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RECYCLING MARKET Development Plan

Houston-Galveston Area Council

November 2021

Plan Background

- In 2019, the 86th Texas Legislature passed Senate Bill 649, which directed the Texas Commission on Environmental Quality (TCEQ) to develop a plan to stimulate increased use of recycled material feedstock
- The *Recycling Market Development Plan* (RMDP) meets the requirements of the law by building on efforts of prior recycling studies and providing information on:
  - Current recycling efforts and availability of recyclable materials that could be feedstock
  - Current and potential economic benefits to be gained by recycling materials not now being recycled
  - Potential feedstock consumers
  - Institutional, financial, administrative, and physical recommendations for state and local governments to increase the use of recyclable material feedstocks

Project Team

Texas Commission on Environmental Quality

Burns McDonnell

Circular Matters

STAR

Re-TRAC Connect

Stakeholder Engagement for TX RMDP

RMDP Survey

June 1 – August 31, 2020

Stakeholder Forums

October 25-27, 2020

- ***Typical Recyclable***
- ***Organics***
- ***C&D***
- ***Other/Hard-to-Recycle***

In-Depth Interviews

- ***Industry groups***
- ***Texas businesses***
- ***State agencies***
- ***COGs and local gov't***

Recycling Industry Committee

- Aluminum Association
- American Beverage Association
- American Forest & Paper Association (AF&PA)
- AMERIPEN
- Carton Council
- Construction & Demolition Recycling Association (CDRA)
- Environmental Protection Agency (EPA)- Reg. 6
- Glass Packaging Institute (GPI)
- Governor's Office of Economic Development and Tourism
- Institute of Scrap Recycling Industries (ISRI)
- ISRI Tires/Rubber Division
- Keep Texas Recycling (KTR)
- National Association for PET Container Resources (NAPCOR)
- National Waste & Recycling Association- TX Chapter (NWRA)
- North American Hazardous Materials Management Association (NAHMMA)
- Office of Rep. Thompson (ex-officio)
- Office of Senator Zaffirini (ex-officio)
- Plastics Industry Association
- Solid Waste Association of North American - Lone Star Chapter (TxSWANA)
- STAR Business Council
- STAR Texas Compost Council
- TCEQ MSWRRAC
- Texas Association of Business (TAB)
- Texas Association of Manufacturers (TAM)
- Texas Association of Regional Councils (TARC)
- Texas Chemical Council (TCC)
- Texas Retailers Association (TRA)
- The Association of Plastic Recyclers
- The Recycling Partnership

Key Definitions

Recycling Definition
Texas Health and Safety Code Section 361.421(8)

“Process by which materials that have served their intended use or are scrapped, discarded, used, surplus, or obsolete are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Recycling includes:

A. the composting process if the compost material is put to beneficial reuse as defined by the commission
B. the application to land, as organic fertilizer, of processed sludge or biosolids from municipal wastewater treatment plants and other organic matter resulting from poultry, dairy, livestock, or other agricultural operations
C. the conversion of post-use polymers and recoverable feedstocks through pyrolysis or gasification

MSW Definition
Texas Health and Safety Code definition of MSW found in Section 361.003(20)

“Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, and includes garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles, and other solid waste other than industrial solid waste.

Industrial Waste Definition
Title 30 Texas Administrative Code Section 335

“Solid waste resulting from or incidental to any process of industry or manufacturing, or mining or agricultural operation

Material Categories

TYPICAL RECYCLABLES	ORGANIC MATERIALS	OTHER MATERIALS
Glass Containers, Other Glass **Metals**[1] Ferrous, Non-Ferrous **Paper** Old Corrugated Containers, Sorted Office Paper, Mixed Paper, Other Paper **Plastics** PET #1, HDPE #2, Plastics #3-7, Film Plastics, Other Plastics	**Biosolids (i.e., sludge)** **Food & Beverage Materials** **Yard Trimmings, Brush & Green Waste**	**Construction and Demolition (C&D) Materials** **Electronic Materials** **Batteries** **Textiles** **Tires** **Paint** **Other**

[1]Excludes scrap metals recycled by entities defined in Section 1956.001 Occupations Code

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Scrap Metals and the RMDP

- SB 649 excludes “ferrous or nonferrous metals recycled by a metal recycling entity as defined by Section 1956.001, Occupations Code” from the list of recyclable materials to be addressed in the RMDP
- RMDP recycling tonnages and recycling rates include an estimate of scrap metal recycling to represent the total MSW and industrial recycling activity in the state. This also allows rates to be compared to prior statewide recycling estimates
- Consistent with the scrap metal facility exemption in SB 649 and to reflect the strong nature of existing recycling markets, scrap metals recycling was excluded from the market development recommendations

RMDP Excluded the Following Methods to Divert Material from Disposal

- Source reduction activities like purchasing products with less packaging or home composting
- Refurbishment or reuse of products for the originally intended use, such as consumer electronics or clothing
- Combustion of materials for energy
- Land reclamation or beneficial use projects using tire shreds or bales
- Disposal or on-site use of material at a landfill for road stabilization or alternative daily cover

The RMDP Report

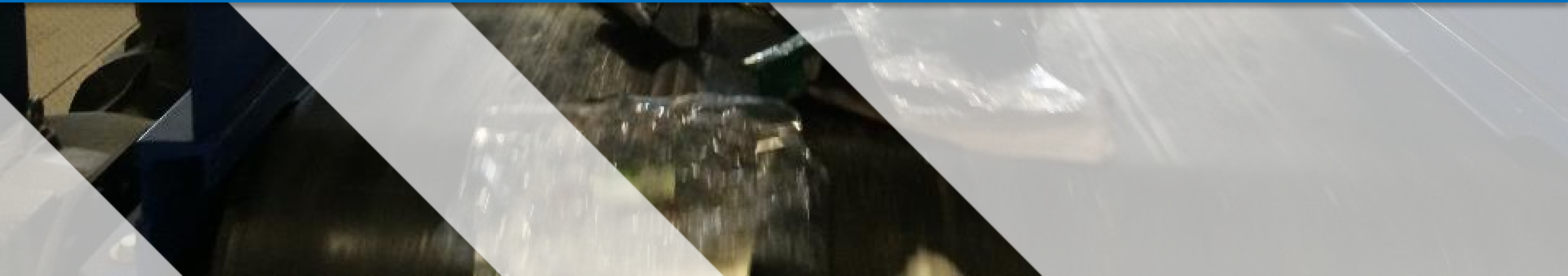
TABLE OF CONTENTS

RECYCLING MARKET DEVELOPMENT PLAN i

- The *Recycling Market Development Plan* report is designed as a tool and resource for strategy implementation
- Available online at:

TXrecyclingstudy.org

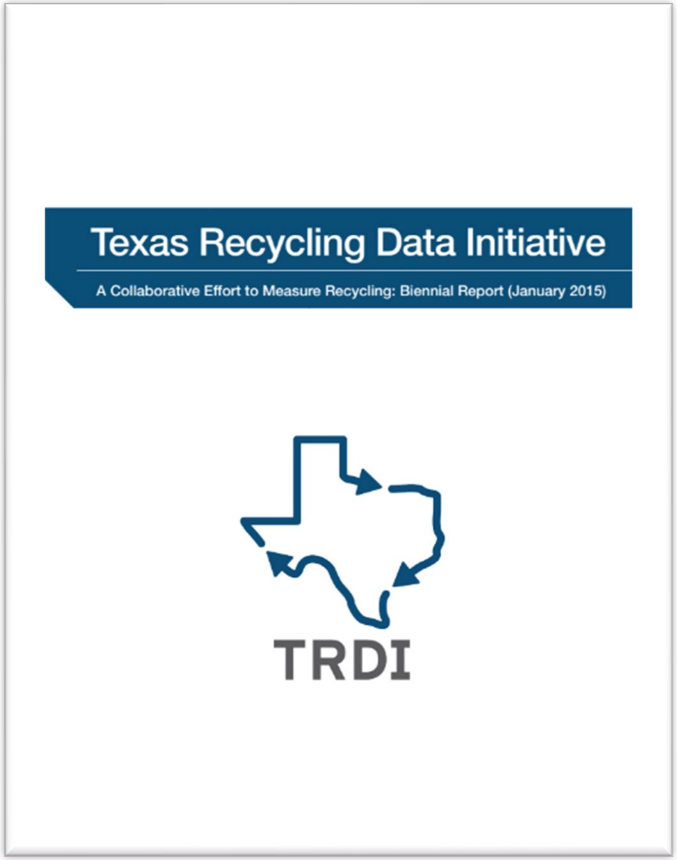
Methodology



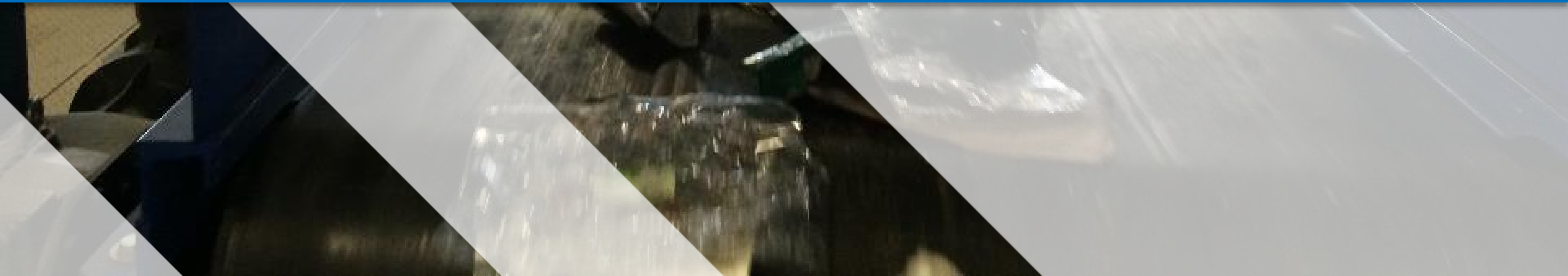
Built on Prior Studies

Study on the Economic Impacts of Recycling (SEIR)

