

Responsible Recycling Task Force

Meeting #4 – July 18, 2018



Agenda

- **9:00 – 9:10:** Welcome & Introduction
(Jeff Gaisford)
- **9:10 – 9:40:** Fiber Markets Overview
(Kevin Kelly & Eric Elliott)
- **9:40 – 10:10:** Plastic Sorting, Processing & Markets
(Sego Jackson on behalf of Merlin Plastics)
- **10:10 – 10:45:** Secondary Sorting & Processing
(Scott Farling)
- **10:45 – 10:55:** Existing Research and Further Study
(Lisa Sepanski)
- **10:55 – 11:00:** Wrap Up & Next Steps
(Julie Colehour)



Task Force Goals

- **Short Term Goal:** To help identify near-, mid- and long-term actions in response to reduction in export markets for mixed recyclable materials due to China National Sword policies.
- **Longer Term Goal:** To help establish commitment across the region to responsible recycling and domestic sorting/processing of curbside recyclables.
- **Outcomes:** Prepare a report with actionable items and recommendations for future action by all; if possible, develop interim tools for communications and other topics that are more immediately available.
- **Role of Task Force:** Not to make decisions, rather to learn about the problem, understand activities that are being implemented elsewhere and opportunities for change. They will provide guidance on next steps that will be brought back to county advisory committees and decision makers.

Updates from previous meetings

- June 18 Meeting Minutes approved
- Update on removal of plastic bags and shredded paper recommendation
- Update on waivers



