What's going on with Plastic Recycling?

Michigan Recycling Conference
May 2019

Sandi Childs, Film & Flexibles Program Director

The Association of Plastic Recyclers

APR:
The Voice of Plastics Recycling™

Increase Supply

Enhance Quality

Expand Demand

Communicate Value

APR Primary Goals

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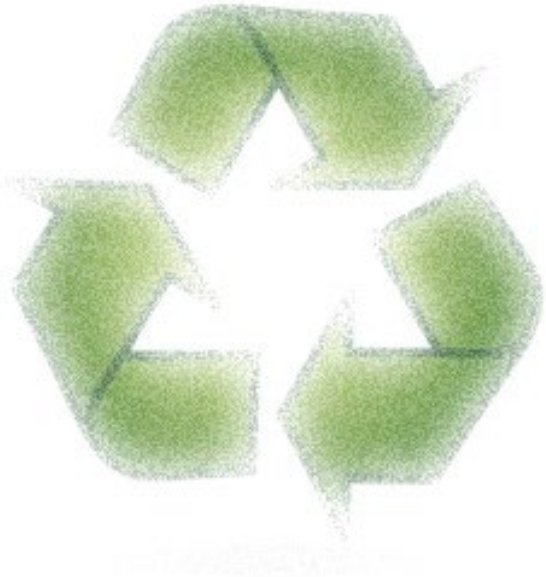
- APR believes that *functional, attractive, and economical* plastic products can be designed that are also *fully compatible* with material recovery and plastics reclamation systems.
- APR Key Programs:
  - Design® Guide for Plastics Recyclability
  - Demand Champions Campaign
  - Support for Stakeholder Initiatives
    - TRP
    - MRFF
    - NEMO
    - WRAP



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SAME
AS
IT
EVER
WAS

Crossroads

- Brand owner sustainability commitments
  - Every package will be recyclable
  - Packages will contain postconsumer recycled content
- Brand owner package innovation
  - More flexible pouches replacing rigid containers
  - Higher performance characteristics

Impact

- Unprecedented need for high-quality PCR
- Unprecedented need for markets for low-quality bales

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Let’s Talk about Supply

- High-yield Collection Infrastructure
  - Curbside carts
  - Deposit-return systems
  - Depots and drop-offs?
- Behavior Normalization
  - Recycling is an industry not a hobby
  - Effects of polarization
  - Expand the circle
- Public Policy Options

Is it Supply or Demand?

- High-value established materials:
  - "Brand Love" – the intersection of marketing and virtue
  - Circularity is the holy grail
  - Quality material at parity cost is the goal
- Low-value new materials:
  - What is the "virtue" proposition?
    - Reducing food waste
    - Reducing resource use in manufacturing, transportation
    - Takes up much less landfill space
    - Can a plastic package be "too good to recycle"?
  - What is the value proposition?

Key Focus Areas

- Supply development for established high-demand plastics
  - PET Bottles
  - HDPE Milk Jugs
  - HDPE Mixed Color
- Market development for emerging materials
  - Multi-layer laminated pouches; “Hybrid” packages
  - Sort for Value
  - What is circularity?
  - What are the roles for chemical recycling (“Transformational Technologies”), combustion or pyrolosis for fuel, product substitutions?

Two Initiatives: MRFF and Demand Champions

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MRFF

MATERIALS RECOVERY
FOR THE FUTURE

FIRST PROGRAM IN THE NATION

Launching the first large-scale opportunity to collect flexible packaging loose in curbside bins – the same way other packages get recycled.