Texas Recycling Data Initiative (TRDI)



Recycled Tons & Recycling Rate

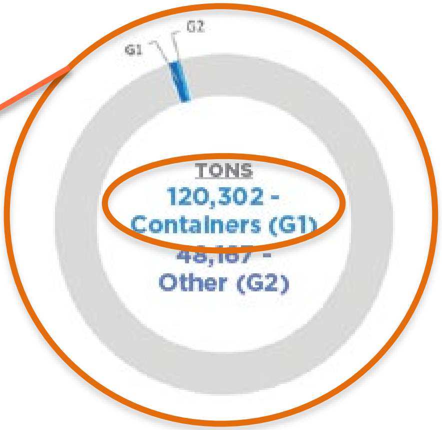


Recycled Tons and Recycling Rate Overview

- Individual material summary example
- Material by material response
- Summary of survey results for all categories, including comparison to 2015 SEIR survey
- Recycling rate calculation

Material Summary Example: Glass (Section 3.4)

Pie Chart



Confidence Level

confidence: strong

The Story

The Story

Much of the recycled glass in Texas flows through MRFs to a small number of glass beneficiation facilities, which provide secondary processing to further prepare the material for end users. While most recycled glass containers in Texas flows through MRFs, some (mainly commercial window and plate glass) flows directly from generators to beneficiation facilities. To obtain a complete understanding of the quantity of glass recycled in Texas, the Project Team surveyed MRFs, glass beneficiation facilities (secondary processors), and end

Survey Tons

Survey Data: 168,469 tons

Facilities Responding

Responsive Facilities

35 total facilities

- 23 MRFs
- 7 landfills and transfer/collection stations
- 5 end-use facilities, including glass beneficiation and end product manufacturing facilities

The Project Team obtained data from entities representing 23 MRFs in Texas (as not all of the MRFs surveyed accept glass). Large commercial MRFs process material via long-term processing agreements with municipalities as well as commercial accounts. Therefore, they handle a large portion of Texas recycled glass. Additional quantities may also be recovered directly from auto shops and contractors. The Project Team believes the glass survey data presented above, which has been adjusted to eliminate double counting and residuals left over after processing, represents the vast majority of Texas glass that was recycled through MRFs and/or secondary processors in 2019. Of the 168,469 total tons, 120,302 tons are glass containers, and the remaining 48,167 tons are other glass.

Supplemental Data

Third Party Data

The Project Team relied on the survey to collect all data related to glass and did not identify available supplemental sources of statewide data covering Texas. However, information from the Glass Packaging Institute was used to confirm the list of Texas-based recycled glass end-use facilities.

Tonnage Comparison to SEIR

Comparison to SEIR Results

The RMDP result for recycled glass is 2 percent higher than the 2015 SEIR result of 165,527 tons. The Project Team believes the result reflects a relatively flat glass recycling market and follows recent national trends in stagnant or decreasing glass packaging recycling tonnages.[3]

Material by Material Results

Comparison to 2015 SEIR:

- ▲ Increased
- ■ Unchanged
- ▼ Decreased
- N/A Not Available

Material	Facilities Responding	Confidence	Supplemental Data?
Glass	35 ▼	■ Strong	
Metals - Ferrous	75 ▼	■ Moderate Plus	✓
Metals - Non-Ferrous	75 ▼	■ Moderate Plus	✓
Paper	67 ▼	■ Moderate Plus	
Plastic	57 ■	▲ Strong	✓
Biosolids	6 ▲	■ Strong	✓
Food and Beverage Materials	27 ▲	▼ Moderate	
Yard Trimmings, Brush, and Green Waste	98 ▼	■ Moderate Plus	
Construction and Demolition Materials	43 ▲	■ Moderate Plus	
Electronic Materials	13 ▼	■ Moderate	✓
Batteries	5 N/A	N/A Moderate Plus	✓
Paint	3 N/A	N/A Strong	✓
Textiles	2 ■	■ Moderate	✓
Tires	- N/A	■ Strong	✓

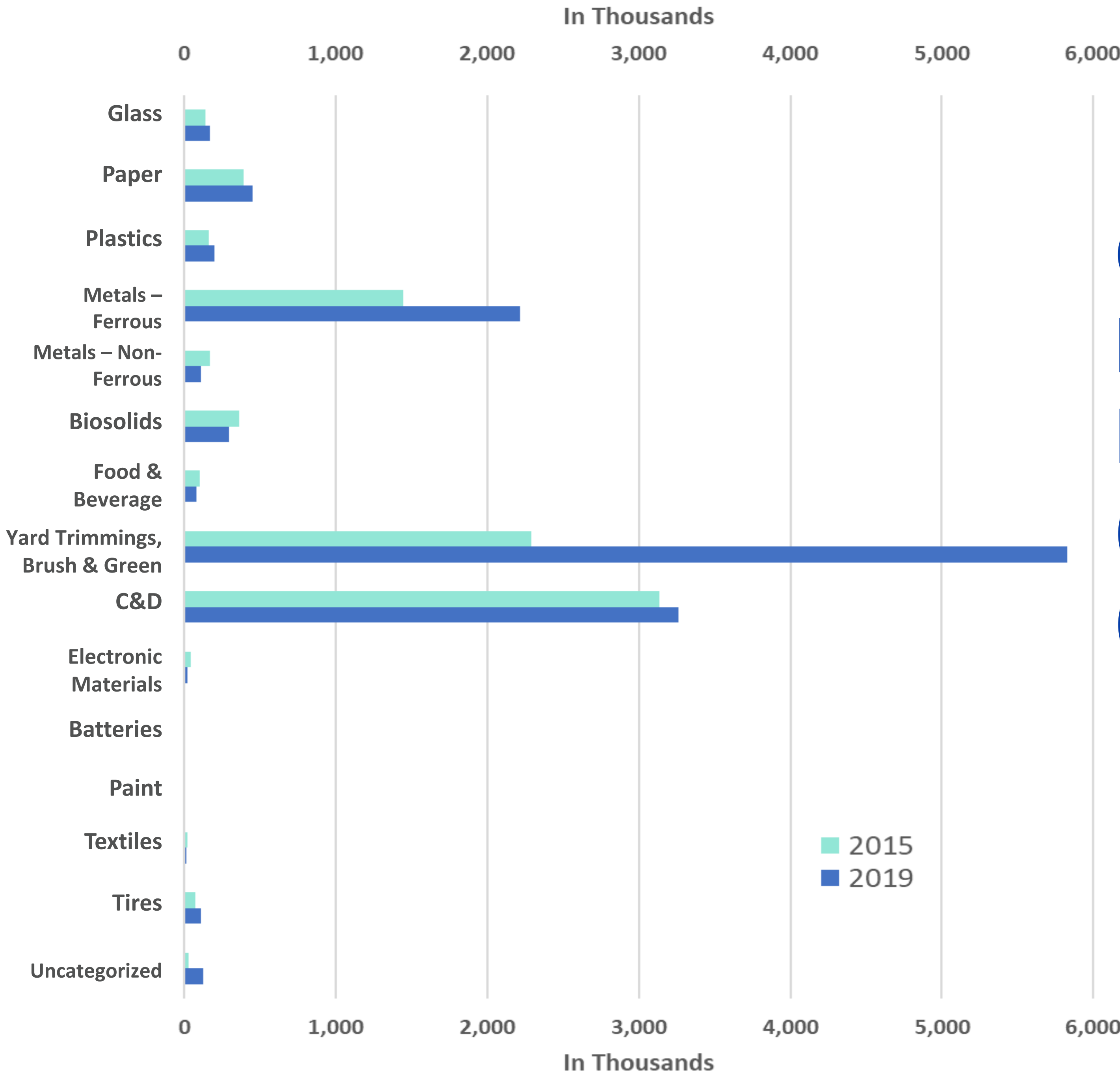
Material Recycled from MSW Sources (Tons) (Table 3-1)

	Material	2015 SEIR
Typical Recyclables	Glass	165,527
	Metals – Ferrous[1]	447,207
	Metals – Non-Ferrous[1]	196,383
	Paper	2,212,562
	Plastics	107,851
Organic Materials	Biosolids	357,116
	Food and Beverage Materials	100,470
	Yard Trimmings, Brush, and Green Waste	2,289,542
Other Materials	Construction and Demolition Materials	3,136,727
	Electronic Material	42,725
	Batteries	440
	Paint[2]	2,306
	Textiles	16,507
	Tires	69,474
Uncategorized[3]		27,932
	TOTAL	**9,172,769**

Material Recycled from Industrial Sources (Tons) (Table 3-4)