International Fiber Markets Overview

Kevin Kelly, General Manager, Recology



Paper Recycling in the Pacific Northwest

Eric Elliott, Recycling Coordinator and Compost Technician, Seattle University

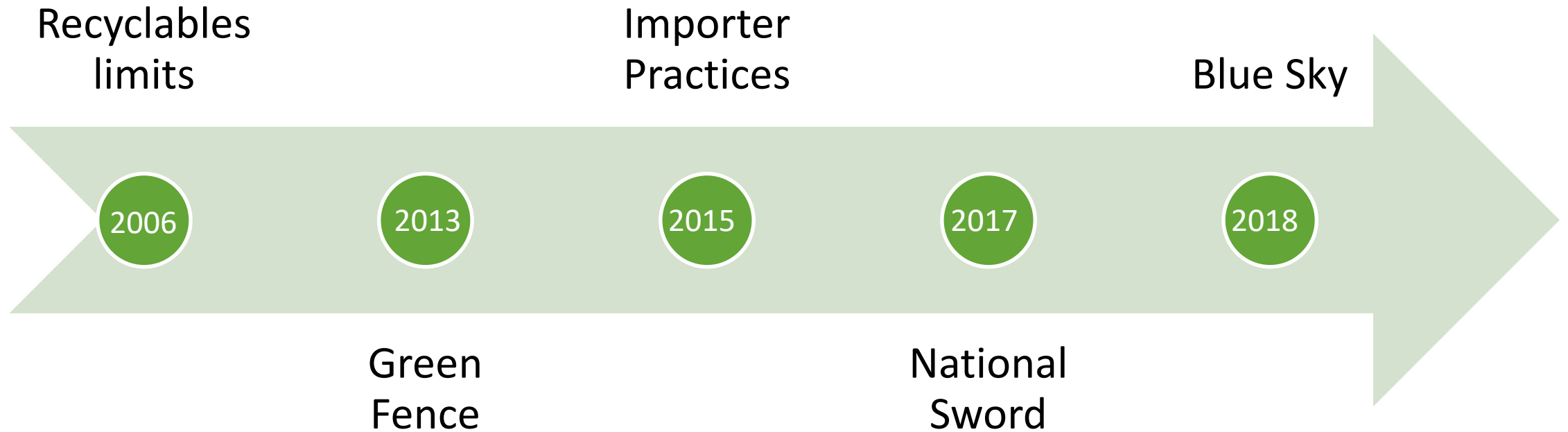


Background

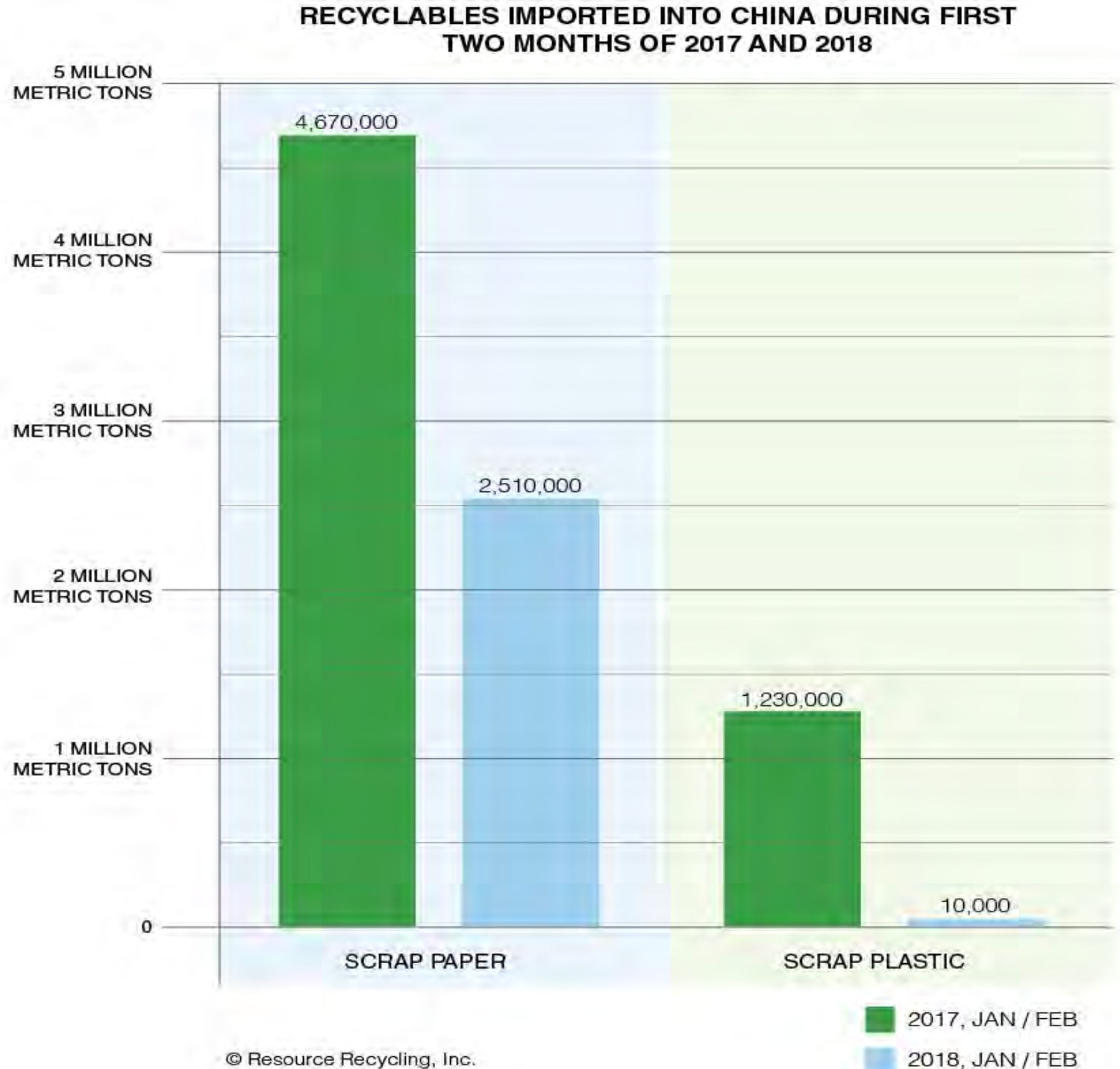
China National Sword Campaign

- Seattle University Business School research project
- US, Europe, and Asian markets affected
 - ½ of recyclable exports went to China (1/6 of all US recycling)
- Price of mixed fiber fell dramatically - \$146/ton to \$5/ton in 6 months
- Average US contamination rate is 5%, although in reality it is much higher
- Report is done under assumption China won't lift ban