MRFF MEMBERS

Hosted by:
Foundation For Chemistry Research & Initiatives

American Chemistry Council

J.P. Mascaro & Sons

Dow

P&G

Target

amcor

PepsiCo

Nestlé
Good Food, Good Life

Nestlé Purina

SC Johnson
A Family Company

Unilever

Plum organics

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Sealed Air
Re-imagine

lyondellbasell

Chevron Phillips Chemical Company LP

Plastics Industry Association

FPA Flexible Packaging Association

Johnson & Johnson

Westlake Chemical

MARS

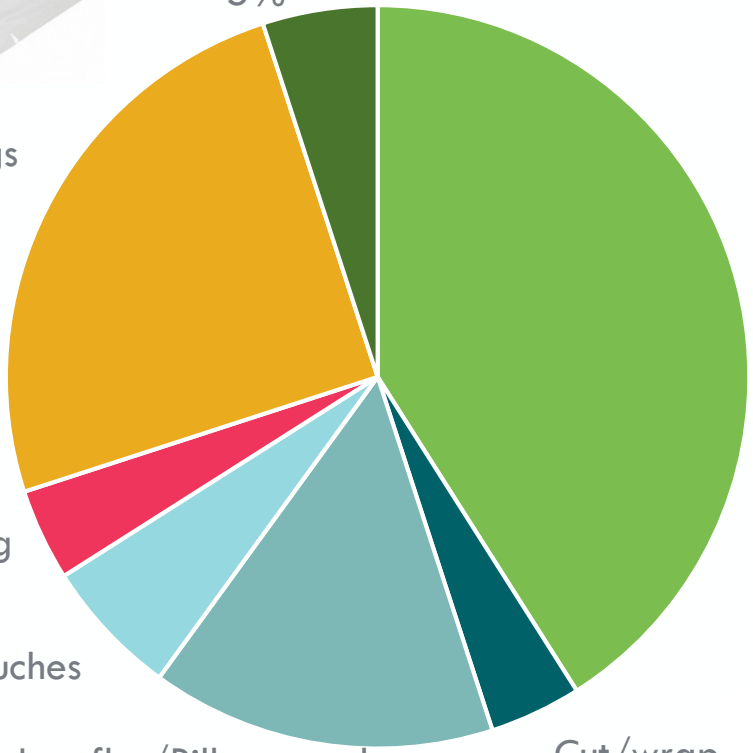
Association canadienne de l'industrie des plastiques
since • depuis 1943
Canadian Plastics Industry Association

WHAT IS FLEXIBLE PACKAGING?

Storage bags
5%

Retail carry bags
25%

Bags (excludes retail, storage and trash bags)
41%



Shrink bundling
4%

Standup pouches
6%

Lay flat/Pillow pouches
15%

Cut/wrap
4%

2019 MRF PILOT : TOTAL RECYCLE, BERKS COUNTY PA

- Owner J.P. Mascaro & Sons, 4th generation family owned business
- Large high speed MRF 700 TPD single stream in growth mode
- Adding capabilities to produce an est. 3100 tons of rFlex annually
- Fully integrated; has extensive hauling operation in area covering 9 counties with 90 municipalities under contract.
- Also owns a landfill and transfer stations in region.

http://www.wastetodaymagazine.com/article/jp-mascaro-sons-built-to-last/

Capturing more value

- 12 billion lbs of light weight flexible packaging generated annually in the US (resealable pouches, snack bags and overwraps)
- Twice the size of the PET market. $31B in sales, 19% of packaging industry (FPA, 2017)
- Potentially valuable, relatively untapped source of post-consumer resin for manufacturing applications

How do we get it back?

PERFORMANCE GOALS OF THE MRFF MASCARO PILOT

1. Capture at least 90% of FPP in feedstock;
2. Minimize paper in FPP product (less than 15% by weight);
3. Even with increased FPP in feedstock, reduce the amount of FPP going into fiber products;
4. Reduce fiber quality control staff requirement by a minimum of 30%; and,
5. Controls integrated with existing MRF control system.

These five performance goals act also as the metrics for the pilot.

NEW rFLEX BALE COMPOSITION: 80% PE AND PP

Generic

Allowable materials:

- Single-resin polyethylene flexible packaging or films (≥ 60%)
- Multi-layer flexible packaging or films (≤ 18%)
  - Limited PET (≤ 2%)
  - Limited PVC (≤ 1%)
  - Limited metal (≤ 1%)
  - Limited nylon (≤ 1%)
- Single-resin polypropylene flexible packaging or films (≤ 7%)
- **Allowable levels of contaminants:**
- Paper (Not to exceed 15%)

Bag Ban Areas

Allowable materials:

- Single-resin polyethylene flexible packaging or films (≥ 54%)
- Multi-layer flexible packaging or films (≤ 22%)
  - Limited PET (≤ 2%)
  - Limited PVC (≤ 1%)
  - Limited metal (≤ 1%)
  - Limited nylon (≤ 1%)
- Single-resin polypropylene flexible packaging or films (≤ 9%)
- **Allowable levels of contaminants:**
- Paper (Not to exceed 15%)