	Material	2019 RMDP
Typical Recyclables	Glass	27,350
	Metals - Ferrous	5,776,436
	Metals - Non-Ferrous	564,882
	Paper - Cardboard	112,266
	Paper - Mixed Paper	28,326
	Paper - Office Paper	19,297
	Paper - Other	42,049
	Plastics - PET (#1)	2,160
	Plastics - HDPE (#2)	1,523
	Plastics - Film	515
Organic Materials	Crop Residue and Manures	3,370
	TOTAL	**6,914,320**

Comparing MSW Results (Tons) (Figure 1-1)



Recycling Rate Overview

- Used disposal data reported by landfills in TCEQ reporting process
- Consider the following when comparing to other states:
  - Refer to “Points to Consider When Comparing Statewide Recycling Rate and Economic Data” (see Table 1-1 on slides 18-19)
  - Economic factors (e.g., cost of disposal)
  - Regulatory factors

MSW Recycling Rate Calculation

Total Recycled / (Total Recycled + Total Disposed)
= % Recycling Rate

2
0
1
5

9,171,707 tons / (9,171,707 tons + 31,049,545 tons)

= 22.7% Recycling Rate

2
0
1
9

12,911,034 tons / (12,911,034 tons + 34,099,350 tons)

= 27.5% Recycling Rate

Recycled Material Value & Quality

Estimated Annual Gross Value of Recycled MSW Material in Texas (2019) (Table 5-1)

Recycled Material	Annual Tonnage	Rounded Value	Basis
TYPICAL RECYCLABLES			
Glass	168,469	$10,950,000	$65/ton
Metals – Ferrous	522,971	$61,710,000	$118/ton
Metals – Non-Ferrous	177,446	$210,100,000	$1,184/ton
Paper	2,214,232	$166,000,000	$75/ton
Plastics	98,450	$85,730,000	$871/ton
ORGANICS	5,906,435	$267,560,000	$30/CY for compost
C&D MATERIALS	3,259,909	$19,560,000	$6/ton
Total	**12,347,912**	**$821,610,000**	

2015 SEIR: 8,656,269 tons and $702,222,000 in gross value

Average Contamination Rate by Recyclable Material (Table 3-2)

Material	Contamination Rate: Average	Contamination Rate: Range
Single Stream Materials	22.4%	10% - 60%
C&D Materials	1.0%	-

2015 SEIR Average Single Stream Contamination Rate: 18.3%

Estimated Annual Gross Value of Recycled Industrial Material in Texas (2019) (Table 5-2)

Recycled Material	Annual Tonnage	Rounded Value	Basis
TYPICAL RECYCLABLES			
Glass	27,350	$1,780,000	$65/ton
Metals – Ferrous	5,776,436	$681,620,000	$118/ton
Metals – Non-Ferrous	564,882	$668,820,000	$1,184/ton
Paper	201,938	$15,150,000	$75/ton
Plastics	7,568	$4,550,000	$601/ton
ORGANICS	336,146	$15,230,000	$30/CY for compost
Total	**6,914,320**	**$1,387,150,000**	

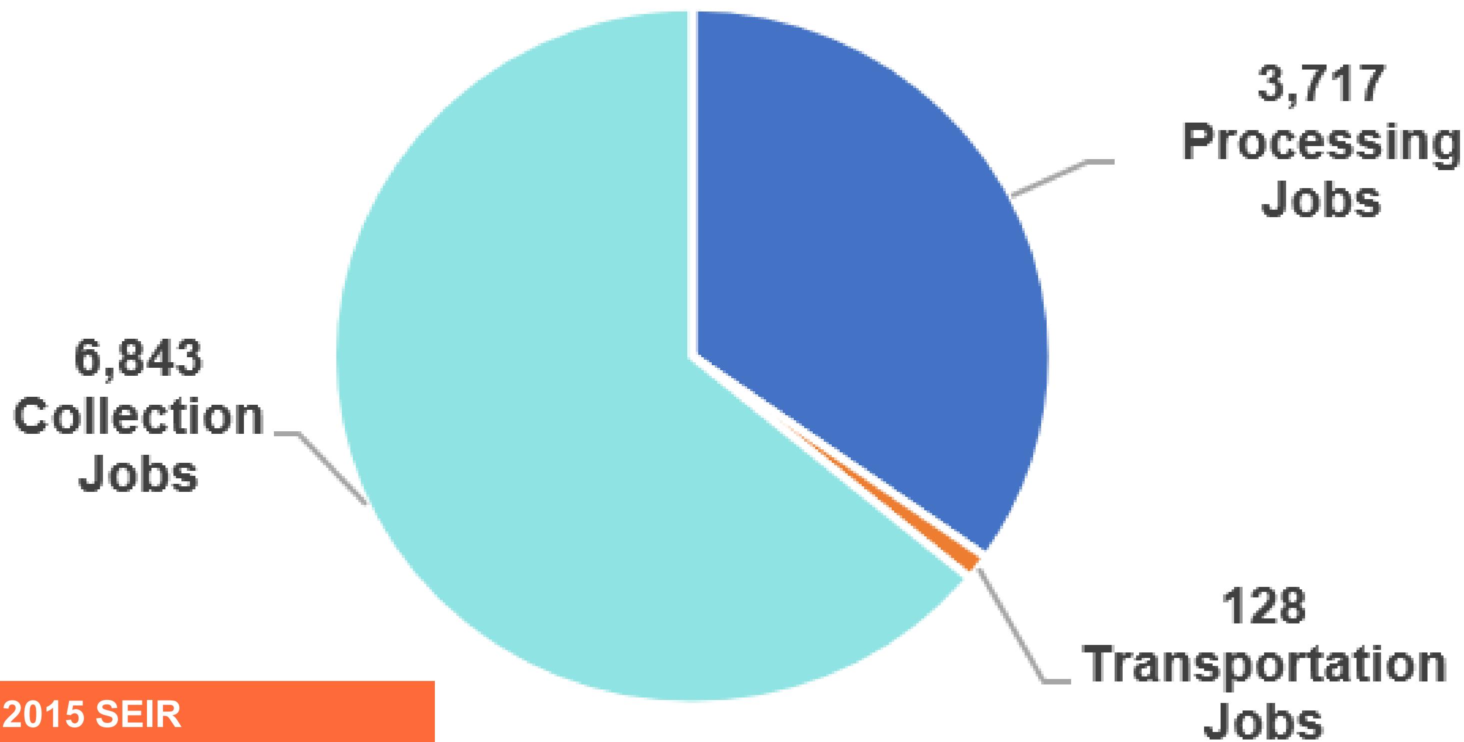
Estimated Amount of Recyclable Materials that Could be Recycled, but are Disposed

Aggregate Composition of Disposed Material by Waste Type by Recyclable Material Category (2019) (Table 4-6)

Waste Type	Recyclable Material Category	Total Tonnage Disposed	Assumed Recovery Rate 20%	Assumed Recovery Rate 40%	Assumed Recovery Rate 60%
MSW	Glass	908,487	181,697	363,395	545,092
	Metals –Ferrous	433,491	86,698	173,396	260,095
	Metals –Non-Ferrous	283,481	56,696	113,392	170,089
	Paper	4,022,213	804,443	1,608,885	2,413,328
	Plastics	1,051,013	210,203	420,405	630,608
	Organic Materials	5,073,825	1,014,765	2,029,530	3,044,295
	Clean/Unpainted C&D Aggregates	13,882	2,776	5,553	8,329
	Other	534,903	106,981	213,961	320,942
	Subtotal	**12,321,295**	**2,464,259**	**4,928,517**	**7,392,778**
C&D Materials	Concrete/Cement	2,215,302	443,060	886,121	1,329,181
	Paper	458,606	91,721	183,442	275,164
	Ferrous	388,649	77,730	155,460	233,189
	Brush	256,509	51,302	102,604	153,905
	Subtotal	**3,319,066**	**663,813**	**1,327,627**	**1,991,439**
Other	Brush	291,287	58,257	116,515	174,772
	Tires	67,896	13,579	27,158	40,738
	Subtotal	**359,183**	**71,836**	**143,673**	**215,510**
TOTAL		**15,999,544**	**3,199,908**	**6,399,817**	**9,599,727**

The Statewide Economic Impacts of Recycling

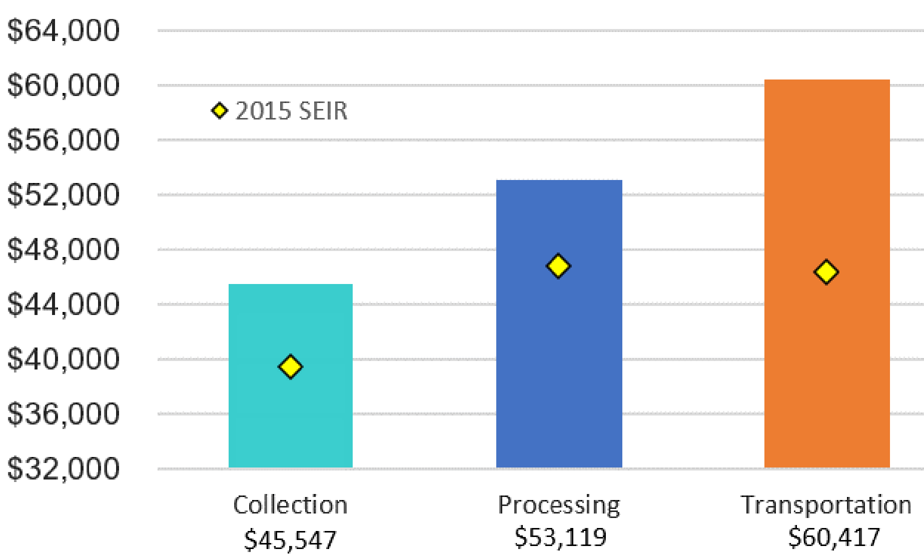
Recycling Direct Employment (2019)

