designed to obtain the FDA's Letter of No Objection – Testing has commenced



Hanging Rock (Plant 1) Facility Overview



Existing Infrastructure

New Infrastructure / Improvements

- 1 Feedstock Storage
- 2 Feedstock Receiving – Truck
- 3 Feedstock Receiving – Rail
- 4 Feedstock Processing
- 5 Utility Building / Spares
- 6 WIP Silos
- 7 PCT Purification Process
- 8 Rail Loading Silos
- 9 Storage Silos
- A Process Flare
- B Water Tank
- F Feedstock Evaluation Unit



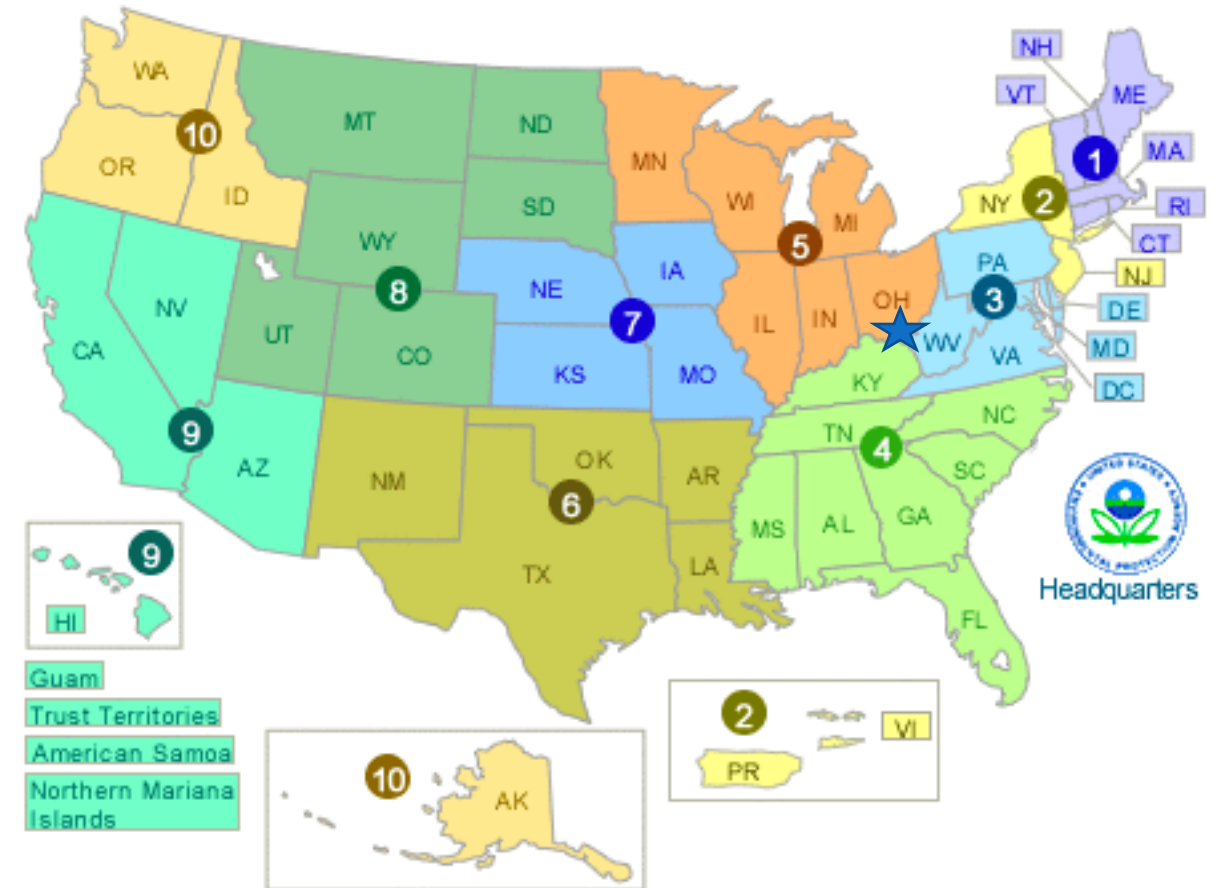
In July 2019, PureCycle commenced operation of Phase I of the Project, the Feedstock Evaluation Unit.