WORKING END MARKETS IN PARALLEL WITH BALE PRODUCTION

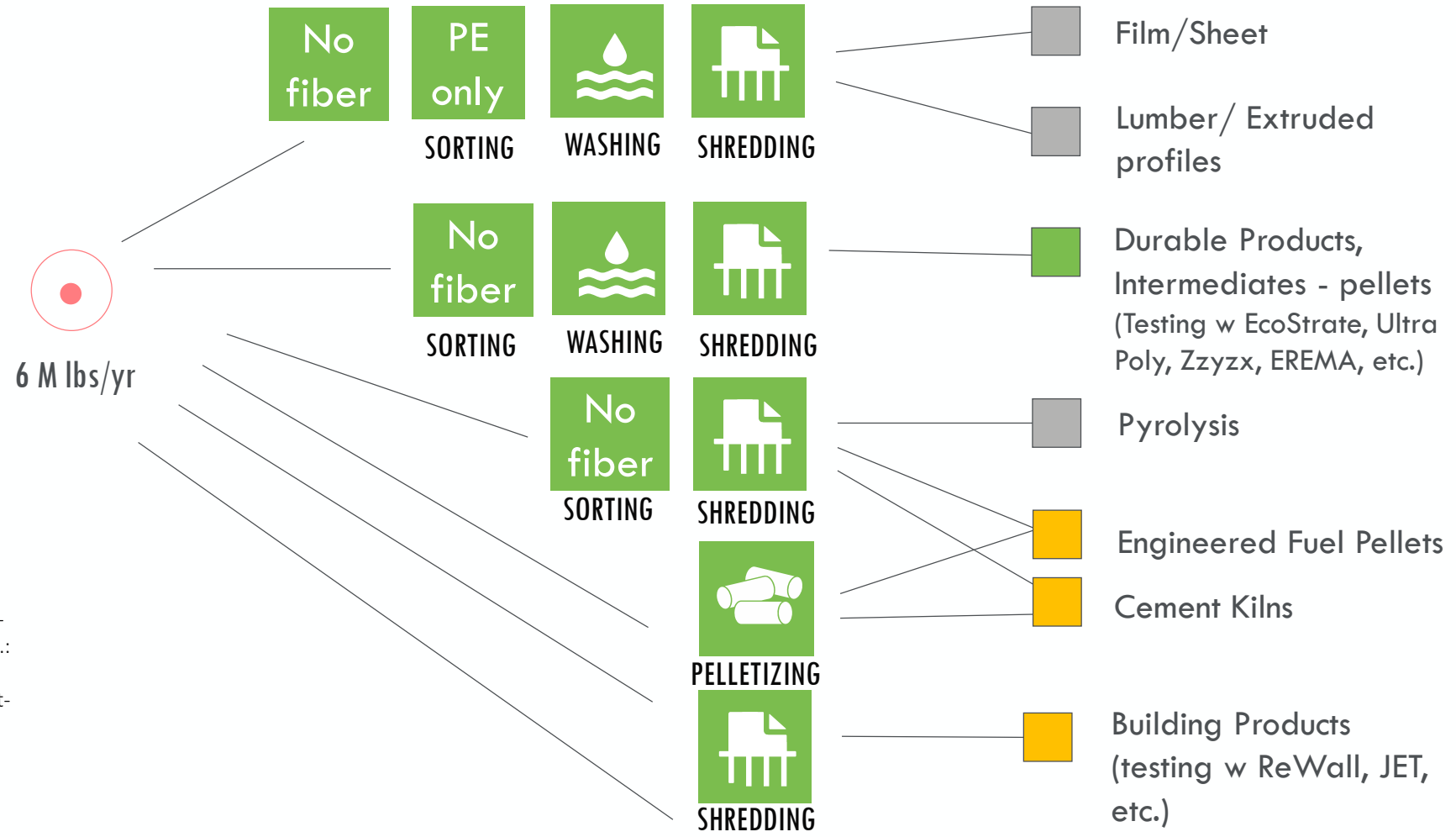
2015

POST-COMMERCIAL
(989 M lbs.)

POST-CONSUMER
(209 M lbs.)