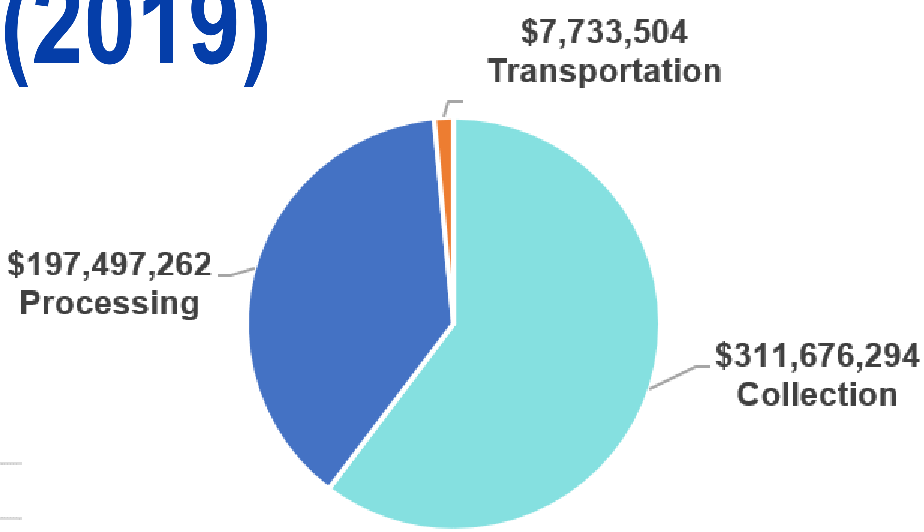


2015 SEIR Employment	
Collection Jobs	4,065
Processing Jobs	3,688
Transportation Jobs	115

Estimated Wages and Benefits in the Recycling Industry (2019)

AVERAGE ANNUAL WAGES AND BENEFITS IN TEXAS





ESTIMATED TOTAL ANNUAL STATEWIDE PAYROLL

2015 SEIR Statewide Payroll	
Collection	$160,383,865
Processing	$172,896,184
Transportation	$5,329,560

Summary of Total Economic Impact of Recycling on the Texas Economy (Table 8-6)

Measure	Direct	Indirect	Induced	Total	2015 SEIR
Employment	10,688	6,651	5,571	22,910	17,037
Labor Income	$530,138,619	$438,691,364	$291,138,384	$1,259,968,367	$856,988,630
Value Added	$1,168,883,317	$670,826,952	$505,151,582	$2,344,861,851	$1,627,661,083
Output	$2,675,693,086	$1,253,442,126	$899,740,454	$4,828,875,666	$3,376,757,500

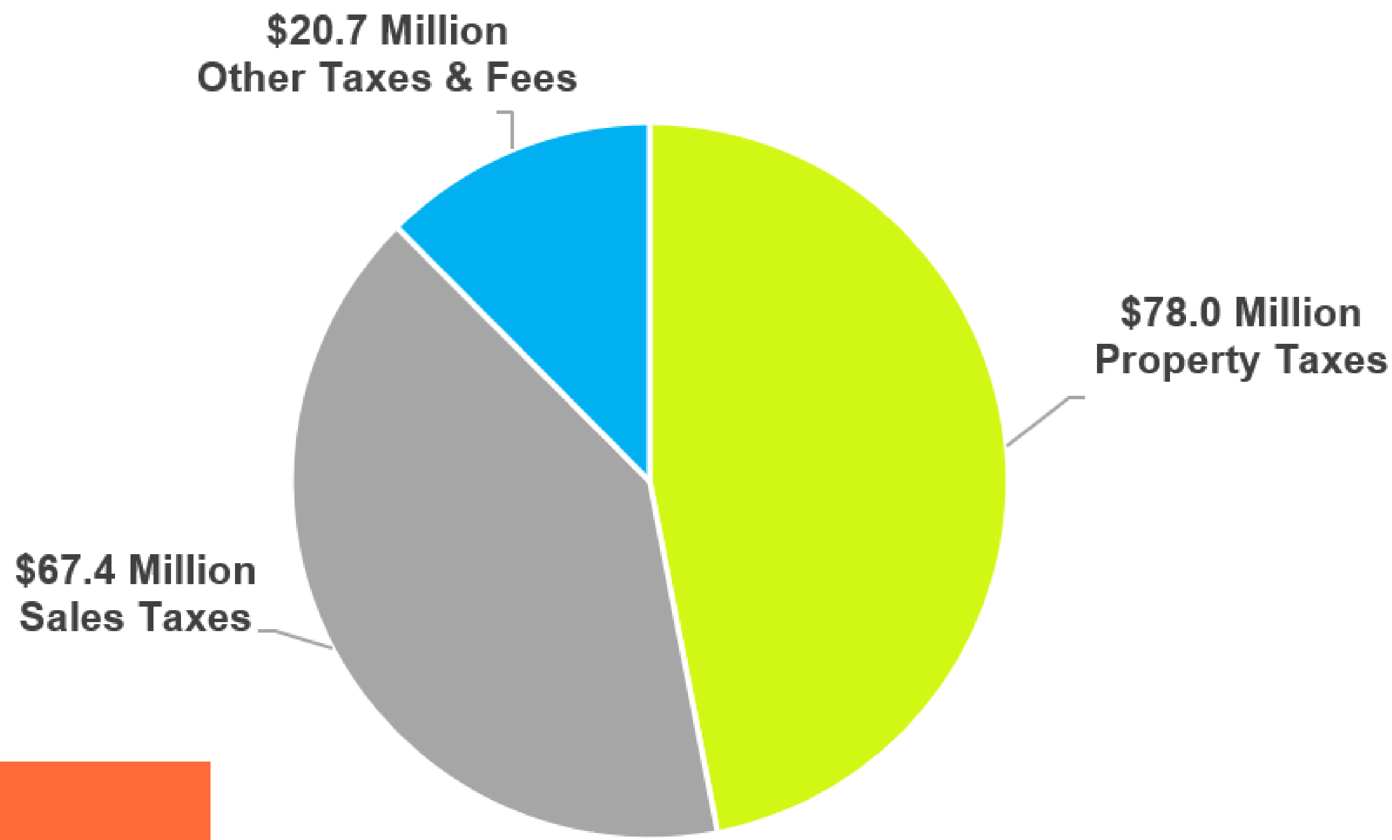
Output Increased 43% compared to 2015 SEIR

Impacts of Recycling on Texas Economy

With more than $4.8 billion of economic output and 22,910 jobs, Texas' recycling sector is similar in size to:

Petroleum Refining	22,976
Furniture Manufacturing	23,399

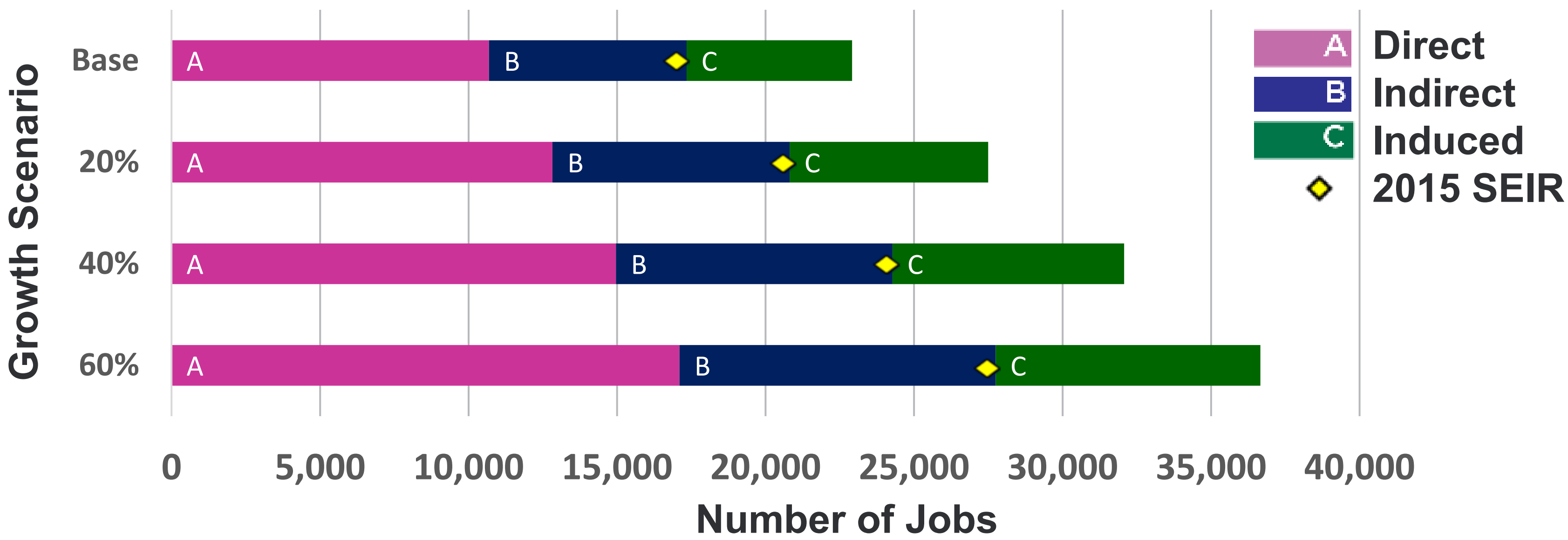
Estimated Fiscal Impacts of Recycling (2019)