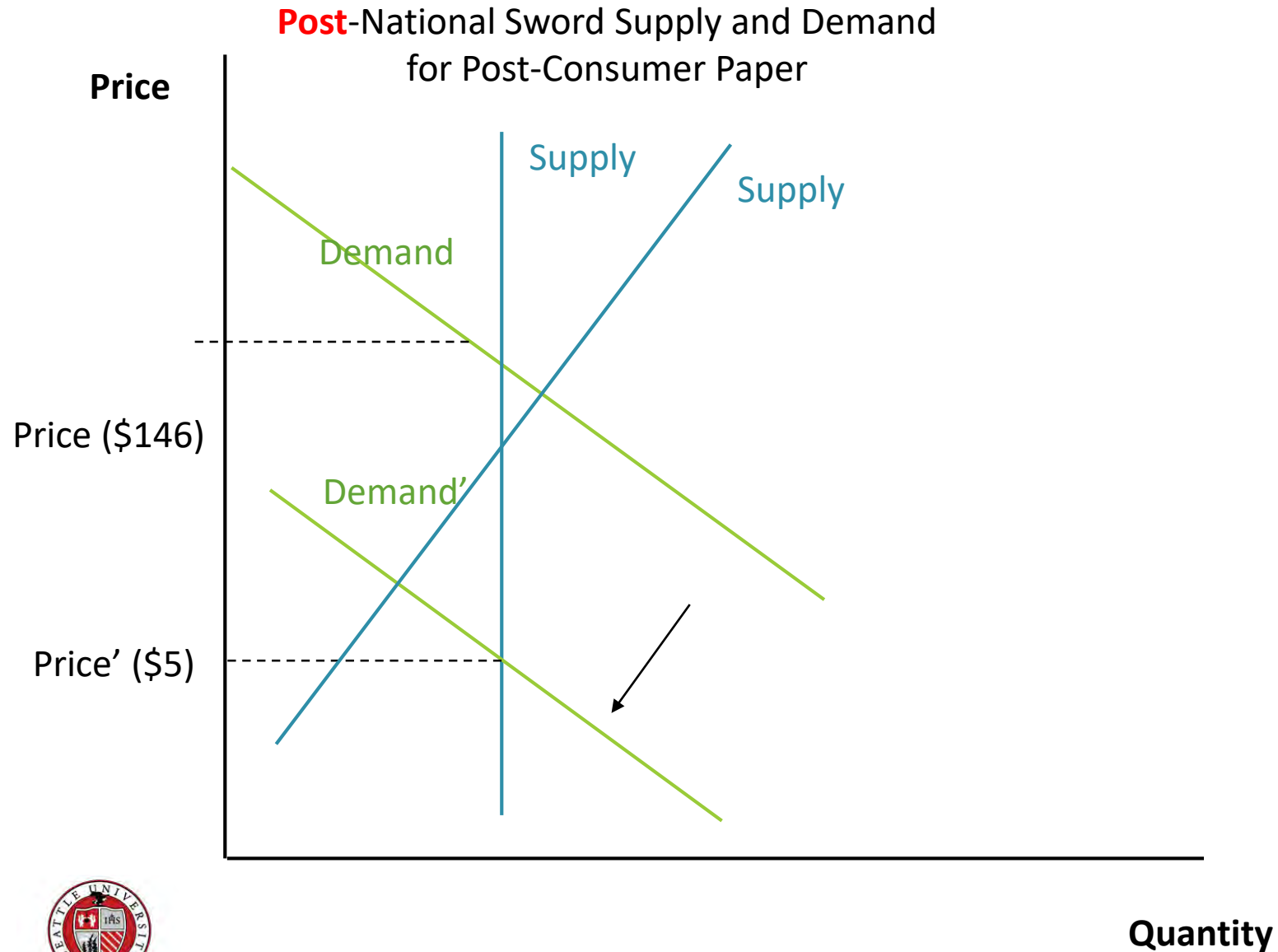
Timeline

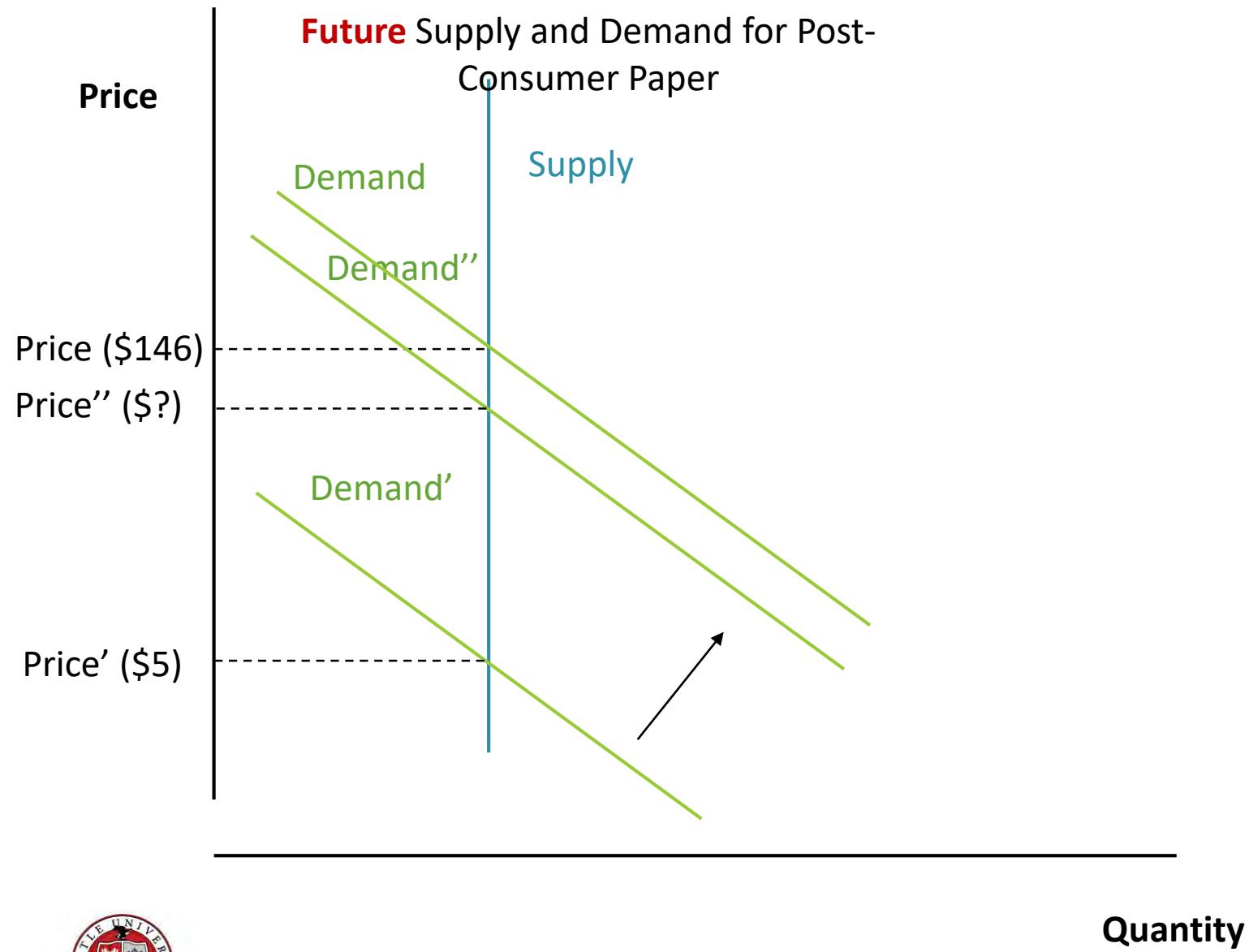


Year over Year Changes



The Economic Model





The Economic Model

Catalog of Paper Mills in WA and OR

Revenue
\$41.7bn
Profit
\$1.8bn

Annual Growth 13–18
-4.1%
Exports
\$2.7bn

Annual Growth 18–23
-1.7%
Businesses
196

Barriers to Entry checklist

Competition	High
Concentration	Low
Life Cycle Stage	Decline
Capital Intensity	Medium
Technology Change	Medium
Regulation & Policy	Heavy
Industry Assistance	Medium

SOURCE: WWW.IBISWORLD.COM

(American paper mills as of 2018)

THE PAPER MILL INDUSTRY AT A GLANCE

Catalog of Working Paper Mills

17 currently operating paper mills in WA and OR

- ◆ Mills currently accepting post-consumer fiber
- ◆ Mills NOT currently accepting post-consumer fiber

Map of Paper Mills in WA and OR State (2018)



Catalog of Working Paper Mills



10 paper mills accepting post-consumer paper fiber

- 6 of which accept only corrugated cardboard (OCC)

GP Halsey, Inland Empire, NORPAC, and Sonoco: only mills accepting other paper fibers

Only NORPAC and Sonoco accepting MIX grade paper

Map of Paper Mills in WA and OR State (2018)

