Northeast Nebraska
Hub & Spoke Recycling Project

NEBRASKA RECYCLING COUNCIL

NEBRASKA

DEPT. OF ENVIRONMENTAL QUALITY

The Nebraska Environmental Trust

preserving NATURAL NEBRASKA™ for future generations

Hub and Spoke Recycling: Maximizing Regional and Rural Programs

Norfolk, Nebraska

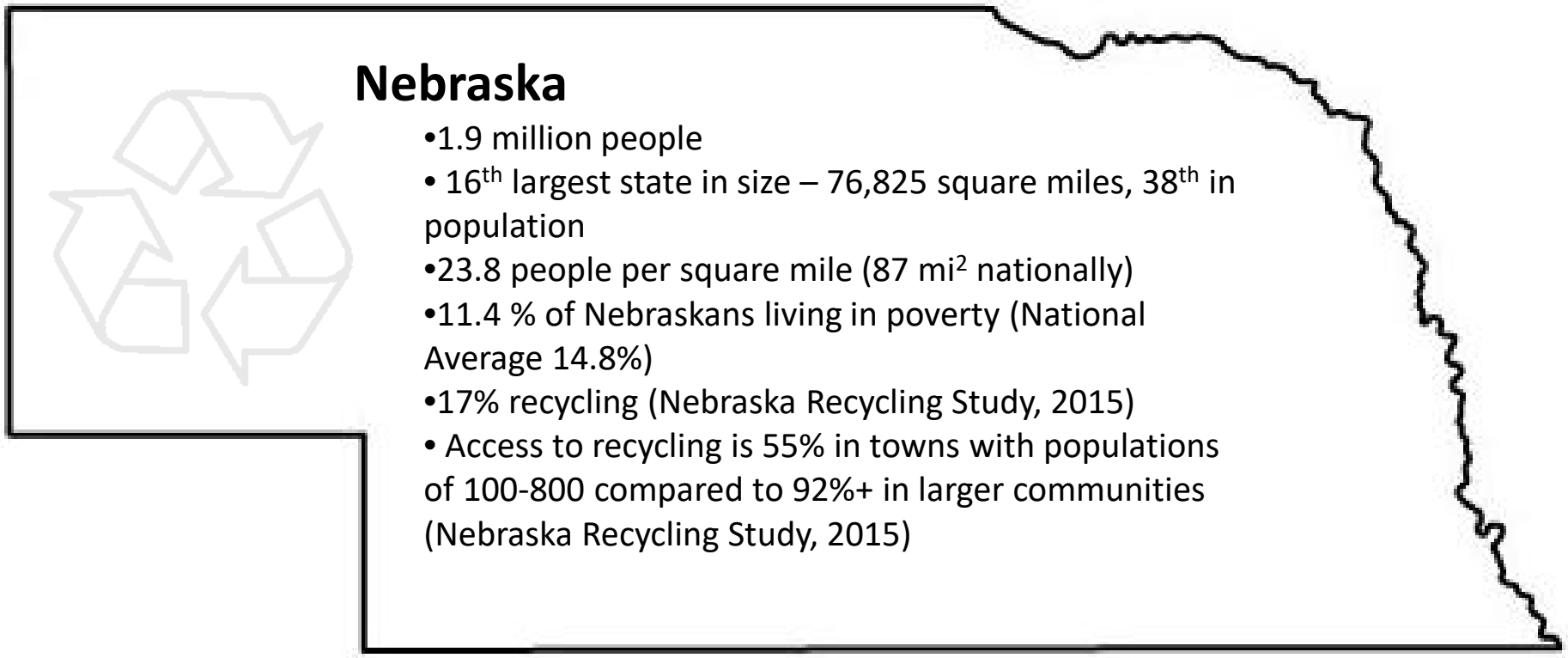
Sarah Pierpont

June 20, 2018

Changing the Culture of Waste

- Look At Waste as a Resource
- Imagine Everything Having Value
- Imagine There Was No Landfill
- The Future = Landfill Mining, Less Landfills
- Recycling as a Practice is Here to Stay
- Try Using the words: Discards, Resources, Products, Materials In the Place of “Waste”

Our Discards Have a Value!



