Multi Material Flexible Recovery Collaborative

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SUSTAINABLE PACKAGING COALITION®

Agenda

1. Welcome and industry updates
2. Introduction to the Advanced Recycling Alliance at ACC
3. Follow-up discussion from virtual Chemical Recycling Workshop

Industry updates

- U.S. government to provide up to $4 million to advance development of technologies to convert recovered plastics into feedstock for fuels. Source

- Nova Chemical and Enerkem partner on Advanced Recycling project in Canada. Source

Industry updates

- Advanced Recycling Alliance For Plastics Announces new name and members Source

Advanced Recycling Alliance for Plastics

ADVANCING SOLUTIONS FOR PLASTICS RECYCLING

ADVANCED RECYCLING ALLIANCE FOR PLASTICS

SPC MMFR Collaborative

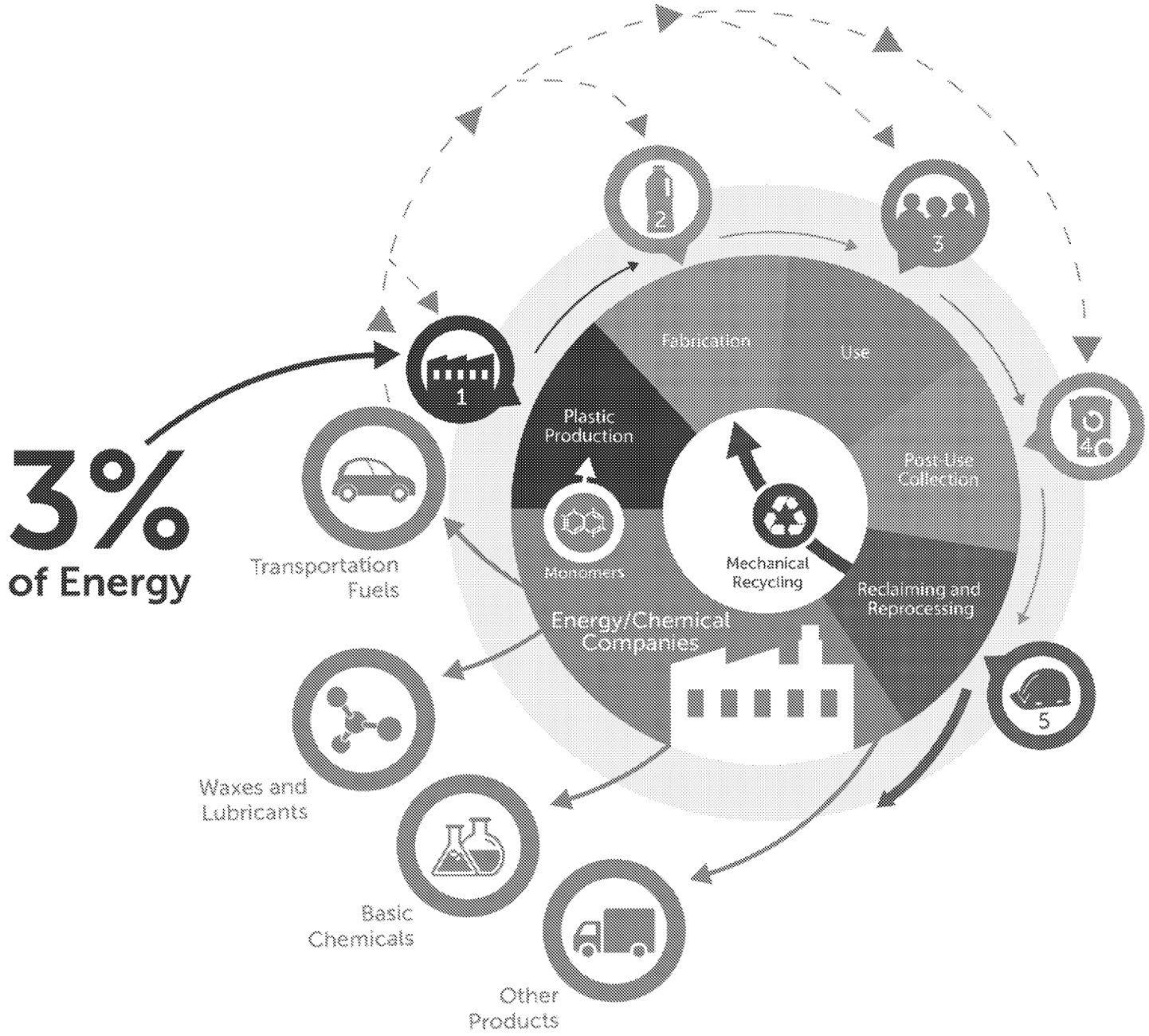
March 4, 2020

American Chemistry Council

U.S. Resin Manufacturer Sustainability Goals

- ✓ **2040 Goal**
  - 100% of plastics packaging is reused, recycled or recovered
- ✓ **2030 Interim Goal**
  - 100% of plastics packaging is recyclable/recoverable
- ✓ **Best Practice Goal**
  - 100% of Division's U.S. manufacturing sites participate in Operation Clean Sweep Blue by 2020, with all North American sites by 2022