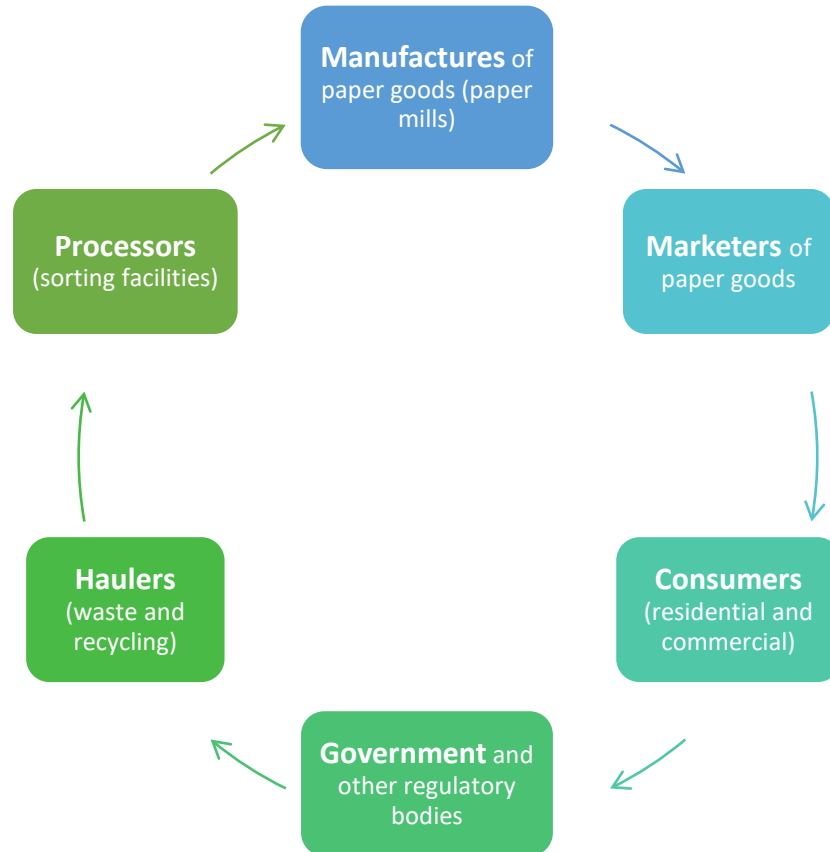


Type(s) of Post-Consumer Material Accepted	Company Name	City	State
High-Grade Paper Fiber	Georgia-Pacific Corp - Halsey	Halsey	OR
Old newsprint	Inland Empire Paper Co	Spokane	WA
Mixed paper, Old magazine grade, Old newsprint, Sorted office paper	North Pacific Paper Corp (NORPAC)	Longview	WA
OCC, Old Newsprint, Mixed paper, All Book Grades, Telephone Directories	Sonoco Products Co	Sumner	WA
OCC (Old Corrugated Cardboard)	Georgia-Pacific Corp - Toledo	Toledo	OR
OCC	Caraustar Industries	Tacoma	WA
OCC	International Paper Co	Springfield	OR
OCC	Kapstone Paper & Packaging Corporation	Longview	WA
OCC	Port Townsend Paper Corp	Port Townsend	WA
OCC	WestRock Co.	Tacoma	WA
NONE	Boise Paper	Wallula	WA
NONE	Clearwater Paper Corp	Lewiston	ID
NONE	Cosmo Specialty Fibers Inc	Cosmopolis	WA
NONE	Georgia-Pacific Corp - Camas	Camas	WA
NONE	Georgia-Pacific Corp - Wauna	Clatskanie	OR
NONE	Nippon Dynawave PackagingCo	Longview	WA
NONE	Ponderay Newsprint Co	Usk	WA
Closed	WestRock Co.	Newburg	OR
Closed but may reopen	McKinley Paper / old Nippon	Port Angeles	WA

Challenges to Paper Mill Expansion

- Glass contamination
 - A “death nail” to the paper recycling process
- Regulation and PCBs
 - Inland Empire reducing production
- Wax-coated and aseptic containers
- “\$10-40M” in paper mill upgrades in order to process more post-consumer paper (Gee 2018)

Future Steps



Some Expansion

- Potential new mills in Port Angeles and Newberg

Success depends on system-wide collaboration

Thank You!

Eric Elliott

Seattle University Facilities

Recycling Shop

elliott@seattleu.edu



Plastic Sorting, Processing & Markets

Sego Jackson, SPU – *Presenting on behalf of Merlin Plastics*





History of Merlin Plastics

- 1987 - Founded in Delta, British Columbia to process post-industrial plastics.
- 1991 - Added post-consumer natural and colored HDPE (eg. milk jugs).
- 1992 - Added post-consumer rigid HDPE material (eg. pails, buckets).
- 1995 - Added post-consumer Film to the processing line.
- 1996 - Developed a post-consumer PET processing line in British Columbia.
- 2004 - USA Patent No. 6,752,192 was issued to Merlin Plastics for the pre-wash technology that was first developed in 1996.
- 2006 - Obtained FDA approval for post-consumer PET Flake for food contact.



History of Merlin Plastics

2009 - Peninsula Plastics Recycling (PPR) was incorporated as a full service PET recycler and processor in Turlock, California.

2010 - Obtained FDA approval for post-consumer PET Pellet for food contact.

2014 - Acquired an interest in ORPET, an Oregon recycler, and partnered with the Oregon Beverage Recycling Cooperative to recycle PET bottles in Oregon.

2015 - State-of-the-art container sortation facility in New Westminster, BC was commissioned to sort cartons, ferrous and non-ferrous cans, plastics and glass.

2016 - Acquired assets of Entropexin Sarnia, Ontario. Upgraded and re-designed the sorting, washing and processing systems and we are now currently processing 3 to 7 containers on the East Coast.





Costs and Revenues

Transportation

The transportation costs from the King County area to the sorting plant in BC

- approximately US\$0.01 to US\$0.02/lb
- approximately US\$600/truckload

Sorting

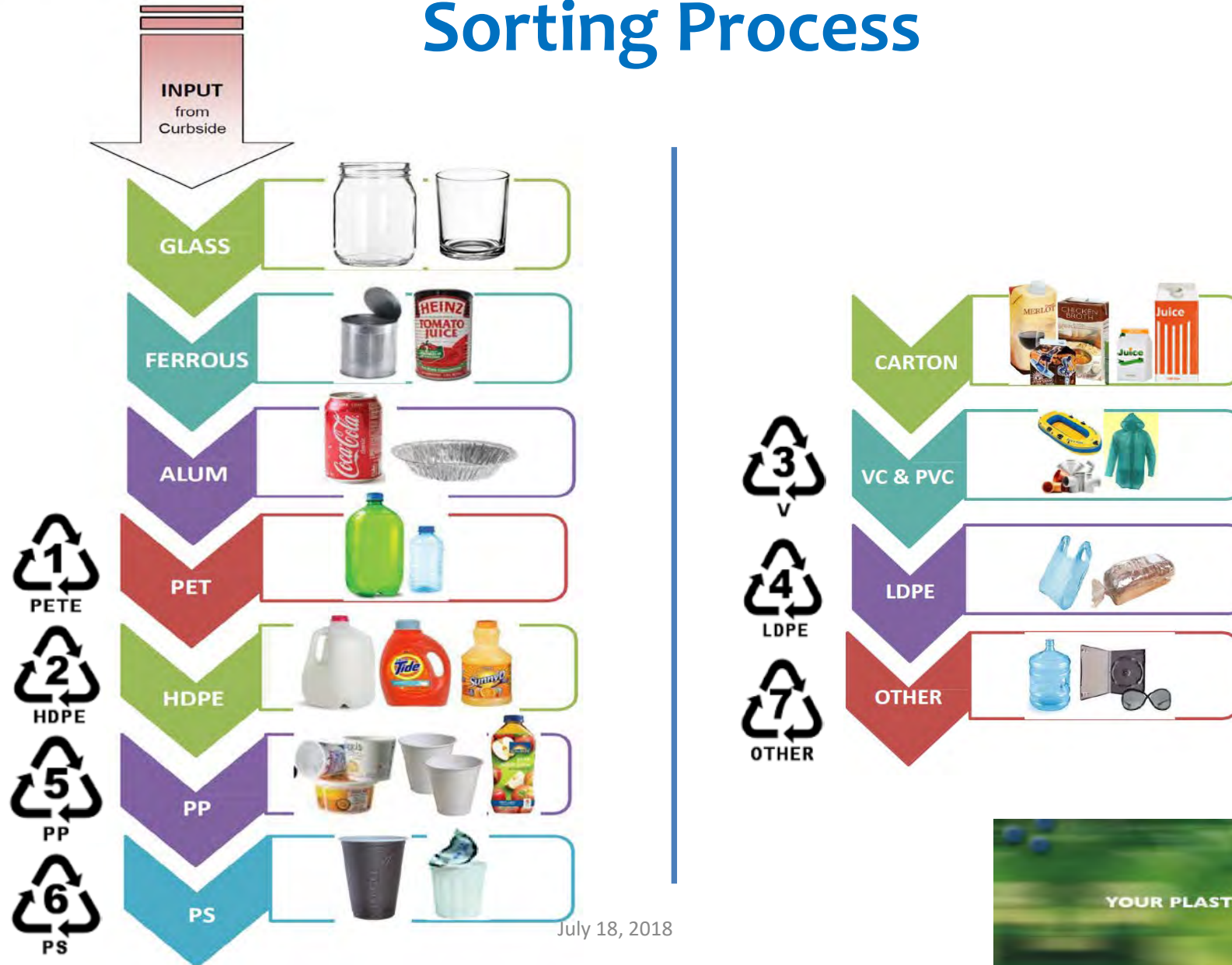
Sorting costs money and is determined by