Nebraska

- 1.9 million people
- 16th largest state in size – 76,825 square miles, 38th in population
- 23.8 people per square mile (87 mi^2 nationally)
- 11.4 % of Nebraskans living in poverty (National Average 14.8%)
- 17% recycling (Nebraska Recycling Study, 2015)
- Access to recycling is 55% in towns with populations of 100-800 compared to 92%+ in larger communities (Nebraska Recycling Study, 2015)

What are we trying to do?…
Reduce Waste!

"I can see only one thing missing in your report, you've overlooked the problem we're trying to solve."

Key to Success - Goals and Planning

"Our community wants to recycle more"

vs

"The City of Norfolk wants to establish a source-separated, residential recycling processing program that accepts cardboard, aluminum, plastic #1 and #2 and tin cans with three drop off locations by March of 2019"

Strategic Plans that Outline Goals

Strategic Recycling Plan

For the [County/City/Entity]

Adopted by Resolution of the Entity's Commission, Council or Board

Executive Summary: This document addresses the City of _____ commitment to providing recycling services to residents, diverting material from the landfill and leading an education campaign related to recycling and waste reduction.

Task: Develop a Strategic Recycling Plan with **short-term and long-term goals to include a 5-year goal of reaching a 33% MSW recycling rate, an education and outreach plan and recycling expansion time frames**.

The following document outlines various elements which can be incorporated into the plan to satisfy the requirements of this Task. These elements are exemplary only and the final plan may or may not include any or all of these elements so long as the requirements outlined are met.

The completed plan shall be formally adopted by the community via resolution. All goals established by the plan should include strategies for attainment including the identification of all participants and their roles and responsibilities related to the attainment of said goals.

Required Elements of the Plan

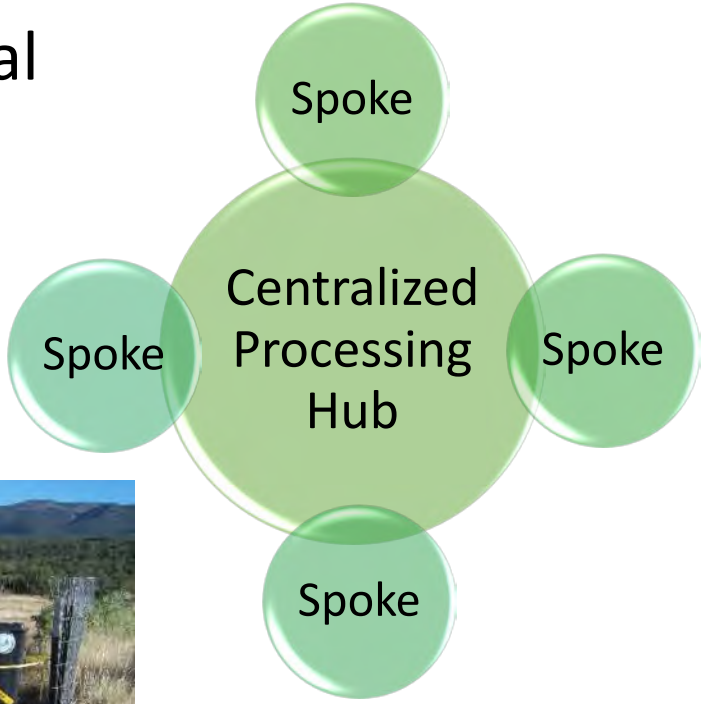
Establish a formal education and outreach strategy in 2018

Establish facility and infrastructure improvements based on forecasted needs with specific timelines/target dates

Establish a goal to reach a 33% MSW recycling rate, as defined by US EPA, to be reached by 2025.