Plastics in a Circular Economy



EMF Recycled Content Commitments

Ahold Delhaize
BURBERRY LONDON
amcor
Coca-Cola
COLGATE-PALMOLIVE
DIAGEO
DANONE
essity
H&M
Henkel
Johnson & Johnson
Kellogg's
L'ORÉAL
MARS
McCormick
Nestlé
SC Johnson A family company at work for a better world
PEPSICO
Sealed Air Re-imagine
Stanley Black & Decker
TARGET
Walmart
Unilever

Source: https://newplasticseconomy.org/assets/doc/GC-Spring-Report.pdf

Investments in Traditional & Advanced Recycling

New Investments in U.S. Plastics Recycling

Announced since July 2017

35

projects in the U.S.

Combined projects valued at

$4.2

billion

Potential to divert

2.7

million tons of waste* from landfills

*Mostly plastic, but includes other waste (MSW, cartons, electronics, etc.)

Infrastructure Investments, Circular Solutions

Examples

P&G
PURECYCLE TECHNOLOGIES
Milliken
NESTE

agilyx
AmSty
DELTA

سابك
sabic
PLASTIC ENERGY
Tupperware
Unilever

lyondellbasell
suez environnement
KIT Karlsruher Institut für Technologie

UNITED AIRLINES
Fulcrum BIOENERGY

RENEWLOGY
City of Phoenix

bp
3ME BRIGHTMARK ENERGY

Shell
Air Liquide
Enerkem

MRFF MATERIALS RECOVERY FOR THE FUTURE
THE RECYCLING PARTNERSHIP
Hefty ENERGYBAG
W.R.A.P.

Economic Impact

The U.S. could support up to 600 chemical recycling facilities, generating nearly 39,000 jobs

Companies are using advanced recycling and recovery technologies, also known as chemical recycling, to complement ongoing recycling efforts. Growing interest and investments in chemical recycling can reduce the amount of waste sent to landfills and generate a diverse range of raw materials, feedstocks for manufacturing, chemicals and fuels.

38,500 Jobs

supported by new conversion facilities, including:

- 9,400 directly employed
- 15,100 employed in supply chain industries
- 14,000 payroll-induced jobs

$2.2 Billion

in annual payrolls generated

$9.9 Billion

in U.S. economic output from plastics conversion operations, including:

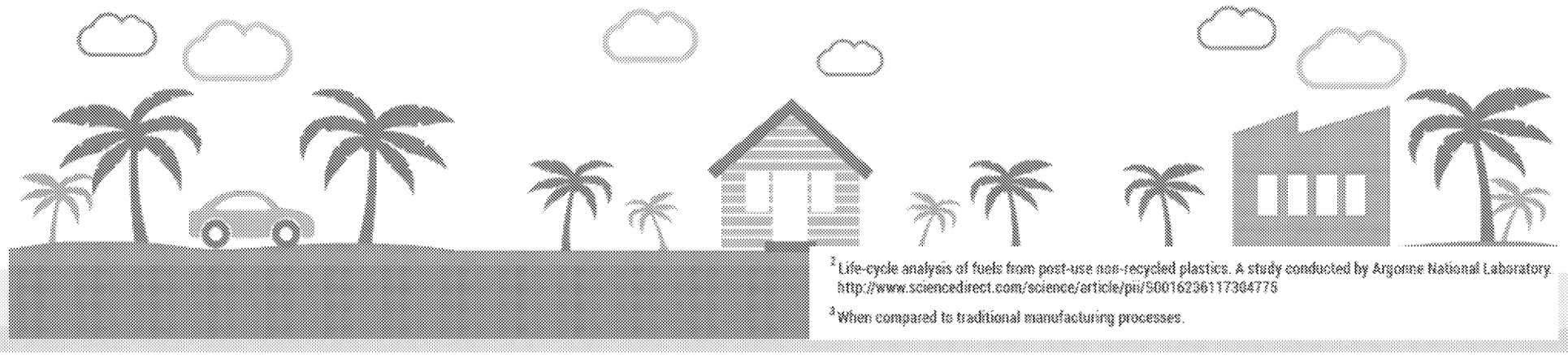
- $4.1 billion related to increased products generated by the facilities
- $5.8 billion in additional supplier and payroll-induced impacts

Environmental Benefits Are Significant

By converting post-use plastics into ultra-low-sulfur diesel, we reduce:[2,3]

WATER CONSUMPTION
-58%

TRADITIONAL ENERGY USE
-96%



[2] Life-cycle analysis of fuels from post-use non-recycled plastics. A study conducted by Argonne National Laboratory. http://www.sciencedirect.com/science/article/pii/S0016236117304775

[3] When compared to traditional manufacturing processes.

Advanced Recycling Alliance for Plastics

Advocating on behalf of technologies that leverage chemistry to convert post-use plastics into new plastics, chemicals, fuels and other products.