- the mix of plastics in the recycling bins
- the presence or absence of contaminants





Sorting Process



July 18, 2018



Costs and Revenues

Revenue

- The most valuable products recovered from curbside plastics
 - PET
 - Natural and Colored HDPE
- *Recyclingmarkets.net* is one of the reliable sources of information for secondary material pricing.



RECYCLINGMARKETS.NET

[Home](#)[Secondary Materials Pricing](#)[Secondary Fiber Pricing](#)[About Us](#)[Membership Options](#)

SECONDARY MATERIALS PRICING.COM

Select A Market Region:

1. CHICAGO (Midwest / Central)
2. NEW YORK (NE USA/Maritimes)
3. Ontario / Western NY
4. Pacific Northwest
5. Quebec
6. ATLANTA (Southeast USA)
7. LOS ANGELES (Southwest USA)
8. HOUSTON (Southcentral USA)

Welcome, Merlin Plastics ([Logout](#) - optional)

ANNOUNCED RECOVERED MATERIALS PRICES PACIFIC NORTHWEST REGION JULY 9, 2018 Domestic prices in US currency

Current Price Range by Grade



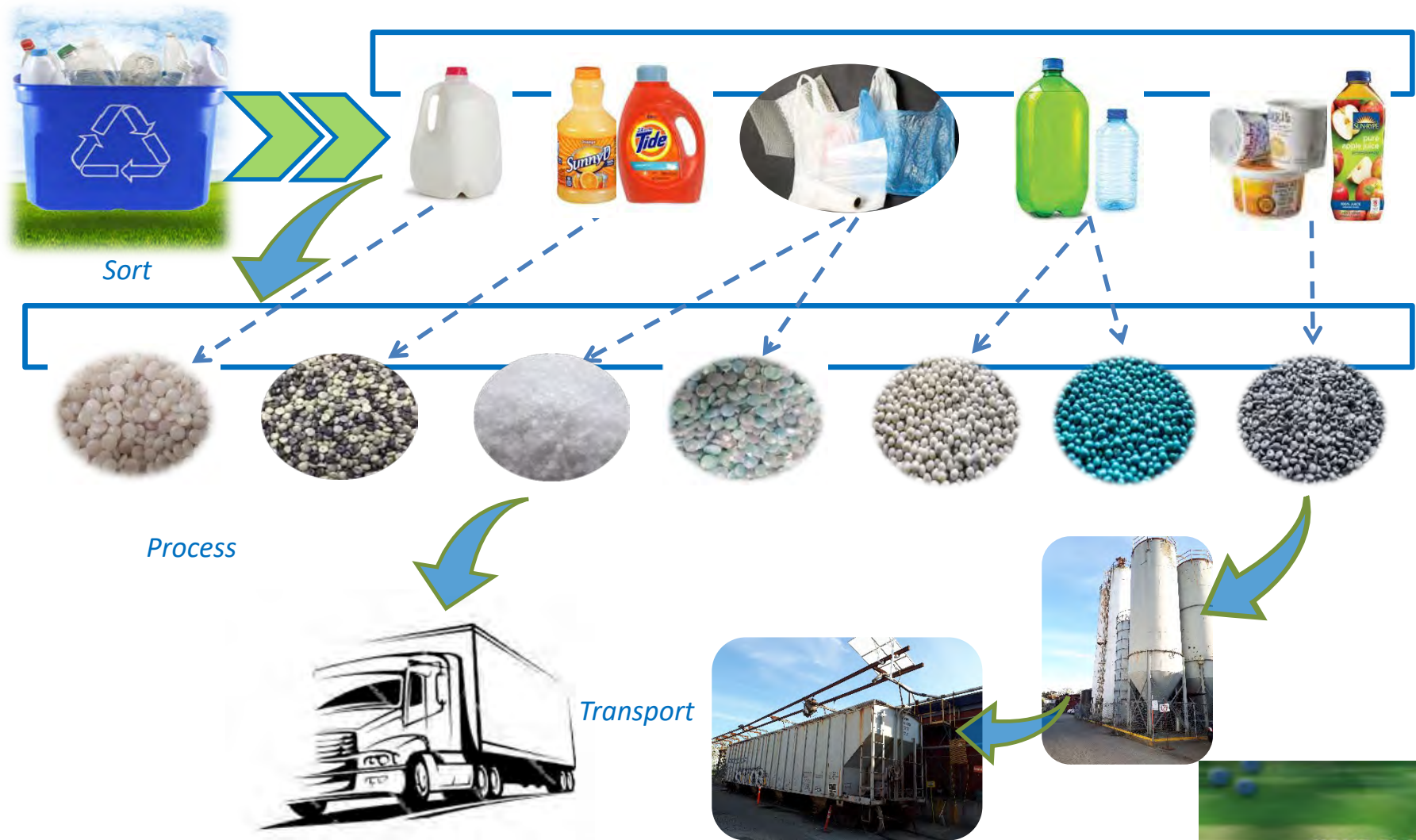
Plastics *(Click on Grade description for Specifications)*