Hub and Spoke Rural Recycling

- Regional recycling processing centers or “hubs” that accept material from drop-off locations or “spokes”
- Generally, hubs do not pay spokes for material and spokes transport material to hubs
- Spokes reduce costs
- Hubs incur processing costs, which are offset by the sale of recyclables



Barriers & Incentives for Rural Recycling

Common Barriers
Low volumes difficult to market
Limited populations = limited materials
Knowledge Gap
Cost to start/run program
Dispersed Population
Lack of infrastructure
Lack of political support
Historic Dependence on Disposal

Incentives for Hub and Spoke
Job Creation
Increase access to recycling
Provides service in rural and underserved areas
Replicable Design
Cost Avoidance – Landfill Tip Fee Savings
Material Sales Revenue at Hubs
Leveraging State Funding
Transportation Efficiencies
Pooling resources – not competing for limited volumes

Achieving Rural Recycling Success

- Easy & Convenient
- Collect Where People Take Their Trash
- Regionalized Processing
- Regional Partnerships
- Citizens Group Support
- Avoid Over-Investment in Equipment
- Set Reasonable Goals: Start with Basics - Cardboard, Aluminum
- Education & Outreach

Markets – From Grassroots to Multi-Million

Markets

- What items do they accept?
- What are their specifications for materials and processing demands? (horizontal verses vertical baler, etc)
- MRF, broker or end-market (mill)

End Market or Mill	Broker	Processor (MRF)
Generally pay the highest price per ton – based on index pricing	Brokers take a fee	Lowest value per ton
Highest quality material required with little contaminants	Highest quality material required with little contaminants	Highest quality material desired, but often more lenient
Generally require 20 ton truckload = storage requirements	Can coordinate milk-runs of material	Avoids capital and operating costs of handling, sorting and processing materials

Collection

- Will you target a specific material?
- Will you target a specific source of material? (residential vs. commercial)
- Curbside vs. Drop-Off

Drop-Off

- Low Capital Cost
- Low Operating Cost
- Smart for Start-Up Programs
- Good for Rural Programs
- Inefficient Freight - (low volumes/ trip)

Curbside

- High Capital Cost
- High Operating Cost
- Requires High Density Population (not always suited for rural applications)
- Convenient

Collection

Drop-off

- Source Separated or Dual/Single Stream
- Locate Where There is People Traffic
- Wide Variety of Container Options
- Variety of Freight Options (roll-off, front-load, trailers)
- Staffing vs. Non-Staffing
- Good Signage is Critical

Curbside

- Single Stream or Dual Stream
- Can Repurpose Existing Fleet
- Bins, Bags, or Carts
- Requires a Processing Facility
- Freight Efficiencies (material density)

Drop-Off signage SIGNAGE SIGNAGE!

All of these are cardboard collection containers

Processing Options

Source-separated Processing

- Collected primarily via drop-off collections
- Residents pre-sort material into separate bins per commodity
- Benefits – low start up costs, clean material that is easy to market and earns high value
- Drawbacks – Less convenient for residents, less volume captured

Dual Stream Processing

- Recyclables sorted into two categories by consumers or operators: fiber (cardboard and mixed paper) and rigids (metal cans and plastic bottles)
- Benefits – fairly convenient for residents, higher capture rate than drop off, moderate start up expenses, produces clean material
- Drawbacks – operating expenses can be high (more labor)

Processing Options Continued

Single-stream Processing

- All recyclables put together in one bin
- Requires a MRF to separate out the different commodities
- Common with curbside collection
- Benefits – convenient for residents, high volume of material captured
- Weaknesses – expensive start up, expensive operating costs, high residual (16%+), more difficult to ensure clean end-product, hard to “un-do” - once a community has single stream difficult to retrain residents and revert back to source-separated

Markets, Collections & Processing: Public-Private Partnerships

A **public–private partnership** (PPP) is a government service or private business venture, which is funded and operated through a partnership of government and one or more private sector companies.