2015 SEIR Fiscal Impact	
Sales Tax	$101 Million
Property Tax	$72 Million
Other Taxes & Fees	$21 Million

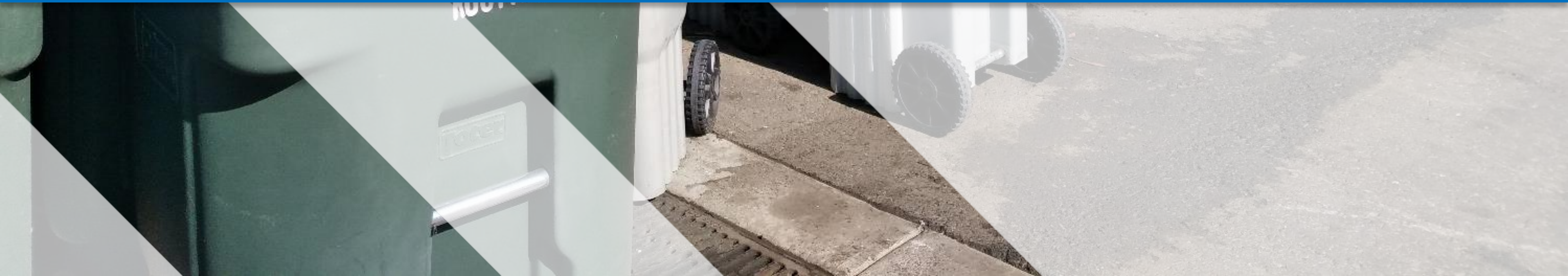
STATE AND LOCAL TAX REVENUES GENERATED BY RECYCLING

Recycling Growth Scenarios Direct Employment (2019)



EMPLOYMENT BY RECYCLING GROWTH SCENARIO

RMDP Strategy Development Approach



What is Recycling Market Development?

Defined actions to enhance the economic vitality of the recycling and reuse industries