Grade	Description	HistoricalCurrent Current Previous			
		Data	Price	Average	Price
Plastics	PET (Baled, ¢/lb, picked up)	View	11-12	11.50	12-12.5
Plastics	PET Curbside Grade B in CA (Baled, ¢/lb, picked up)	View	--	--	--
Plastics	Natural HDPE (Baled, ¢/lb, picked up)	View	32-36	34.00	30-35
Plastics	Colored HDPE (Baled, ¢/lb, picked up)	View	10-14	12.00	12-14
Plastics	Commingled (#1-7, Baled, ¢/lb, picked up)	View	2-4	3.00	2-4
Plastics	Commingled (#3-7, Baled, ¢/lb, picked up)	View	-3-0	-1.50	-1-1
Plastics	HDPE Rigid (Baled, ¢/lb, picked up)	View	6-8	7.00	5-10
Plastics	Mixed Bulky Rigid (Baled, ¢/lb, picked up)	View	1-5	3.00	0-3.5
Plastics	FILM - Grade A (Sorted, 800+lb Bales, ¢/lb, picked up)	View	10-12	11.00	10-11
Plastics	FILM - Grade B (Sorted, 800+lb Bales, ¢/lb, picked up)	View	2-4	3.00	2-5
Plastics	FILM - Grade C (Sorted, 800+lb Bales, ¢/lb, picked up)	View	1-2	1.50	1-3
Plastics	LLDPE-Stretch Film (Refer to FILM grades A, B, C)	View	--	--	--
Plastics	PP Post Consumer (Baled, ¢/lb, picked up)	View	7-10	8.50	6-7
Plastics	Polystyrene EPS (Baled, ¢/lb, picked up)	View	1-3	2.00	1-3



Merlin Plastics

Curbside Plastic Containers to Pellets





Merlin Plastics

NATURAL
RESOURCES
- OIL-BASED RESIN

Container Circular Path



PLASTICS SOLUTION FOR THE FUTURE

Secondary Sorting & Processing: Providing “Blue Bin Accountability”

Scott Farling, Titus MRF Services



Blue Bin Recycling is at Risk



- Problem: **Blue Bin Recycling is at Risk**
- Solution: **Secondary MRF Process is Ready**
- Use our experience and expertise to implement our solution
- Provide benefits to all stakeholders