Benefits of Public-Private Partnerships

- Rural Markets can be Developed through PPPs
- Removes the responsibility of funding the investment from the government´s balance sheet;
- Introduces/promotes competition;
- Serves to share managerial practices and experience of the private sector;
- Restructures public sector service by embracing private sector capital and practices;
- Can achieve greater efficiency than traditional methods of providing public services

National Sword/China Ban (2017 - ?)

Processing: Single Stream and National Sword

Considerations

- Contamination of SS loads is on average 16% of inbound tons
- Contamination cost an average of $140 per ton
- Markets are demanding reduced contamination which increases processing costs
- Single Stream significantly improves participation – residents love it!
- There are more non-recyclable materials in the feedstock - which increases the cost of recycling programs
- There are more low-value materials in the recycling stream, which reduces overall revenue
- Processing costs at the MRF are increasing because of stricter quality standards

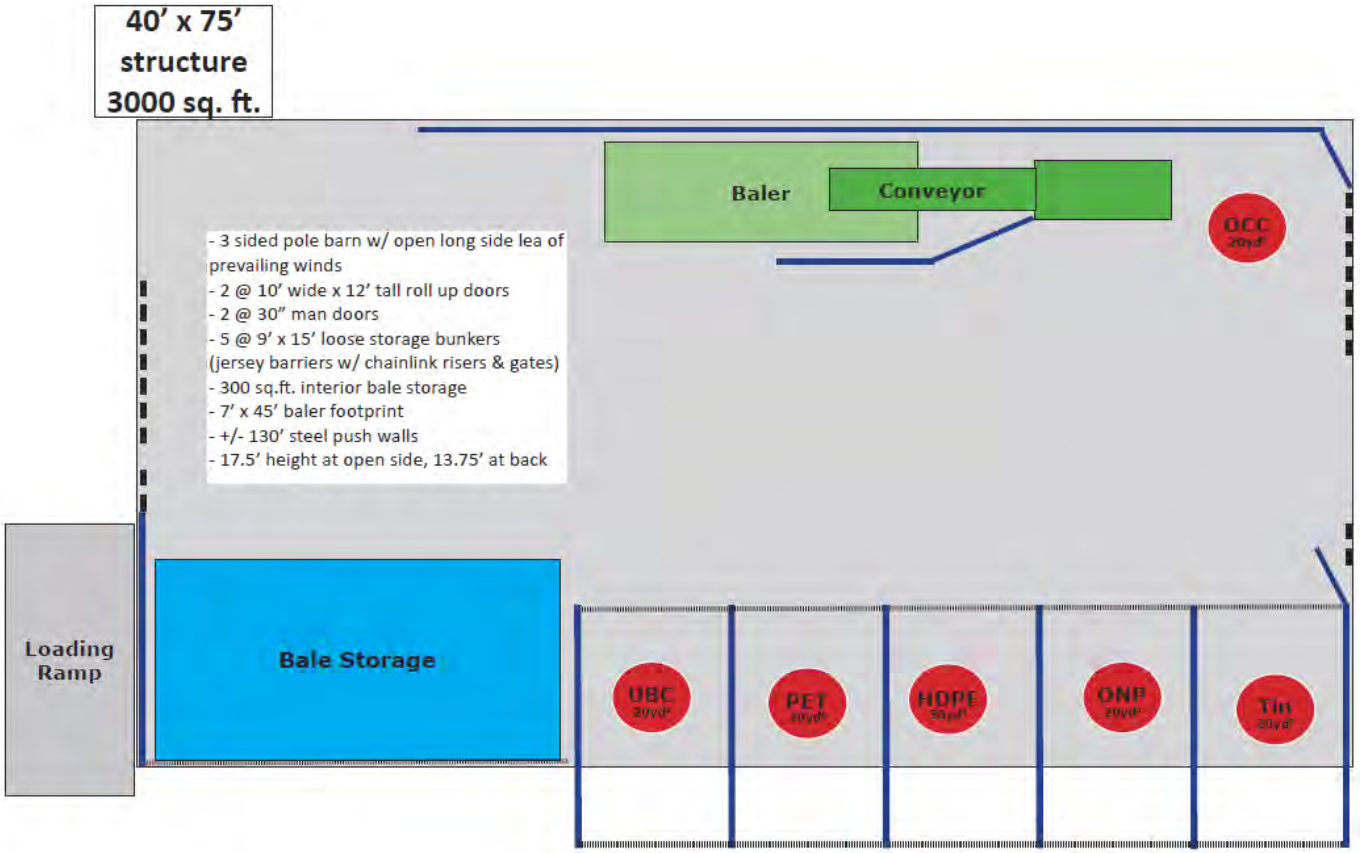
Processing Options for Norfolk Hub

Source Separated

Dual-Stream

Processing Options – Capital Expenses

Item	Source Separated Program with Processing (~1500 tons/year)	Dual Stream Program with Processing (~2000 tons/year)
General (bonds, mobilization, etc.)	$0	$0
Construction		
Pre-engineering/Site Work	$23,000	$23,000
Construction	$60,000	$60,000
Asphalt	$20,000	$20,000
Baler & Conveyor & Additional Storage		
Horizontal Manual Tie Baler (GSA)	$60,000	$60,000
Pit Conveyor (GSA - 2R CONVEYOR 4829)	$24,000	$24,000
Baler Freight and Install	$8,000	$8,000
3 Phase Power Conversion	$9,000	$9,000
Sort Line Conveyor (GSA GS-07F-5447P - 3 person station, magnetic head for ferrous & diverter shoot)		$36,000
