



October 4, 2018

CREATING A CIRCULAR ECONOMY FOR POST-USE PLASTICS

2018 EEC/WTERT CONFERENCE



Plastics Division Members




BAYPOL



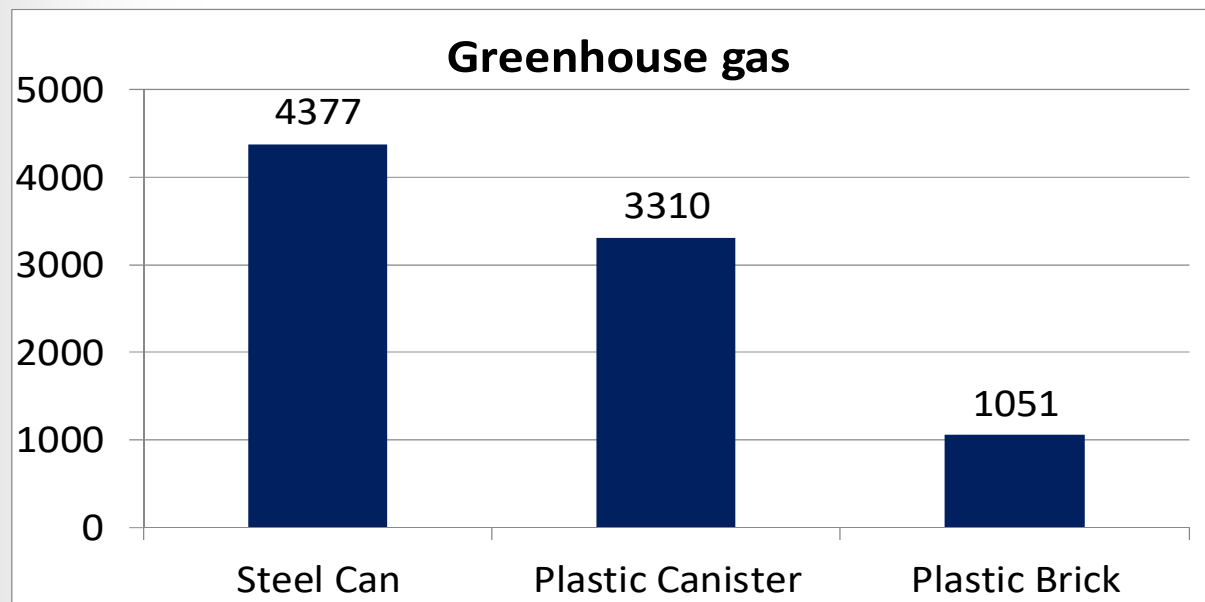
ExxonMobil



Our View

- Plastic and other litter in the environment is unacceptable
 - Plastics deliver significant societal benefits, including:
 - Energy, GHG & resource savings
 - Innovations that improve health care, reduce food spoilage & improve quality of life
 - Benefits are lost if plastic litter harms our natural environment
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Plastic Packaging Reduces Impacts



Source: Franklin Associates, September, 2008

Decoupling Waste and Economic Growth

Historically



The more affluent
the country is,



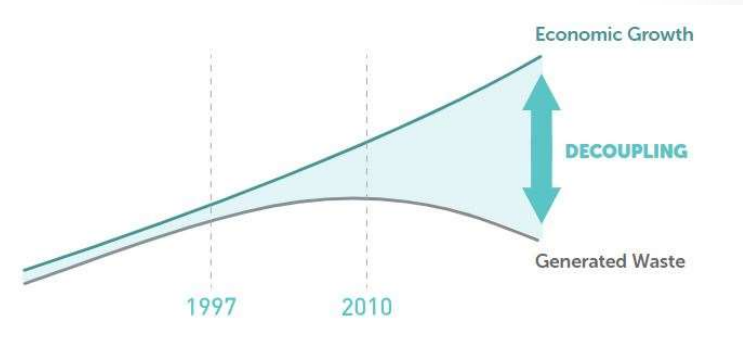
The more they
consume



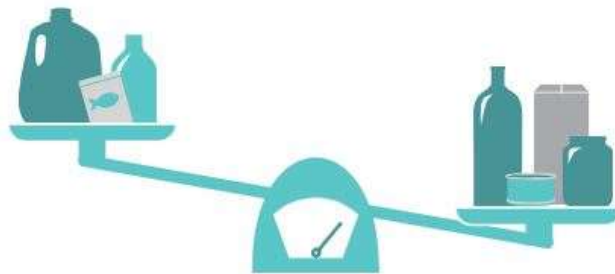
and the more they throw out.
This creates stress on the environment