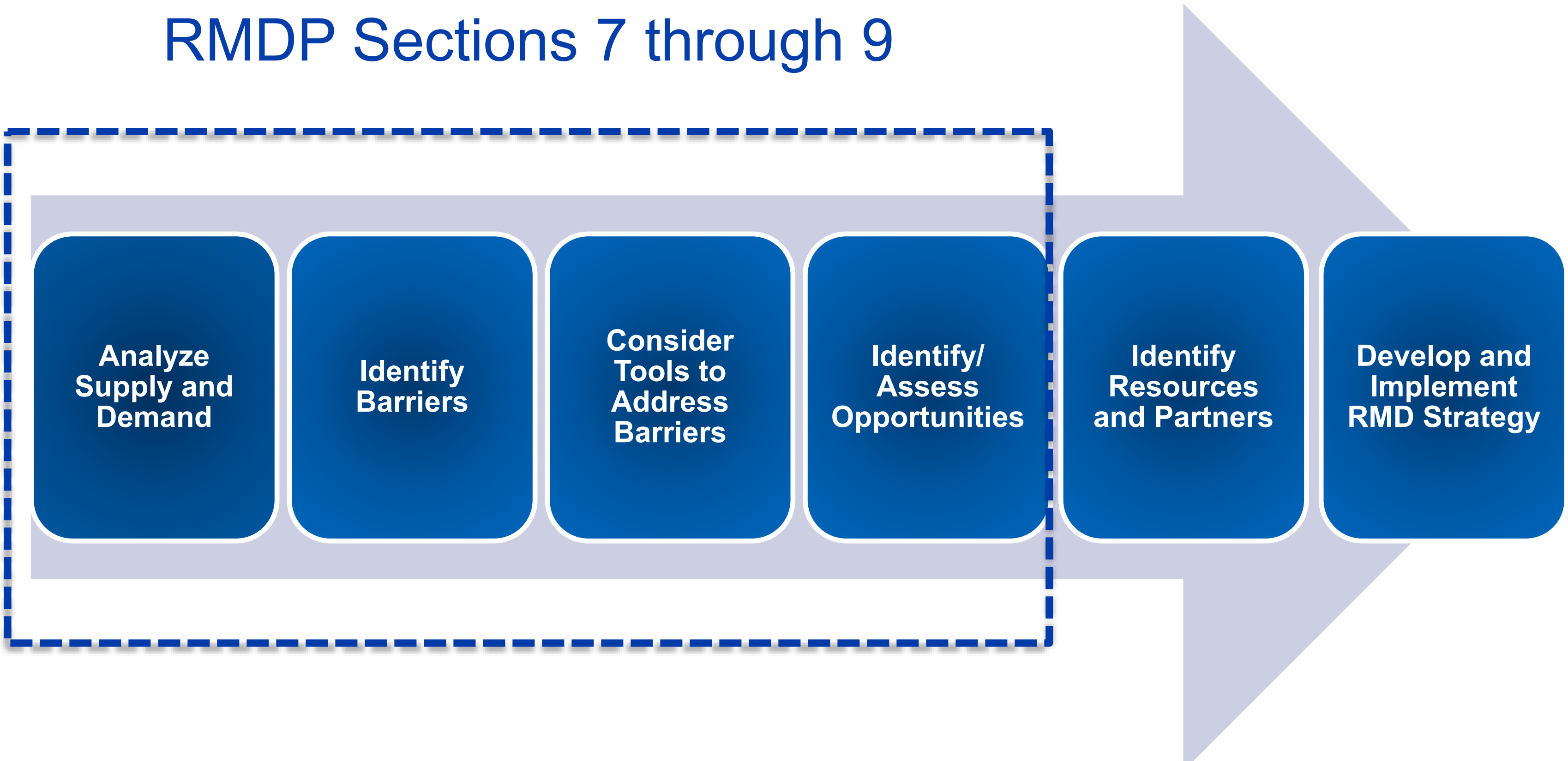
DEMAND PULL STRATEGIES

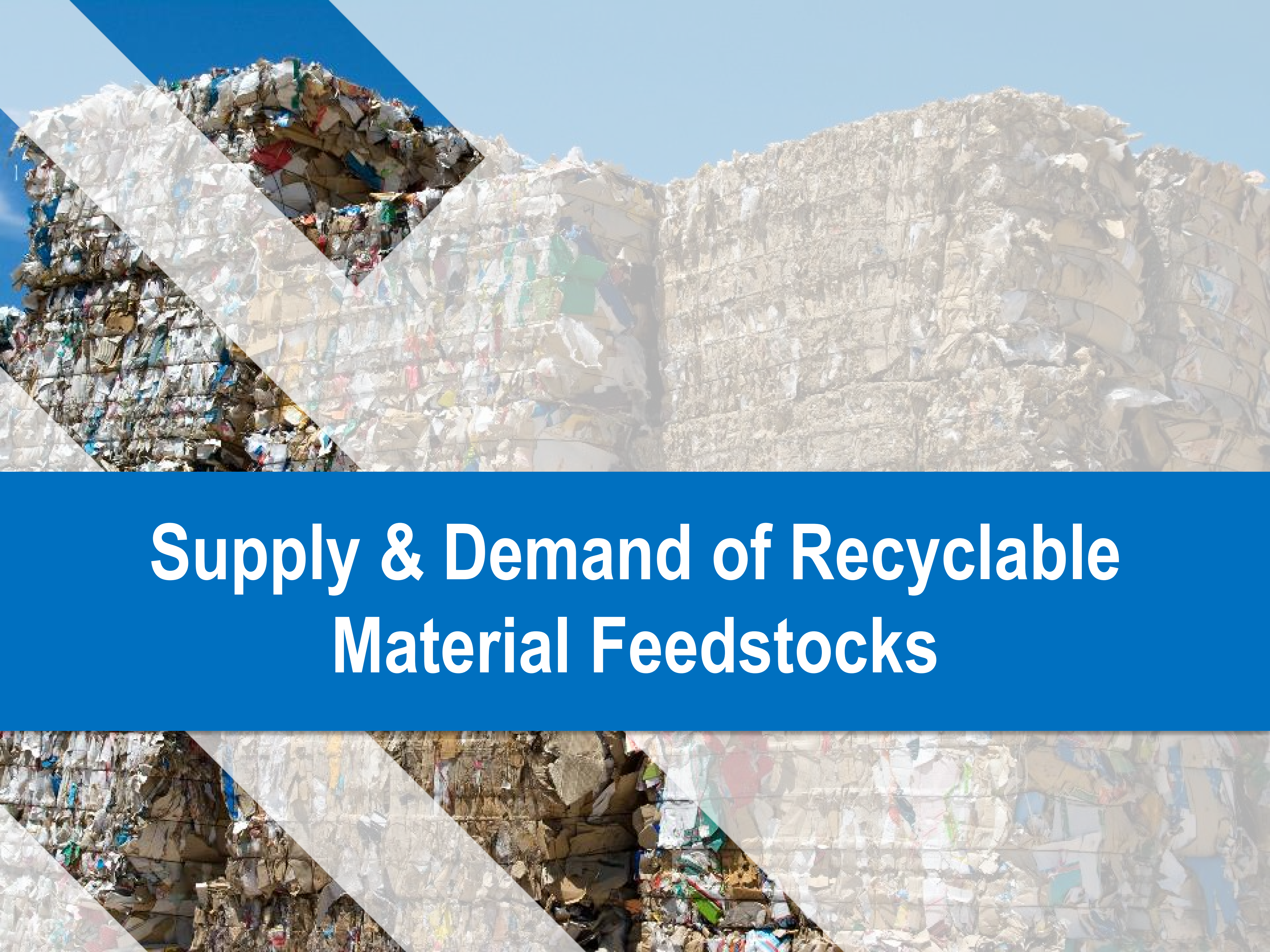
GROW DEMAND FOR RECYCLABLE MATERIALS & RECYCLED-CONTENT PRODUCTS

SUPPLY PUSH STRATEGIES

- INCREASE TONNAGE
- IMPROVE QUALITY
- ENHANCE RELIABILITY
- ENHANCE AFFORDABILITY

Systematic Approach to Recycling Market Development





Supply & Demand of Recyclable Material Feedstocks

Approach to and Contents of Supply and Demand Analysis

- Broad description of the recycling systems in Texas
- Overview of national, regional, and state material flows and markets
- Summary of the nature of material supply
- Summary of demand for Texas-generated material
- Supply and demand comparison

Example: Supply and Demand Results for Typical Recyclables (Table 7-21)

Supply > Demand	Supply = Demand	Supply < Demand
▪ Cartons & Other Polycoat Containers		▪ Corrugated Cardboard ▪ Sorted Office Paper ▪ Other Paper ▪ Newspaper
▪ Low Grade PET (Thermoform, Black) ▪ Colored HDPE ▪ Other Film ▪ Plastics #3 - #7		▪ High-Quality PET ▪ Natural HDPE ▪ Clean Clear Film
▪ Mixed Non-Ferrous	▪ Industrial Scrap	▪ Bulky Metals ▪ Aluminum Cans
▪ Glass (Rural Areas)		▪ Glass

Barriers & Opportunities to Increase Recycling

Approach

- Identified barriers based on market trends, survey results, stakeholder forums, interviews, and additional research
- Catalogued supply-related, demand-related, and economic barriers for each material type
- Evaluated gaps in Texas recycling infrastructure by material type

Major Barriers Identified

- Contamination
- Competition with low-cost alternatives to recycling
- Low participation where programs are accessible
- Inconvenient/limited access to recycling opportunities
- Lack of / inadequate secondary processing
- Costly to transport relative to value
- Low value / inadequate demand
- Lack of equipment
- Challenges obtaining / retaining / training employees
- Other

Primary Barriers by Material: Typical Recyclables (Table 8-10)

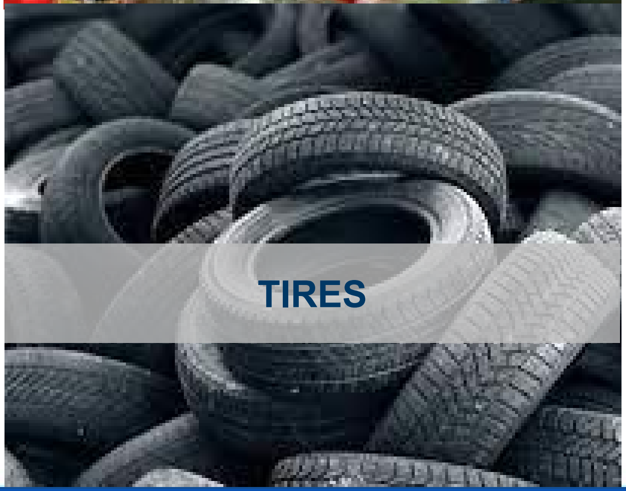
Prioritization Key: High Priority ● Medium Priority ◑ Low Priority ◌	Contamination	Competition with Low-Cost Alternatives to Recycling	Low Participation Where Programs are Accessible	Inconvenient/Limited Access to Recycling Opportunities	Lack of or Inadequate Secondary Processing	Costly to Transport Relative to Value	Low Value/Inadequate Demand	Lack of Equipment	Challenges Obtaining, Retaining, Training Employees	Other
Plastics #3-7 and Other Plastics	●	●	●	◑	●	●	●	◑	◌	
Glass	●	●	●	◑	●	●	◌	◑	◌	
Film Plastics	●	●	●	●			◑	◑		
PET	●	●	●	◑		◌	◌	◑	◌	
HDPE	●	●	●	◑			◑	◌	◌	
Paper	●	●	●	◑		◑		◑	◌	
Non-Ferrous Metals	●	●	●	◑				◑	◌	
Ferrous Metals	●	●	●	◑					◌	

High Priority Cross-Material Barriers

	MATERIAL TYPE						
BARRIER			#3-7/Other				
CONTAMINATION	✓	✓	✓	✓			
ACCESS FOR RURAL AND MULTI-FAMILY RESIDENTS	✓	✓	✓				
LACK OF PARTICIPATION	✓	✓	✓				
COSTLY TO TRANSPORT RELATIVE TO VALUE (FOR SOME MATERIALS)	✓ Glass		✓				
LOW-COST ALTERNATIVES TO RECYCLING	✓	✓	✓	✓	✓	✓	✓
RELUCTANCE OF END MARKETS TO PAY FOR SOME MATERIALS	✓ Some	✓					
LACK OF ADEQUATE MARKETS FOR TX-MADE PRODUCTS				✓	✓		

High Priority Materials

HIGH PRIORITY



Medium Priority Materials

MEDIUM PRIORITY

C&D WASTE

ELECTRONIC MATERIALS

THERMOFORMS

MEDIUM PRIORITY (LONG-TERM)

BATTERIES

BIOSOLIDS

Infrastructure Needs and Gaps Assessment

Example: Infrastructure Needs for Typical Recyclables (Table 8-7)

Material	Level of Infrastructure Need			Overall Sufficiency of Existing Infrastructure
	Infrastructure Needs Key: High ● Moderate ◐ Low ◌			**Existing Infrastructure Key:** Weak □ Moderate ▤ Strong ■
	Collection	Processing	End-Use	
OCC	◐	◌	◌	■
Mixed Paper	◐	◌	◌	■
HDPE	◐	◌	◌	■
PET	◐	◐	◐	▤
Plastics #3-7	◐	●	●	□
Film Plastics	◐	◐	◐	▤
Ferrous Metals	◐	◌	◌	■
Non-Ferrous Metals	◐	◐	◌	▤
Glass	◐	◐	◌	▤