Collection Equipment		
Cardboard Only or Comingled Collection Roll-Off (3 sets or 6 total at $6000 each)		$36,000
Source Separated Collection set - container for OCC and divided container for sorted recyclables (3 sets at $15,000 per set)	$45,000	
Miscellaneous		
Perimeter Fencing (8 ft, High)	$3,000	$3,000
Fork Lift	$30,000	$30,000
Loading Ramp	$11,000	$11,000
Sub Total:	$293,000	$320,000
15% Contingency	$43,950	$48,000
Nebraska Sales Tax (7%)	$23,587	$25,760
Total for Program	$360,537	$393,760
Interest Rate	4.0%	4.0%
Annual Debt Service	$43,803	$47,840


40’ x 75’ structure 3000 sq. ft.
Baler
Conveyor
OCC
20yd³
- 3 sided pole barn w/ open long side lea of prevailing winds
- 2 @ 10’ wide x 12’ tall roll up doors
- 2 @ 30” man doors
- 5 @ 9’ x 15’ loose storage bunkers (jersey barriers w/ chainlink risers & gates)
- 300 sq.ft. interior bale storage
- 7’ x 45’ baler footprint
- +/- 130’ steel push walls
- 17.5’ height at open side, 13.75’ at back
Loading Ramp
Bale Storage
UBC
20yd³
PET
30yd³
HDPE
30yd³
ONP
20yd³
Tin
20yd³

Processing Options – Operating Expenses

Operating Expenses	Source Separated Drop Off Program Estimated Amount	Dual Stream Processing Estimated Amount
Labor Rates Not Including Hauling (Annual wages and benefits), assuming $55,000 per FTE	$ 110,000	$ 275,000
Gallons of Diesel Fuel used/hour for Onsite Equipment (e.g. fork lift, skid steer, etc)	4	4
Onsite Equipment Use Per Day (Hours)	3	6
Annual Fuel Expenses*	$ 9,984	$ 19,968
Annual Utilities Costs (electricity, etc)**	$ 6,500	$ 7,800
Annual Supply Expenses (baling wire, signs, personal safety equipment, etc)	$ 3,500	$ 5,000
Total Direct Expenses	$ 129,984	$ 307,768
Indirect/Admin cost rate (%)	10%	10%
Annual Indirect/Admin fees	$ 12,998.40	$ 30,776.80
TOTAL Annual Expenses	$ 142,982.40	$ 338,544.80