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of New York

Decoupling



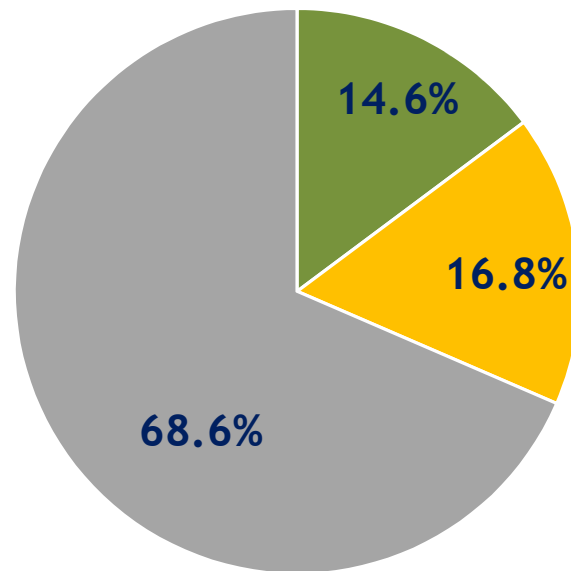
Plastics role



**Role of plastics in decoupling municipal solid waste and economic growth in the U.S. Demetra Tsiamis, Melissa Torres, Marco Castaldi. Waste Management*

Plastic Packaging Recovery (2015)

EPA Plastics Packaging 2015: Finding a solution for the (nearly 10 MT) of plastics packaging landfilled each year



■ Recycling ■ WTE ■ Landfill

Circular Economy Goals Established

ACC's new goals publicly announced in May 2018:

1. 100% of plastics packaging is re-used, recycled, or recovered by 2040
2. 100% of plastics packaging is recyclable or recoverable by 2030
3. 100% of the U.S. manufacturing sites operated by ACC's Plastics Division members will participate in Operation Clean Sweep-Blue by 2020, with all of their manufacturing sites across North America involved by 2022

Market Turbulence in the News

The New York Times

Your Recycling Gets Recycled, Right? Maybe, or Maybe Not

Plastics and papers from dozens of American cities and towns are being dumped in landfills after China stopped recycling most “foreign garbage.”

THE WALL STREET JOURNAL.

Recycling, Once Embraced by Businesses and Environmentalists, Now Under Siege

Local officials raise fees and send recyclables to landfills as economics erode

Los Angeles Times

California has a recycling crisis. The only way to solve it is to stop making so much trash