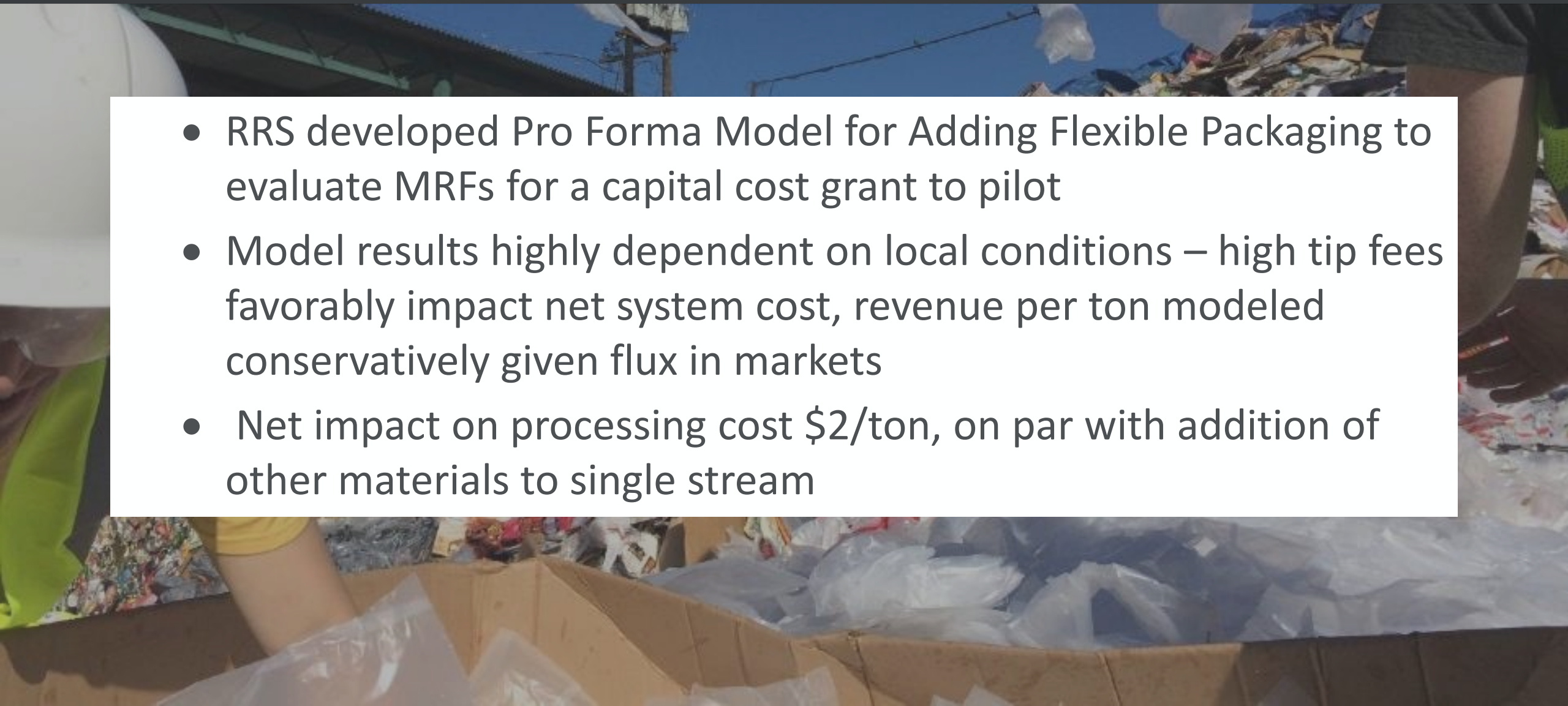
Retail bags & films and MRF curbside film

Pilot & 10yr Projection



1. American Chemistry Council . (2017). *2015 National Post-consumer Plastic Bag & Film Recycling Report*. In . (Ed.). N.p.: Moore Recycling. Retrieved from https://plastics.americanchemistry.com/2015-National-Post-Consumer-Plastic-Bag-and-Film-Recycling-Report.pdf

ECONOMIC FEASIBILTY



- RRS developed Pro Forma Model for Adding Flexible Packaging to evaluate MRFs for a capital cost grant to pilot
- Model results highly dependent on local conditions – high tip fees favorably impact net system cost, revenue per ton modeled conservatively given flux in markets
- Net impact on processing cost $2/ton, on par with addition of other materials to single stream

END MARKET WORK FOCUSED ON LOCAL CIRCULAR ECONOMY

- Continuus Materials (acquired ReWall) wallboard and roof system elements
  - Current plant in Des Moines, IA
  - Expansion plans – 2 additional facilities, one in PA
  - Successfully tested theoretical rFlex bale
- Expert, well-established plastic recyclers testing in PA – UltraPoly, Ecostrate, Zzyzx plus others with variety of potential end uses for pellets
- Additional rFlex performance tests scheduled for 2019
- Engage PA Recycling Markets Center as innovation hub

If you are not buying or using PCR, you are unnecessarily using a dwindling natural resource and contributing to pollution.