*Assumes 260 work days per year and $3.20 per gallon for diesel

**Assumes 260 work days per year and $25/day utilities fees

Diversion Estimates: Dual Stream Curbside in Norfolk

Population Served: Norfolk, NE	24,350	(US Census)							
Predicted MSW Disposed (tons)[2]	31,107	(7 lbs/person/day)							
Diverted (Recycled) Tons[2]	6,346	(17% recycle rate)							
Total MSW Generation (tons)[2]	37,329	(8.4 lbs/person/day)							
Landfill Tipping Fees Per Ton	$ 24.00								
MSW Hauling Fee Per Ton[3]	$ 6.00								
Mid Capture Rate	Percent of MSW[2]	Tons Generated	Estimated Capture Rate[2]	Recovered Tons Annually	Estimated $/Ton (low market)	Gross Value	Avoided Landfill Tipping Fees	Avoided MSW Hauling Costs	Combined Value & Avoided Costs
Cardboard (OCC)	11.50%	4,293	7.5%	322	$80	$25,757	$7,727	$1,932	$35,415
Mixed Paper (ONP#7)	15.56%	5,808	15.0%	871	$5	$4,356	$20,910	$5,227	$30,494
Aluminum Cans (UBC)	1.03%	384	10.0%	38	$1,200	$46,138	$923	$231	$47,292
Tin	1.48%	552	25.0%	138	$50	$6,906	$3,315	$829	$11,049
#1 PET Plastic Bottles	2.70%	1,008	10.0%	101	$320	$32,252	$2,419	$605	$35,275
#2 HDPE Plastic Bottles	1.10%	411	10.0%	41	$280	$11,497	$985	$246	$12,729
Totals:		**12,457**		**1,512**		**$126,906**	**$36,279**	**$9,070**	**$172,254**
High Capture Rate	Percent of MSW[2]	Tons Generated	Estimated Capture Rate[2]	Recovered Tons Annually	Estimated $/Ton (low market)	Gross Value	Avoided Landfill Tipping Fees	Avoided MSW Hauling Costs	Combined Value & Avoided Costs
Cardboard (OCC)	11.50%	4,293	15%	644	$80	$51,513	$15,454	$3,864	$70,831
Mixed Paper (ONP#7)	15.56%	5,808	25%	1,452	$5	$7,260	$34,850	$8,712	$50,823
Aluminum Cans (UBC)	1.03%	384	25%	96	$1,200	$115,345	$2,307	$577	$118,229
Tin	1.48%	552	50%	276	$50	$13,812	$6,630	$1,657	$22,099
#1 PET Plastic Bottles	2.70%	1,008	25%	252	$320	$80,630	$6,047	$2,268	$88,945
#2 HDPE Plastic Bottles	1.10%	411	25%	103	$280	$28,743	$2,464	$616	$31,823
Glass Bottles and Jars[4]	4.00%	1493.14	25%	373					
Totals:		**12,457**		**3,196**		**$297,303**	**$67,751**	**$17,694**	**$382,748**

[1] 2009 Nebraska Waste Characterization Study

[2] Nebraska Recycling Study, 2015; 2009 Waste Study; 2015 local waste characterization studies

[3] Assuming 50 mph speed for truck, $3.22 price per gallon of diesel, 68 mile round trip, 20 ton truck, $1525 in annual truck maintenance costs, $20/hour driver and employee benefits valued at 35%

[4] Glass collection could be secondary and should be only if the markets exists for the material, may require separation from other rigids