Advanced Recycling Alliance for Plastics

ADVANCING SOLUTIONS FOR PLASTICS RECYCLING

agilyx

3ME BRIGHTMARK ENERGY

Golden Renewable Energy

GREENMANTRA TECHNOLOGIES

NEW HOPE ENERGY

RENEWLOGY

AmSty

Chevron Phillips Chemical Company LP

SealedAir

Ravago

TETRA TECH

Stay Connected

@Adv_Recycling

Advanced Recycling Alliance for Plastics

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Follow-up discussion from virtual Chemical Recycling Workshop

Today's objective

Provide a list of the major points to be expressed in our narrative on our website for people to react to. This will probably be an ongoing discussion for the next several meetings.

Terminology

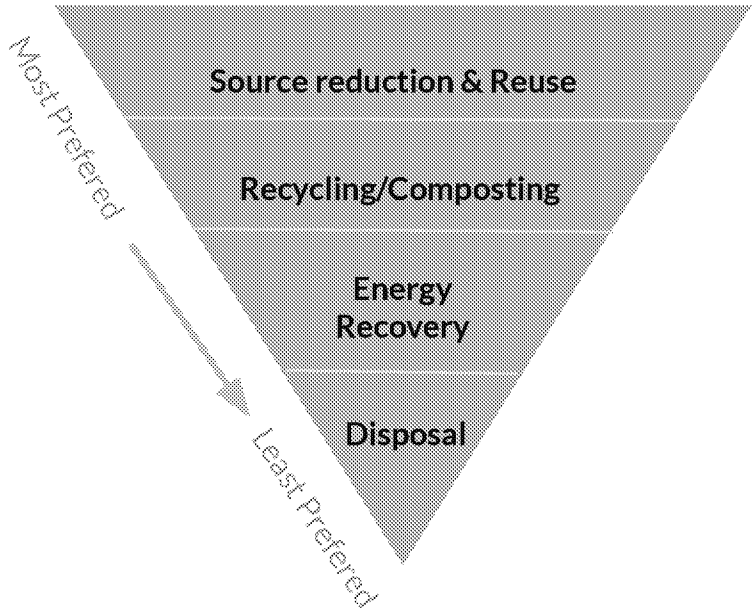
- It's important for technologies to fit into definitions of "recycling" to enable their growth. Definitions are important from permitting a plant, to accounting for materials, to consumer claims around recycled content, and financial incentives and program requirements defined by policies.

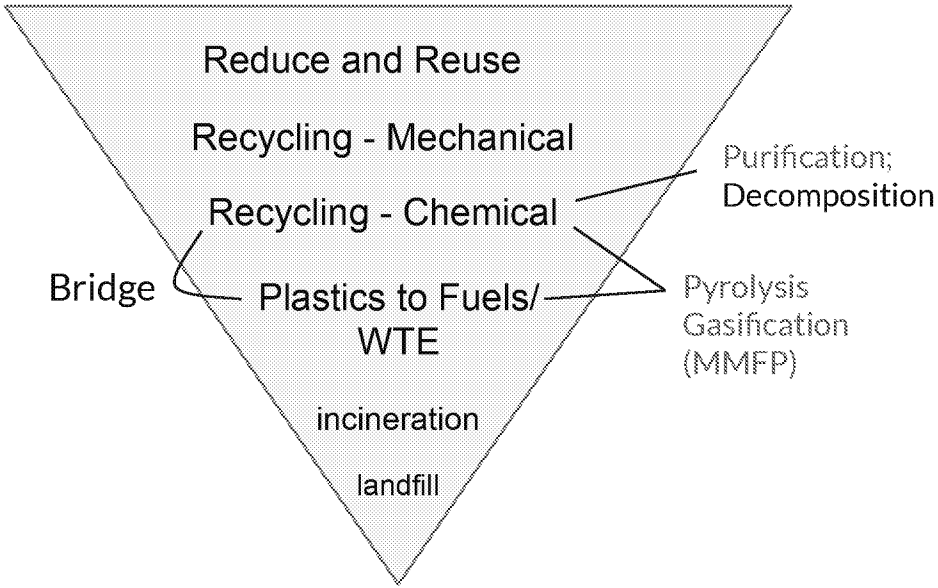
- Change use of the term “Chemical Recycling” to “Advanced Recycling” to align with others in industry.

The role of Advanced Recycling

- **It is more important to consider fate vs. process when evaluating these technologies** - The sustainability of AR depends on the market uses for its outputs.
- **Differentiate the different technologies.** AR is a mix of recycling and fuel production. Some aspects can be classified as recycling while others not.
- **Purification or depolymerization processes are clearly recycling** by any definition since they produce polymers or monomers.
- **AR belongs somewhere near mechanical recycling - above or below depends on output** (i.e. is it downcycled? or does it create many markets?)
- **Chemical recycling should go above composting**, since it saves more energy in the product than compost.

Is Chemical Recycling, Recycling?





Where does **chemical recycling** fit in?
Where does it fit for **MMFP** specifically?