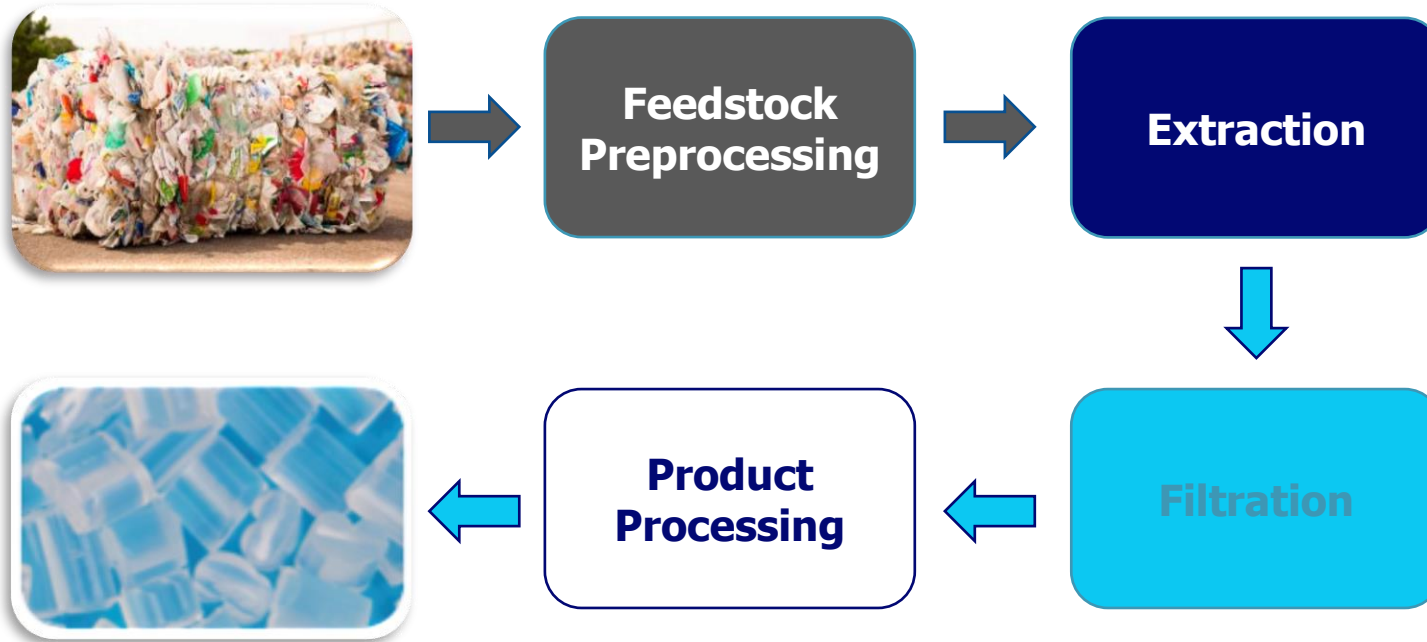
- Produced first UPRP July 2019
- Processed many different types of feedstock to date
- All feedstocks have produced product meeting contractual commercial product specifications

Our Goal - Increase collection of PP

- Primary Materials - (What we take?)
 - Bales
 - #3-#7 bales (50% min. PP)
 - #5 bales (75% min. PP)
 - Bulky Rigids (50% min PP)
 - Film (Post industrial)
 - Fiber bales (carpet backing, supersacks)
- Regionally Focused
 - Developing PRF model in Ironton
- Focusing heavy on Post consumer collection
 - See large growth opportunity
- Billion pound capacity by 2024



Waste stream polypropylene is returned to near near-virgin condition through a novel assemblage of commercially available equipment/unit operations.



Key Benefits of the Technology

- All unit operations are well-known and commercially available at scales much larger than required by PCT
- Physical separation/ specialized solvent-based purification process (no chemical reactions are involved)
- Process operating conditions comparable to current polyolefin (PP and PE) production conditions

Because no chemical reactions are performed, the PureCycle process can be reutilized many times on the same polypropylene material enabling a true circular economy.

PureCycle brings something **new** to the Plastics Recycling Industry.

PureCycle is able to bring PP scrap back to a clear FDA Grade PP from multiple formats, not through Mechanical or Chemical Recycling



Example of Scrap to PureCycle PP



Feedstock: Film

Before



After



Feedstock: Rigid

Before



After



Feedstock: Fiber (Carpet)

Before



After



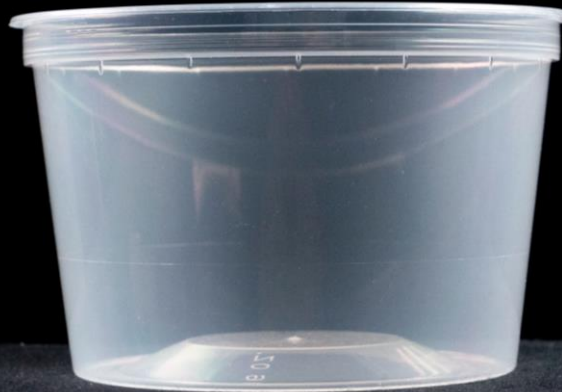
The first run from the FEU transformed waste carpet into virgin-like recycled polypropylene.



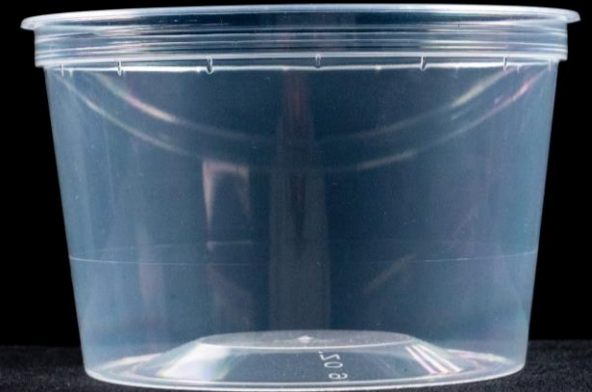
PureCycle's UPRP has the ability to supplement or replace traditional polypropylene with a more sustainable solution.



100% Virgin Resin



100% PCT Ultra-Pure
Recycled
Polypropylene



100% PCT Ultra-Pure
Recycled Polypropylene
with a Milliken clarifier

Because we can get to an ultra-pure PP resin, we can sell into a versatility of end products.



Thank You!

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