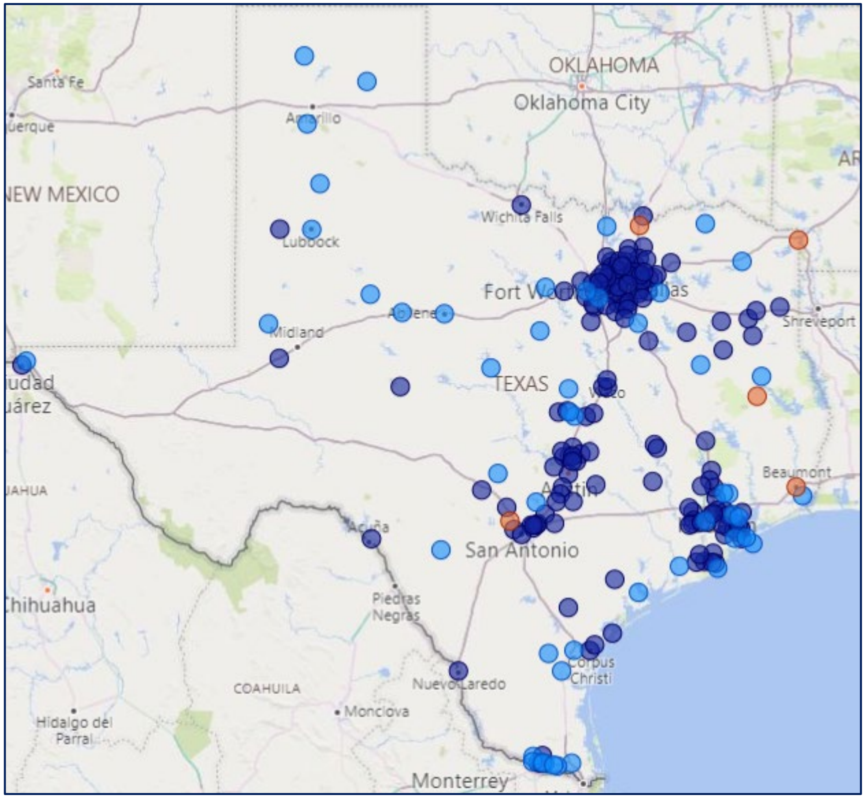
Collection and Transportation Needs

RURAL NEEDS

- EXPAND COLLECTION SYSTEMS
- COST-EFFECTIVE TRANSPORTATION OPTIONS

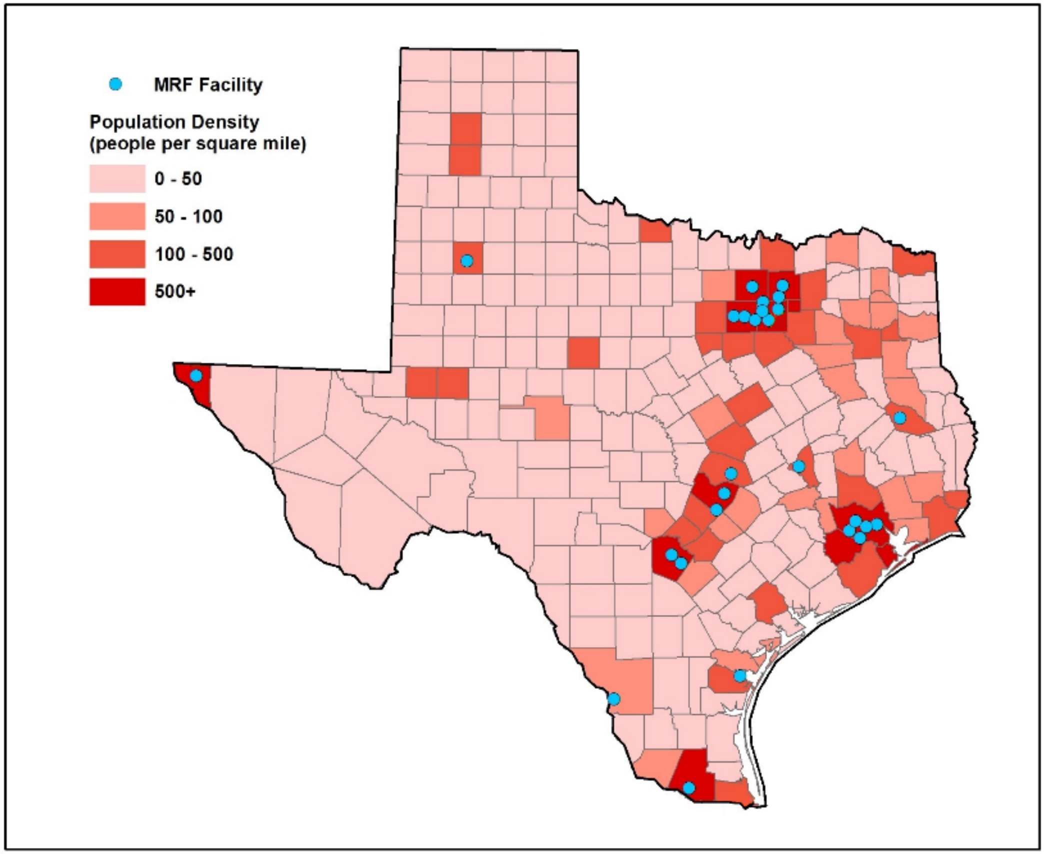
STATEWIDE NEEDS

- RESIDENTIAL FILM
- FOOD WASTE
- RESIDENTIAL TEXTILES
- NON-CAN FERROUS METAL



Recycling Collection Program:
- Curbside
- Drop-Off Only
- Suspended

MRF Infrastructure Needs



EXPAND MRF CAPACITY

UP TO
15
NEW MRFS*

HUB AND SPOKE

**Based on a 20% increase in recycling statewide*

ENHANCE MRF CAPABILITIES

- PRODUCE CLEANER BALES
- CAPTURE LOW-VOLUME MATERIALS
- REMOVE NEW MATERIALS & CONTAMINANTS

Other Processing & End-Use Needs

- Plastics Processing
- Glass Beneficiation
- Organics Processing & End Use
- Plastics End Use Capacity
- C&D Processing
- Textile Processing & End Use
- Regional Battery Processing
- Tire-Derived Product End Use
- Expanded Paint Processing
- End Uses for Gypsum & Asphalt Shingles

Market Development Tools & Mechanisms

Approach

- Evaluated 43 tools and mechanisms across 5 categories:
  - Information, facilitation, and technical assistance
  - Preferential procurement
  - Financial assistance
  - Financial and other incentive/disincentives
  - Policies
- Developed detailed summary resource on each tool/mechanism and its use to address priority barriers
- Determined appropriate tools/mechanisms and key programs of work for Texas based on priority barriers in both urban and rural areas of the state

Recommended Tools & Mechanisms Example: Contamination (Table 9-1)

High-Priority Barrier

Barrier	Information, Facilitation & Technical Assistance	Financial Assistance	Policies
Contamination High Priority Typical Recyclables Film Plastic Medium Priority C&D Materials	• Recycle Right Campaign • Harmonization Guidance • Contamination Reduction Guidance • Clear Labeling and Signage	• Equipment/ Recycling Market Development Grants and Loans	• Harmonization Policy and Setout Requirements

Affected Materials (high and medium priority)

Tools/Mechanisms

Tools & Mechanisms Summary Example (Sections 9.4 & 9.5)

Category

Priority Barrier and Affected Materials

Applicable Tools and Mechanisms

External Links to Reports, Example Policies, etc.

Analysis and Case Studies

Tools and Mechanisms to Address Competition with Low-Cost Alternatives to Recycling

Material Priority/Categories Addressed: *High Priority: Typical Recyclables, Tires, Textiles, C&D Materials*

D - Financial Incentives/Disincentives

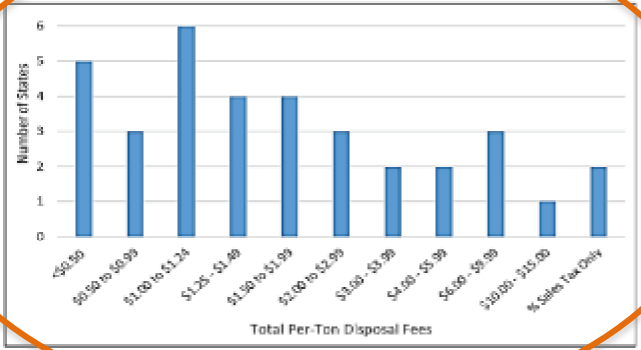
Tax Credits or Exemptions. Lowering the cost associated with recycling operations is one means of "leveling the playing field" with respect to disposal. Some state governments provide tax credits or tax exemptions for recycling-related business enterprises. Examples include sales and/or property tax exemptions on recycling equipment and property tax credits.

FIGURE 9-1: THE RECYCLING PARTNERSHIP'S CIRCULAR ECONOMY ACCELERATOR MEMBERS

Rebates and Incentive Payments. Some jurisdictions provide permit fee waivers and/or disposal fee waivers for recycling facilities. Additional incentives such as material rebates and incentive payments can be used to encourage recycling businesses to locate in the state or for a manufacturer to switch from virgin feedstock.

Disposal Surcharges. Raising the cost of disposal through disposal surcharges (or in Texas's case, increasing the current state-level disposal surcharge on MSW) also helps recycling to be more cost competitive. This approach is being recommended by The Recycling Partnership's Circular Economy Accelerator (see Figure 9-1 for list of members) as both a means of "leveling the playing field" as well as generating funding to support local recycling programs. As shown in Figure 9-2, about half of U.S. states have a statewide per-ton disposal fee, ranging from $0.13 to $13.00, with an average of $2.30 per ton and a median value of $1.06. The per-ton disposal fee in Texas is $0.94 per ton, which is below the national median and average. Two states have a percentage fee on waste disposal services. Minnesota has a 9 percent fee for residential and a 17 percent fee for commercial and self-haul and Iowa charges sales tax of 6 percent on solid waste and sludge collection and disposal services, along with a per-ton disposal fee. In some states, local governments are also authorized to charge a local solid waste disposal fee.

FIGURE 9-2: STATE-LEVEL MSW DISPOSAL SURCHARGES IN THE U.S. (2016)