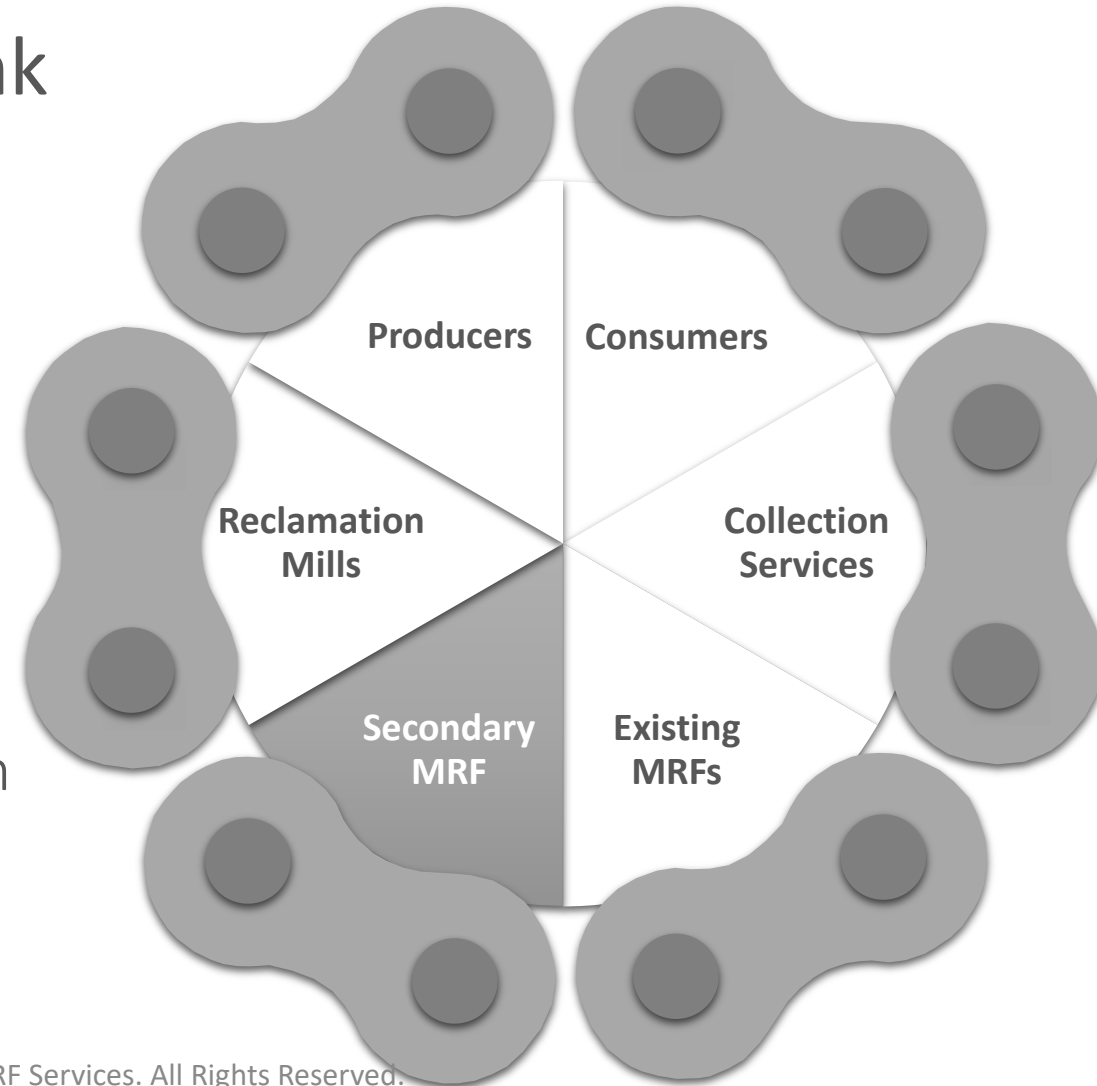


Opportunity to Optimize

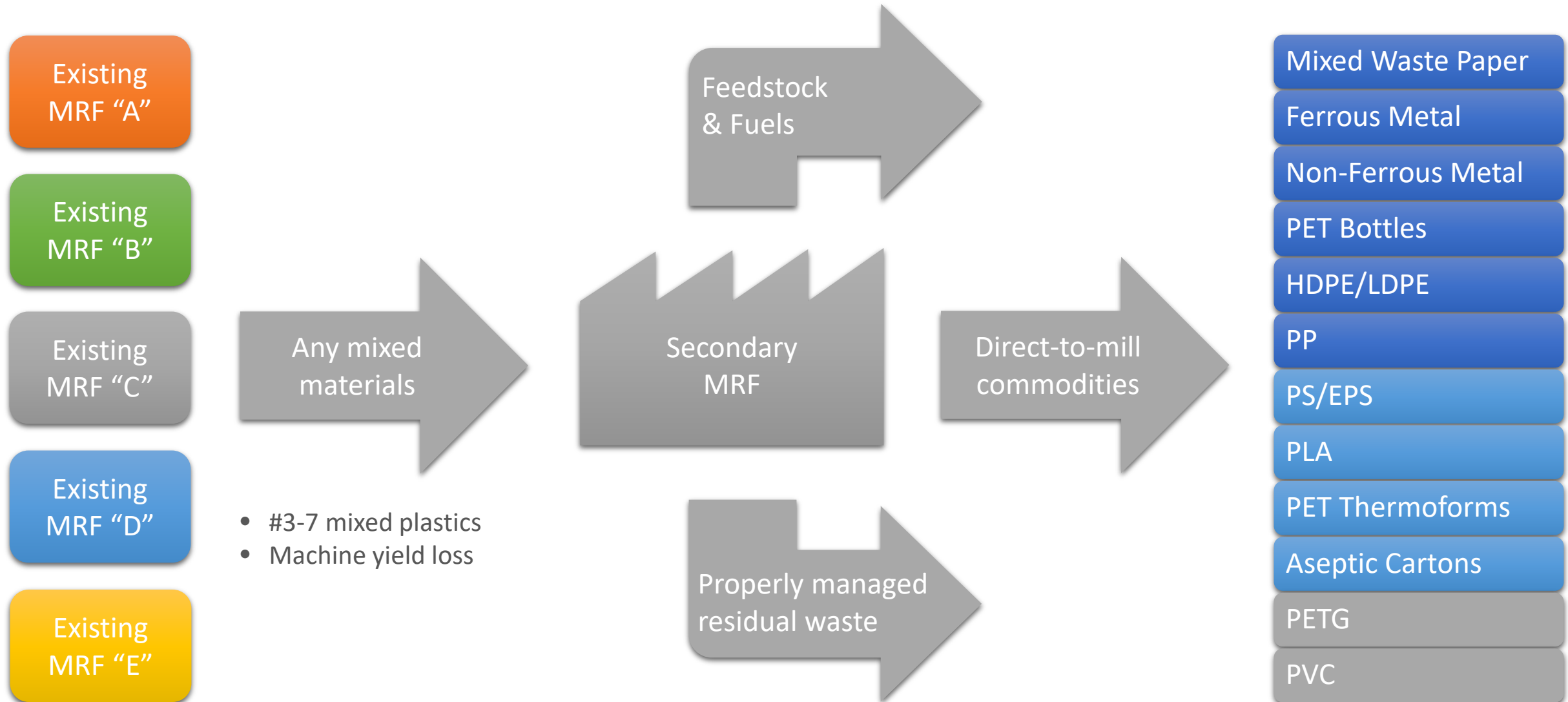


The Secondary MRF is the Missing Link

- Aggregates, sorts, and recovers truckload quantities of low volume materials
- Advanced technologies for sorting materials efficiently and economically
- Extends existing MRFs ability to adapt to the “ever changing” blue bin
- Provides data to encourage product stewardship
- Patented process with a demonstration facility in Los Angeles, CA



What is a Secondary MRF?



Impact!

- *Blue Bin Accountability* for ~25 million consumers!
- Extends existing MRFs *ability to adapt* to the “ever changing” blue bin
- Reduces *greenhouse gas* generation by 330,000 tons CO_{2eq}
- Reduces leakage to the *marine environment* by managing mixed materials domestically
- Creates 138 direct *clean technology jobs*
- Provides data to encourage *product stewardship*

Blue Bin Accountability - sorting to recover direct-to-mill commodities and managing residual wastes responsibly - can be achieved for less than \$3 per household - **equivalent to the cost of 1 cup of coffee per month**

Our Mission



Our mission is to provide “Blue Bin Accountability” to ensure that material recovery is maximized and all waste is managed responsibly.

Our Team



Mike Centers

- Founder and owner of Titus MRF Services
- Invented the Secondary MRF Process
- Executive experience at Strategic Materials (glass recycling) and TOMRA (sorting systems)
- Harvard MBA, West Point concentration in Operations Research
- Expertise in all aspects of material recovery, including policy, partnerships, operations, maintenance, processes, equipment, materials, and sales



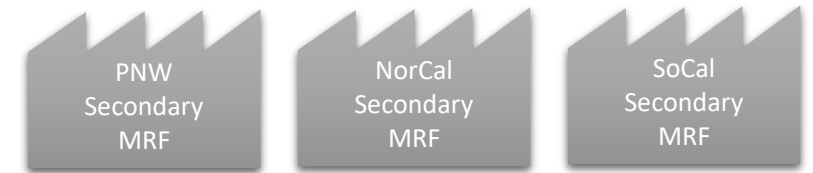
Scott Farling

- Founder and owner of Scott Farling Recycling & Materials Management
- Passionate about waste prevention and material recovery
- Clean-tech startup experience at MBA Polymers and Agilyx Corporation
- Penn State Chemical Engineer
- Expertise in recovering value from complex waste streams, including business development, process optimization, equipment design, and waste plastics research

Our Plan



- Develop three Secondary MRFs
- Provide a positive return to our investors
- Solve challenges for our stakeholders and the environment