statesman journal

PART OF THE USA TODAY NETWORK

One Oregon county throws in the towel on recycling



Vietnam to temporarily stop accepting scrap plastic imports

Achieving the 2040 Goal

100% of plastic packaging is re-used, recycled, or recovered by 2040



Define, inventory and target



Design new packaging to enable greater recycling and recovery



Invent new circular business models



Increase access and infrastructure

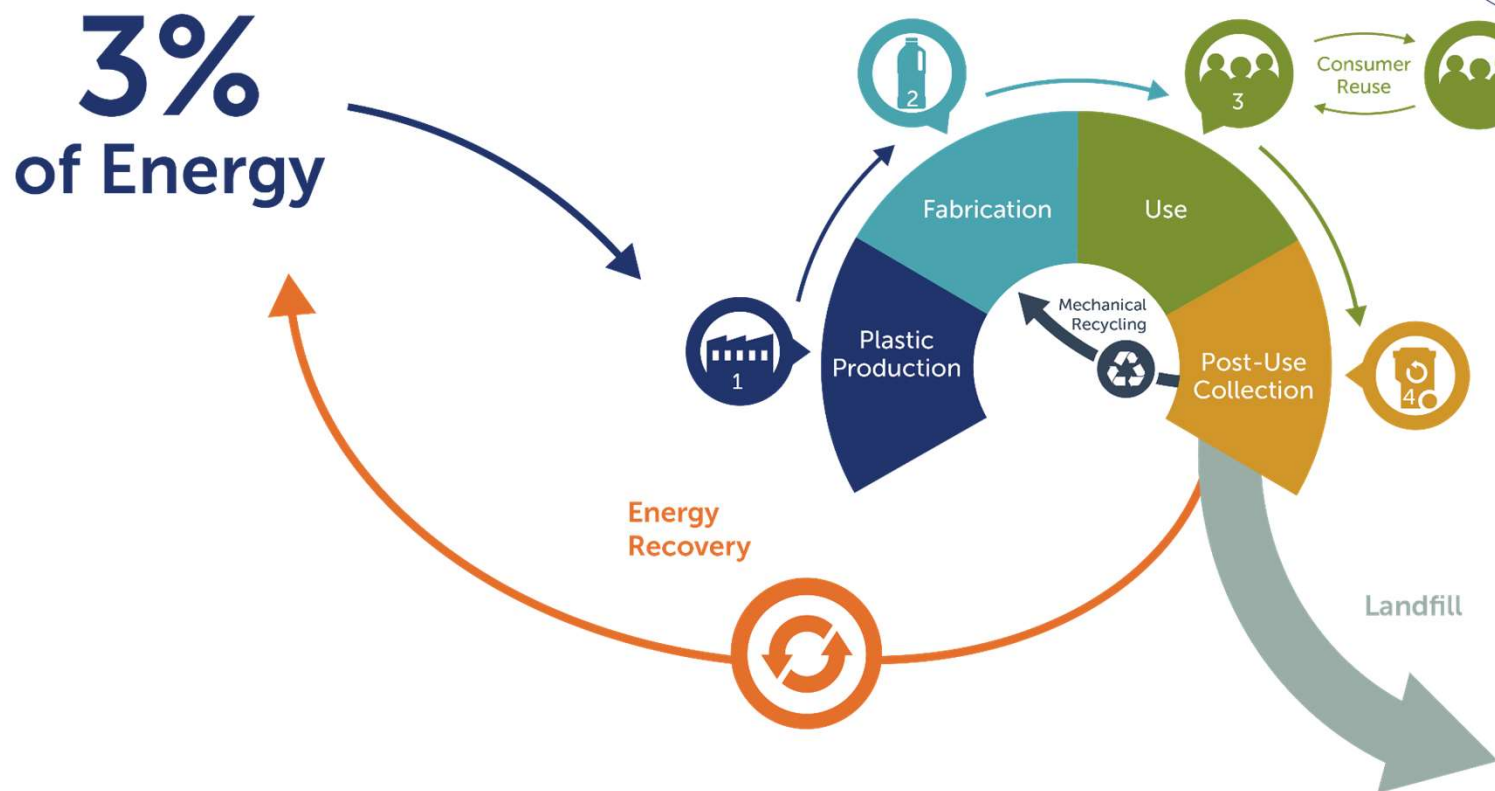


Educate consumers and change behavior



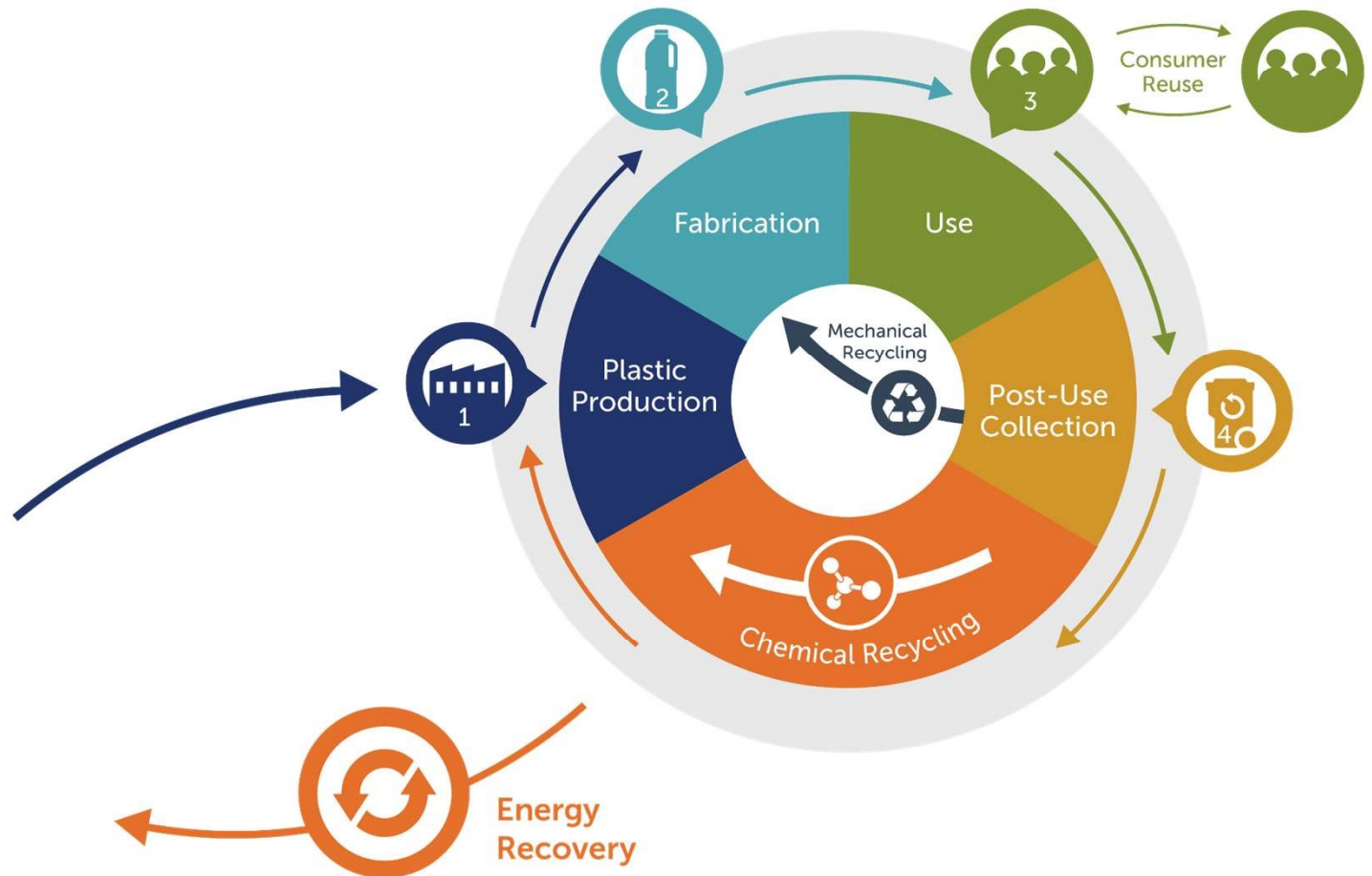
Develop new disruptive technology

Plastics | The Current Model

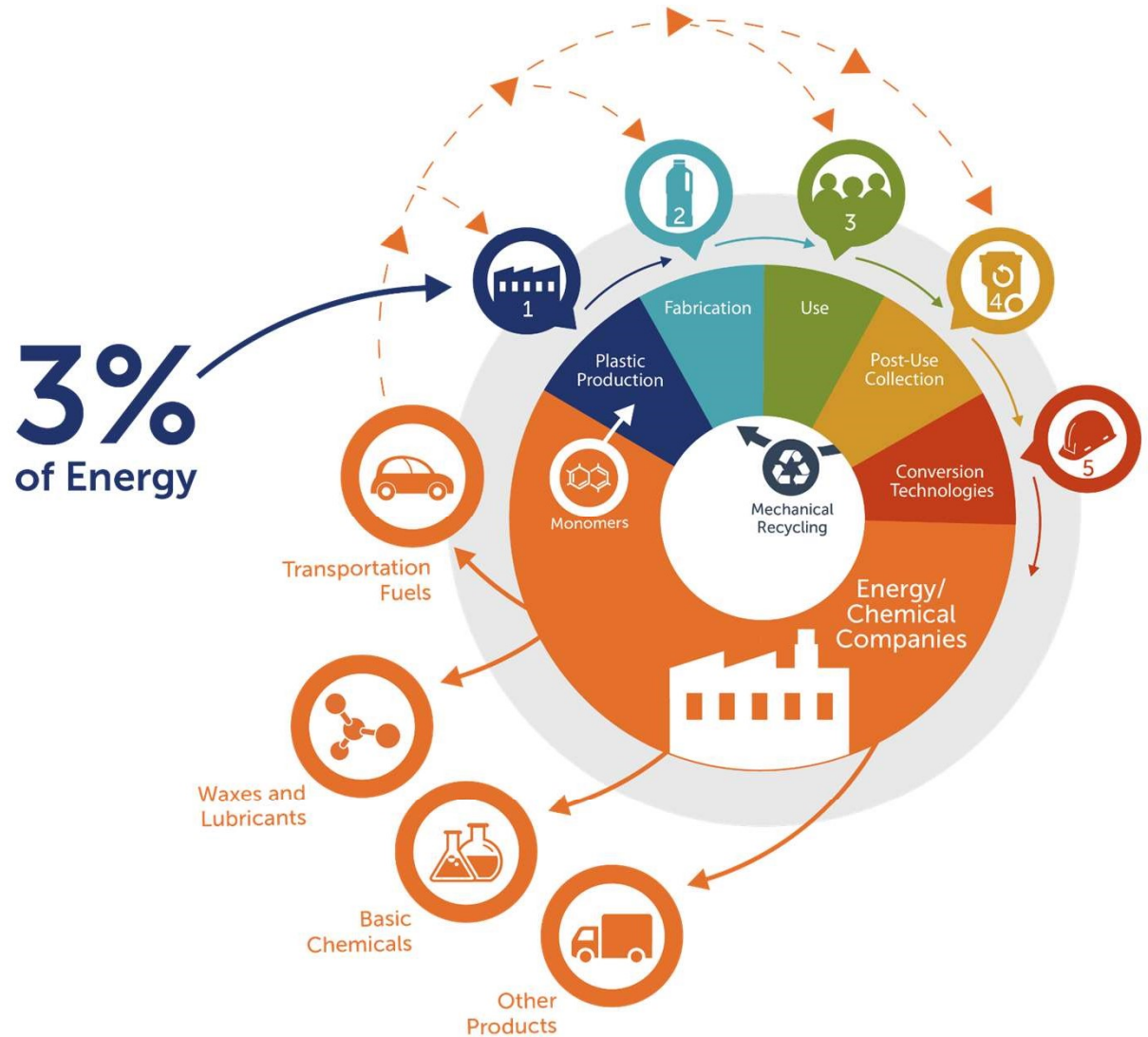


Plastics | In A Circular Economy

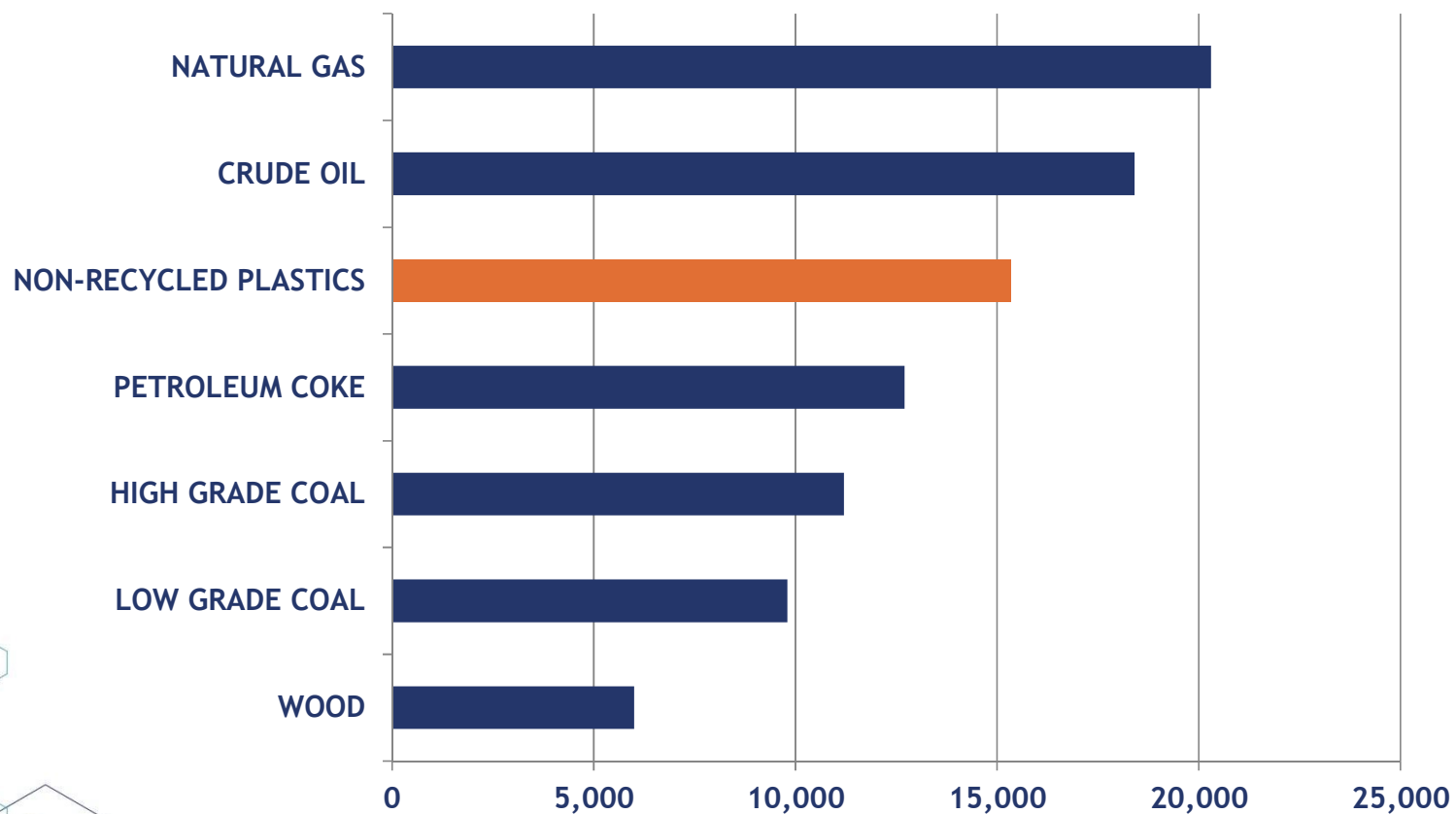
3%
of Energy



The Key to the Circular Economy