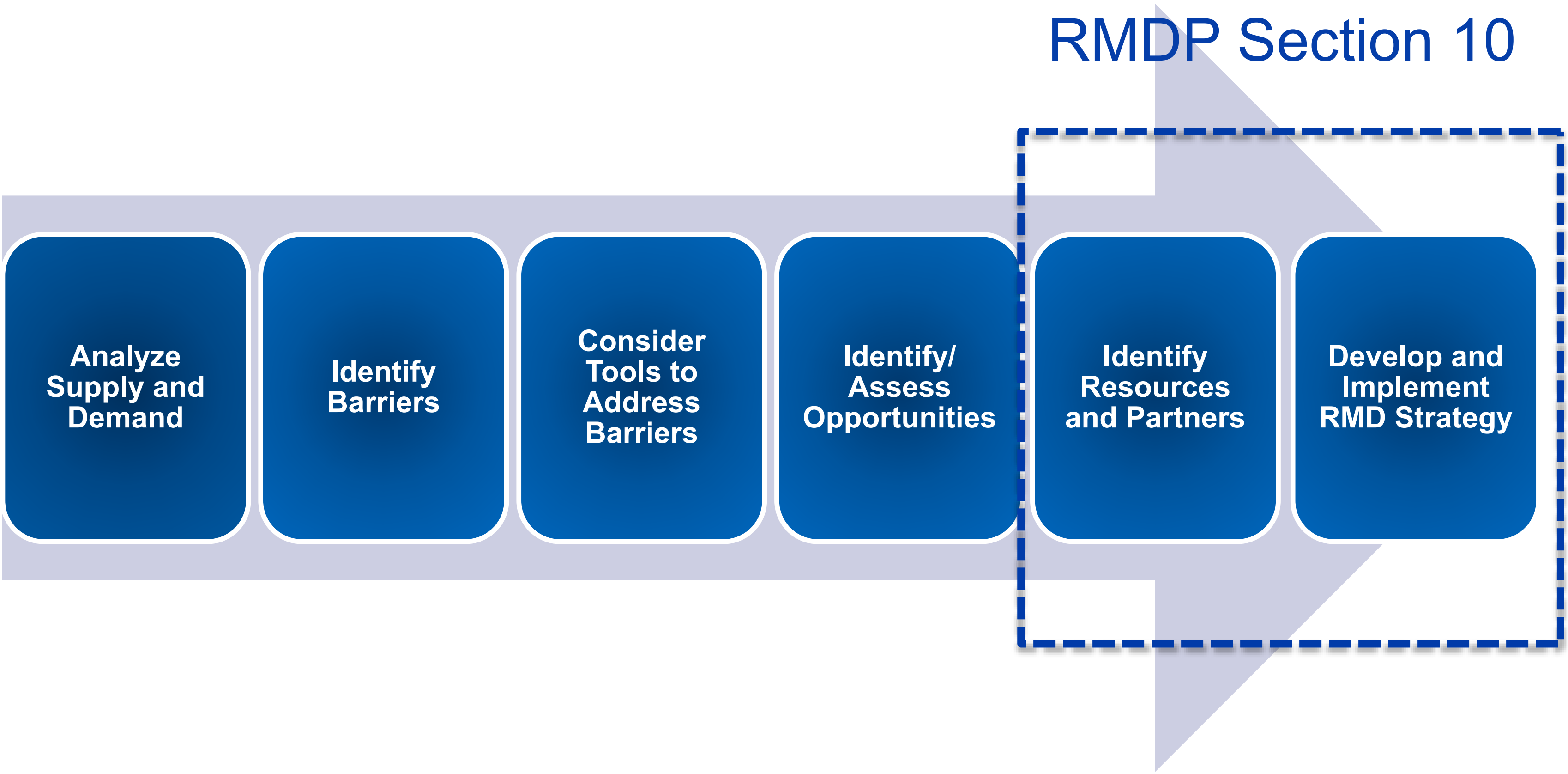
Source: Circular Matters

For more information:

- Circular Economy Accelerator Policy Whitepaper: https://recyclingpartnership.org/wp-content/uploads/dlm_uploads/2020/09/Policy-Whitepaper-9.30.2020.pdf

Texas Recycling Market Development Strategy

Systematic Approach to Recycling Market Development



Developing the Strategy for Texas

INFORMATION, FACILITATION & TECHNICAL ASSISTANCE
PREFERENTIAL PROCUREMENT
FINANCIAL ASSISTANCE
FINANCIAL AND OTHER INCENTIVES/DISINCENTIVES
POLICIES

Recommended strategy:

- Overcome priority barriers through targeted programs of work
- Align programs of work with the categories of tools and mechanisms to be employed

Information, Facilitation & Technical Assistance

- ✓ DISSEMINATE INFORMATION ON HOW TO RECYCLE CORRECTLY AND REDUCE CONTAMINATION
- ✓ FACILITATE REGIONAL COOPERATION, HARMONIZATION AND INFORMATION EXCHANGE
- ✓ RESEARCH & TECHNICAL ASSISTANCE, R&D, DEMONSTRATION PROJECTS, AND GENERATOR MAPPING
- ✓ ASSIST AND SUPPORT FEEDSTOCK CONVERSION RESEARCH

Preferential Procurement

- ✓ PROMOTE TEXAS-MADE RECYCLED-CONTENT PRODUCTS
- ✓ ENHANCE THE RECYCLED-CONTENT PRODUCT DIRECTORY
- ✓ SUPPORT EXISTING COOPERATIVE CONTRACTING WORK
- ✓ REFRESH THE STATE PREFERENTIAL PROCUREMENT PROGRAM

Financial Assistance

- ✓ DEVELOP GRANTS AND/OR LOANS
- ✓ GENERATE FUNDING VIA PAY-AS-YOU-THROW (PAYT)

Financial and Other Incentives or Disincentives

✓

DEVELOP INCENTIVES / DISINCENTIVES SUCH AS:
- **TAX CREDITS & EXEMPTIONS**
- **DISPOSAL SURCHARGES**
- **PERMIT FEE WAIVERS**
- **AWARDS PROGRAMS**

Policies

✓ **EXPLORE NEW POLICIES SUCH AS:**
- **HARMONIZATION**
- **ADVANCE RECYCLING FEES**
- **DISPOSAL SURCHARGES**
- **INDUSTRY FUNDING MECHANISMS**

✓ **REVIEW / REVISE STATE REGULATIONS AS NEEDED**

✓ **PROMOTE OR ENACT LOCAL GOVERNMENT POLICIES SUCH AS:**
- **PAYT PROGRAMS**
- **SETOUT REQUIREMENTS**
- **MANDATORY SERVICE PROVISION**
- **FOOD WASTE DIVERSION MANDATES**

Approach to Identifying Resources & Partners

- Evaluated current and potential roles in implementing the recycling market development strategy for:
  - 10 state agencies and similar entities
  - Local government
  - State, regional and national organizations
- Developed institutional and administrative recommendations to implement the recycling market development strategy
- Recommendations follow 6 key principles to effectively manage recycling market development efforts, and address funding needs

Entities with Potential Roles

State and Regional Agencies & Entities

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Local Governments

Other Organizations & Entities

Principles for Effective Implementation

RECOMMENDATIONS	
1	ESTABLISH TEXAS RECYCLING MARKET DEVELOPMENT CENTER (TxRMDC)
2	APPOINT A DIVERSE RECYCLING MARKET DEVELOPMENT BOARD
3	ENGAGE THE PRIVATE SECTOR TO SAVE SCARCE STATE RESOURCES
4	APPROPRIATELY STAFF TxRMDC FOR SUCCESS
5	COLLECT CURRENT & ACCURATE MARKET INTELLIGENCE
6	MONITOR IMPLEMENTATION EFFORTS AND ADJUST AS NEEDED

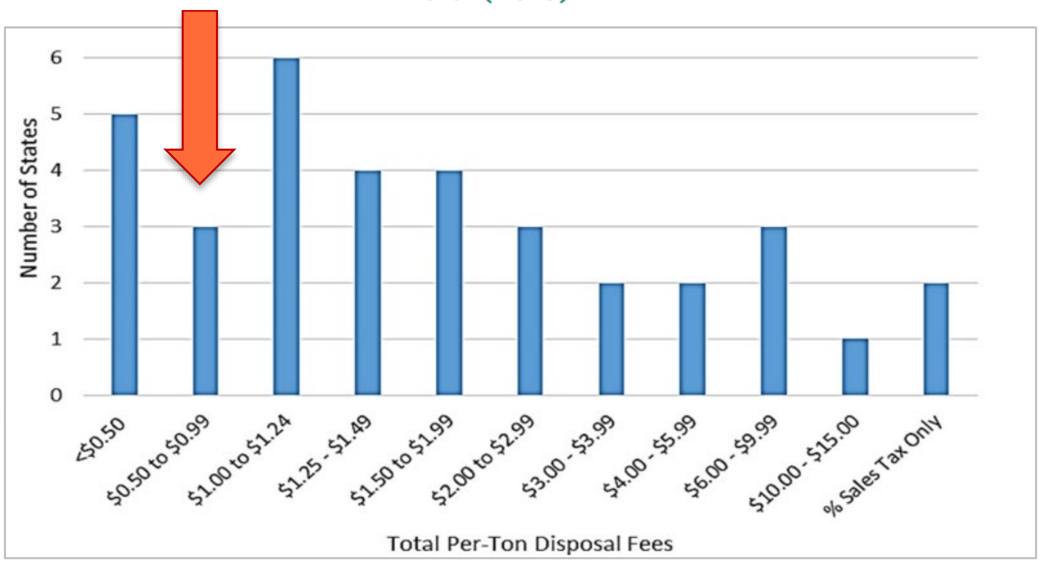
Funding Texas Market Development Efforts

“PORTFOLIO” APPROACH	
✓	INSTITUTE PAY-AS-YOU-THROW (PAYT) USER FEE SYSTEMS AT THE LOCAL LEVEL
✓	ESTABLISH PUBLIC-PRIVATE PARTNERSHIPS AND PURSUE GRANT FUNDING
✓	ESTABLISH ADVANCE RECYCLING FEES FOR TIRES, ELECTRONICS & PAINT
✓	INCREASE STATE DISPOSAL FEE
✓	ESTABLISH ONE OR MORE INDUSTRY FUNDING MECHANISMS
✓	INVESTIGATE PASSAGE OF BEVERAGE CONTAINER DEPOSIT LEGISLATION

Expand Existing Funding Mechanisms

Increase State Disposal Fee: Fees average $2.30/ton in the U.S. with current fee in Texas at $0.94/ton.

FIGURE 9-2: STATE-LEVEL MSW DISPOSAL SURCHARGES IN THE U.S. (2016)



Increase Per-Ton Fee to	Estimated Increase in Total Revenues
$1.50 per ton	$20.6 million
$2.00 per ton	$39.0 million
$2.25 per ton	$48.2 million
$2.50 per ton	$57.4 million

Questions

RECYCLING MARKET
Development Plan

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