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APR Demand Champions Campaign

- ***The positive impact of exerting "demand pull" for products made with PCR***

Increased volume of product sold raises productivity

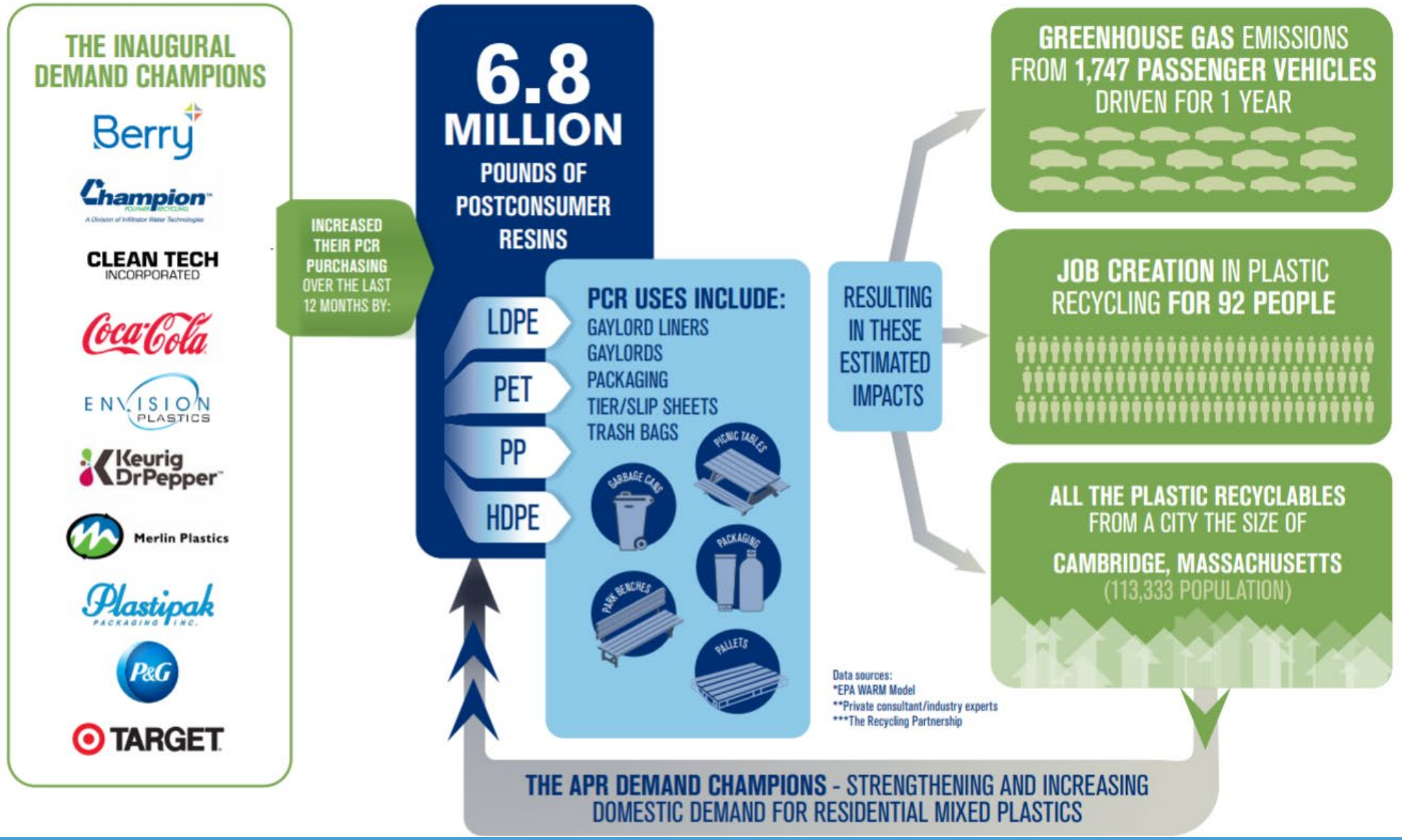
Higher productivity can drive technology investment

Technology investment can improve quality and reduce costs for finished goods

Better quality finished goods at competitive price spurs sales

2018 APR RECYCLING DEMAND CHAMPIONS YEAR END REPORT

Consistent, reliable demand is critical for recycling to be mature, vibrant and sustainable



We are an APR Recycling
DEMAND CHAMPION

P&G

CLEAN TECH INCORPORATED

Campbell's

Merlin Plastics

KEURIG GREEN MOUNTAIN

ENVISION PLASTICS

Coca-Cola

Plastipak

Berry

KW

Denton Plastics Inc.
A legacy of plastics for the planet.

Nestlé

Champion™ POLYMER RECYCLING
A Division of Infiltrator Water Technologies

Stay in Touch!

Sandi Childs

Director, Film & Flexibles and Design® Guide Manager

sandi@plasticsrecycling.org

(678) 474-6008