ADVANCING RECOVERY OF NON-RECYCLED PLASTICS:
2016 WTERT Bi-Annual Meeting
Plastics Division Members
Plastic: A Nominal Energy User

ENERGY

97%

FUEL

POWER

OTHER

3%

PLASTIC PRODUCTION

ENERGY RECOVERY

OIL

NATURAL GAS

PLASTIC PRODUCTION

FABRICATION

USE

POST-USE COLLECTION

FEEDSTOCK RECOVERY

RECYCLE
Plastic Packaging: Do More With Less

Greenhouse gas

<table>
<thead>
<tr>
<th>Material</th>
<th>Greenhouse gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Can</td>
<td>4377</td>
</tr>
<tr>
<td>Plastic Canister</td>
<td>3310</td>
</tr>
<tr>
<td>Plastic Brick</td>
<td>1051</td>
</tr>
</tbody>
</table>

Source: FRANKLIN ASSOCIATES, September, 2008
Global Environmental Costs (2015)

The Environmental cost to society of alternatives use in the consumer goods sector are 3.8 times more than plastic

**Business as Usual**

$139 Billion

For every million of Consumer goods sector revenue, $4,886 of environmental costs are created

**Plastic Alternatives**

$533 Billion

For every million of Consumer goods sector revenue, $18,773 of environmental costs are created
Post-Use Treatment of Plastics

Plastics Generated in Waste Stream

- 73.1% Plastics Landfilled
- 17.7% Plastics Energy Recovery
- 9.2% Plastics Recycled
Growing Plastic Recycling

Technical reports and data: rate reports, material recovery for future, mixed-waste

Industry programs: plastic film recycling, common recycling terms, grocery rigid

Policy alignment: advance broadly supported recycling policies

Large scalable partnerships: for carts, education, infrastructure, education
Plastics are Captured Energy

BTUs per LB

- Natural Gas
- Crude Oil
- Non-Recycled Plastics
- Petroleum Coke
- U.S. Coal
- U.S. Coal
The Power of Waste

GARBAGE → ENERGY → 13.8M HOMES

13.8M homes powered

6K acres saved

GARBAGE → ENERGY = 6K ACRES

PLASTICS → 5.7B GALLONS OF GAS → 9M CARS

9M cars fueled
Plastics are Captured Energy

Figure 3: Comparison of EEC|CCNY NRP heating value to literature values and to LHV of conventional energy sources
Non-Recycled Plastics in Gasification

- Collaboration with EEC | CCNY and City of Edmonton
- Conducted pilot testing at Edmonton test facility
What was the Impact?

Ratio of Methanol Production for Plastic Feedstock Mixture compared to 100% Biomass Feedstock

![Bar chart showing the ratio of methanol production for different plastic feedstock mixtures compared to 100% biomass feedstock. The x-axis represents the feedstock mixtures: 100% Biomass, 92% Biomass/8% Plastics, 85% Biomass/15% Plastics, and 50% Biomass/50% Plastics. The y-axis represents the ratio of methanol production. The chart shows a clear increase in the ratio as the percentage of plastic in the feedstock increases.]
Engaging in State Advocacy

Pins indicate ACC testimony, policy outreach, or C2E events
Recycling/Recovery Outlook

• Low energy/commodity prices

• Plastics growth due to shale advantage

• Challenges for recycling businesses/community programs

• Renewed push for “industry pays” (EPR)
  • (unappreciated) light-weighting/source reduction
  • perception of “stagnating” recycling rates
Reasons for Optimism

- State Interest
- S. 2012 Energy Policy Modernization Act
- Sustainable Materials Management
- Leadership from U.S. EPA
- Brandowners
Thank You!

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