Plastics are Captured Energy



Industry Trends toward Circular Economy

“What if virgin plastics companies were also major purchasers of [recycled plastics] for use in the resins they sell?”

GreenBiz

Solving the recycled plastics puzzle

Rob Kaplan

Thursday, September 21, 2017 - 1:35am



Shutterstock / By Alaettin YILDIRIM

Raw plastic pellets for use in manufacturing.

Pathway to New Plastics and Chemicals

**RESOURCE
RECYCLING**

Your trusted source for recycling news and analysis

In My Opinion: Launchpad for circularity

Posted on January 25, 2018

by [Rick Wagner](#)



Chemical recycling of recovered plastics to the monomer level would open important opportunities in materials management. Here's why focusing on plastics-to-fuel now can help the industry blast off toward further innovation.

Recent Commercial Announcements

Plastics News

BP deal will help RES Polyflow open first commercial plastics-to-fuel plant



REUTERS Suez, LyondellBasell in plastics recycling JV

Plastics News

Agilyx, Americas Styrenics sign deal for monomer from recycled PS



Pyrowave and Ineos enter into polystyrene recycling venture

Plastics News

Polystyvert, Total partner to recycle post-consumer polystyrene

**environmental
LEADER**

Unilever Joins Partnership to Turn PET Waste into Virgin Grade Material

FORTUNE United Airlines to Power Flights With Waste

Life Cycle Analysis of Plastics-to-Fuel



By converting non-recycled plastics into ultra-low-sulfur diesel, we reduce:^{2,3}



CCNY Partnership: MSW to Chemicals

- Evaluated plastics feedstock impact of gasification to methanol
- Increasing post-use plastics % compared to biomass results in:
 - the process is more energy efficient
 - yields more useful chemical
 - less waste (ash) sent to landfill
- *Find the study and video at chemical-recycling.com*
- *Currently evaluating Phase II*



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Conclusion and Final Thoughts

- 
- ✓ Resin manufacturers have committed to big goals
 - ✓ Business models changing (China, vertical integration)
 - ✓ Developments in new end markets (feedstocks, chemicals, fuels, asphalt)
 - ✓ Creating needs for technical due diligence and projects
 - ✓ ACC members greatly value our partnership with CCNY and Columbia



Thank You!

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