Breakout Session Report Out

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Re-designing a Recycling System for the Future

Session Report "Volunteer"

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Objective

- Discuss what new recycling streams could look like given redesign of plastics with end-of-life in mind.
  - Are there steps along the way where new recycling technologies can have a role?

Question 1

What are challenges and opportunities with redesigning plastics and recycling technologies at the same time?

- Trying to design the infrastructure with the different sorting aspects is a challenge. Need to understand the value chain.
- These cannot be operated in a silo. There is a chance that a redesigned plastic could make a new recycling technology obsolete.
- Can we design products with separations in mind?
- Key challenge is getting all the key stakeholders together. The recycling community is often regional versus the petrochemical community which is global.
- The waste companies are still driven by value. They aren't going to change if it does not make economic sense to do so.

Question 2

To what extent is system redesign already being handled by MRFs?

- MRFs are not incentivized to work with new materials because they are not large scale. Need to be a support for research to understand how to handle these new materials.
- Consumers are demanding loop models. Need to do life cycle on the packaging, especially in food packaging.
- Need to consider sustainability as well as economics.
- Is there an environmental analysis impactful enough that would support an increase to cost of recycling?

Question 3

In an ideal future are there less plastics types to facilitate easier sorting or more plastic types with better matched use cases and recycling strategies?

- Coming from a secondary MRF perspective, less plastic is easy. But we don't want to do that because we need to focus on full environmental impacts.
- You can separate packaging into separate categories, one where people pay a little extra for preservation (food) where there is higher costs for recovery.
- There is a reason all these plastics are out there. Shelf life, food quality, safety.
- The equipment that processes these materials have very defined properties that aren't easy to change over at a moment's notice.

Question 4

What should we optimize for in an ideal recycling stream?

- Maximizing economic value while minimizing carbon loss in the polymer.
- Minimizing not just GHG emissions, but water usage, land usage, wastewater.
- Drivers will always come back to economic drivers. Also looking at energy, policy, and consumer drivers.
- Need to have flexibility as new technologies come in.
- How can the infrastructure be best utilized across the country.