17% IRR



Financial Assumptions

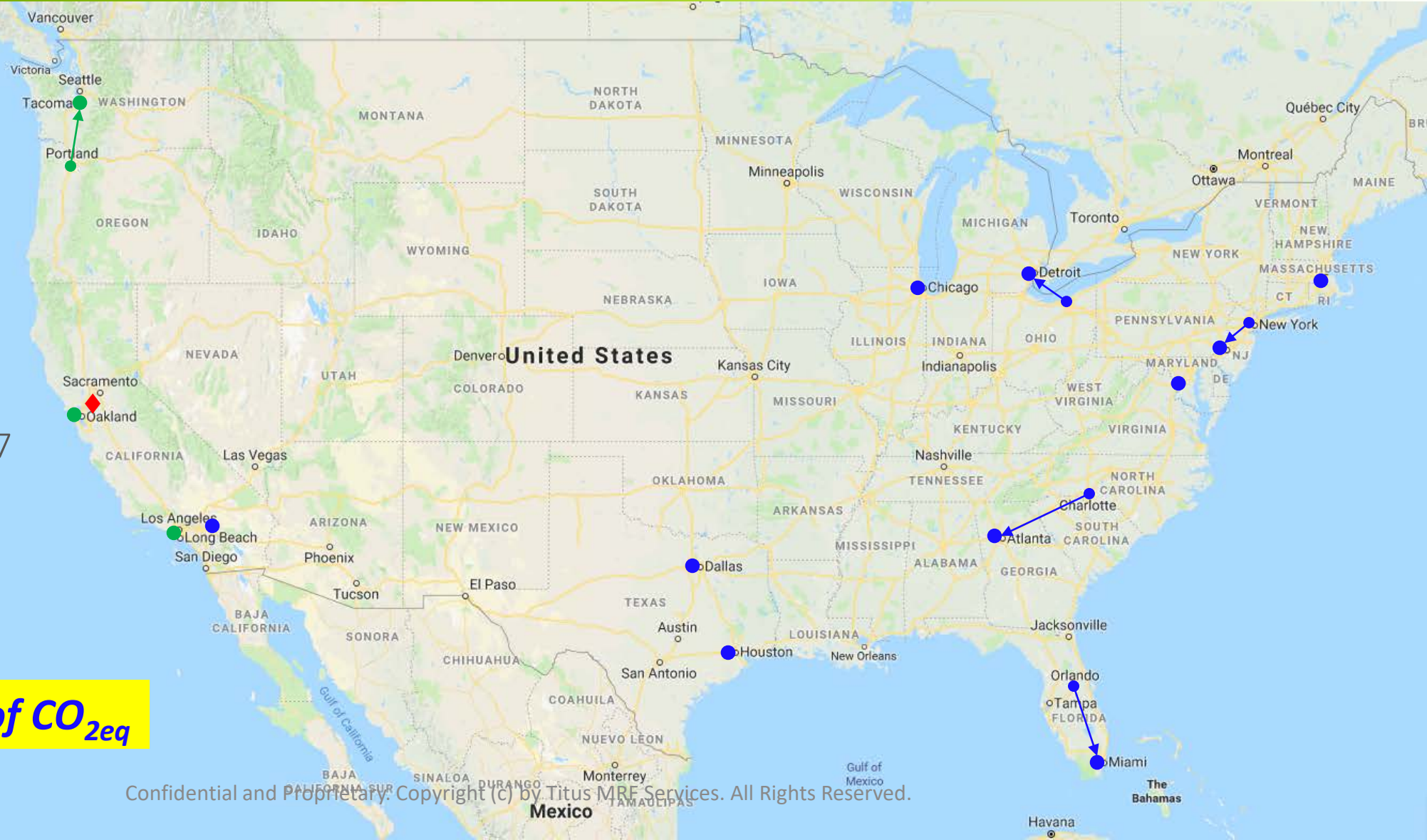


Assumptions	PNW
Volume (TPM)	8,300
Processing Fee (\$/ton)	\$111
Revenue Share (\$/ton)	\$28
Net Cost to MRF (\$/ton)	\$83
Landfill Rate (\$/ton)	\$75
Net Value to MRF (\$/ton)	(\$8)

Continued Growth Strategy – Network



- ◆ NEWCO
- First three Secondary MRFs will service the West Coast
- Next ten Secondary MRFs will increase service area to 17 of the top 20 combined statistical areas



1.43M tons of CO_{2eq}

Continued Growth Strategy – Markets



- The larger our network of Secondary MRFs, the greater our ability to *develop markets* by producing truckload quantities of additional commodities, feedstock materials, and fuels

Drivers

- Volunteer Producer Responsibility (VPR)
- Zero Waste Plan
- Volunteer Producer Responsibility (VPR)
- Zero Waste Plan
- Competitive \$/BTU
- Reduced GHG Generation vs. Coal
- Diversion Credits

Truckload Quantities



New Markets



Cement Kilns

To Build the PNW Secondary MRF...



- Supply Agreements from all primary MRFs in the region
 - All machine yield loss and plastics not sorted by type
- Assistance with site selection and permitting
- Grants in exchange for jobs and environmental benefits



Want to learn more...



Contact Us:

Mike Centers

Scott Farling

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scottfarling@gmail.com

(925) 548-3093

(415) 810-9454

Visit Us:

Secondary MRF Demonstration Facility, Los Angeles, CA

Existing Research & Further Study

Lisa Sepanski, King County Solid Waste Division



Market Research and Studies

- Oregon DEQ Research Projects
 - Mixed Paper Recycling Markets (Moore and Associates/Recycling Partnership)
 - Plastics Recycling Markets (More Recycling)
 - Market Development Policies/Incentives (Reclay StewardEdge)
- *Sustainable Materials Management: A Life Cycle Approach to Reducing Northwest Waste Stream*, Evergreen State College Sustainable Infrastructure Study
- *Initiative to Illuminate Successful USA Recycling Market Development Practices and Activities*, RSE Sustainable Product Solutions



Wrap Up & Next Steps

- Action items, recommendations & take-aways
- Next meeting: *Creating Demand for Recyclable Materials & Market Development*

Date: August 24, 9:00am – 11:00am

Location: Kirkland City Hall, 123 5th Ave, Kirkland, WA

Parking: Free parking on surrounding side streets and neighborhoods

Room: Peter Kirk Room

Date	Topics Covered
April 30	<i>Task Force Goals; Responsible Recycling Framework; Current Conditions; Communications</i>
June 1	<i>Curbside Materials and Communications</i>
June 18	<i>Contracts, Waivers, Surcharges</i>
July 18	Fiber & Plastics <ul style="list-style-type: none"> <i>Fiber Processing (Domestic Processing and Markets)</i> <i>Plastic Processing (Domestic Processing and Markets)</i>
August 24	Creating Demand <ul style="list-style-type: none"> <i>Legislative and Policy Option (Create Demand for Recycled Feedstock)</i> <i>National and Private Sector Efforts/Opportunities (Create Demand for Recycled Feedstock)</i>
September 19	Financing & Infrastructure <ul style="list-style-type: none"> <i>Financing Options (Responsible Recycling is Not Free)</i> <i>Recycling Infrastructure Systems (Quality vs Quantity, Domestic Processing and Markets, Responsible Recycling is Not Free)</i>
October 26	Possible Focus on Legislation/Revisit & Confirm Task Force Recommendations
November 15	Final Recommendations & Next Steps