MSW = Municipal Solid Waste, generated from residential and business

Diversion Estimates: Source Separated Drop-off in Norfolk

Population Served: Norfolk, NE	24,350	(US Census)							
Predicted MSW Disposed (tons)[2]	31,107	(7 lbs/person/day)							
Diverted (Recycled) Tons[2]	6,346	(17% recycle rate)							
Total MSW Generation (tons)[2]	37,329	(8.4 lbs/person/day)							
Landfill Tipping Fees Per Ton	$ 24.00								
MSW Hauling Fee Per Ton[3]	$ 6.00								
Mid Capture Rate	Percent of MSW[2]	Tons Generated	Estimated Capture Rate[2]	Recovered Tons Annually	Estimated $/Ton (low market)	Gross Value	Avoided Landfill Tipping Fees	Avoided MSW Hauling Costs	Combined Value & Avoided Costs
Cardboard (OCC)	11.50%	4,293	7.5%	322	$80	$25,757	$7,727	$1,932	$35,415
Mixed Paper (ONP#7)	15.56%	5,808	7.5%	436	$5	$2,178	$10,455	$2,614	$15,247
Aluminum Cans (UBC)	1.03%	384	10.0%	38	$1,200	$46,138	$923	$231	$47,292
Tin	1.48%	552	10.0%	55	$50	$2,762	$1,326	$331	$4,420
#1 PET Plastic Bottles	2.70%	1,008	8.0%	81	$320	$25,801	$1,935	$484	$28,220
#2 HDPE Plastic Bottles	1.10%	411	8.0%	33	$280	$9,198	$788	$197	$10,183
Totals:		**12,457**		**965**		**$111,834**	**$23,154**	**$5,789**	**$140,777**
High Capture Rate	Percent of MSW[2]	Tons Generated	Estimated Capture Rate[2]	Recovered Tons Annually	Estimated $/Ton (low market)	Gross Value	Avoided Landfill Tipping Fees	Avoided MSW Hauling Costs	Combined Value & Avoided Costs
Cardboard (OCC)	11.50%	4,293	9%	386	$80	$30,908	$9,272	$2,318	$42,499
Mixed Paper (ONP#7)	15.56%	5,808	8%	465	$5	$2,323	$11,152	$2,788	$16,263
Aluminum Cans (UBC)	1.03%	384	12%	46	$1,200	$55,366	$1,107	$277	$56,750
Tin	1.48%	552	12%	66	$50	$3,315	$1,591	$398	$5,304
#1 PET Plastic Bottles	2.70%	1,008	10%	101	$320	$32,252	$2,419	$907	$35,578
#2 HDPE Plastic Bottles	1.10%	411	10%	41	$280	$11,497	$985	$246	$12,729
Glass Bottles and Jars	4.00%	1493.14	10%	149					
Totals:		**12,457**		**1,255**		**$135,661**	**$26,527**	**$6,934**	**$169,122**

[1] 2009 Nebraska Waste Characterization Study

[2] Nebraska Recycling Study, 2015; 2009 Waste Study; 2015 local waste characterization studies

[3]Assuming 50 mph speed for truck, $3.22 price per gallon of diesel, 68 mile round trip, 20 ton truck, $1525 in annual truck maintenance costs, $20/hour driver and employee benefits valued at 35%

MSW = Municipal Solid Waste, generated from residential and business

Diversion Estimates: Spokes

Potential from Spoke Communities			
	Population	Distance (in miles) from a Norfolk Hub	Low-Capture Rate
Battle Creek	1,200	17	61
Creston	203	29	10
Elgin	661	40	33
Hadar	293	7	15
Hoskins	283	9	14
Humphrey	760	26	39
Madison	2,438	16	123
Meadow Grove	301	17	15
Newman Grove	721	38	37
Oakdale	300	30	15
Pierce	1,767	14	90
Tilden	951	22	48
Winside	427	19	22
Total	10,305	22 miles (average)	522 tons

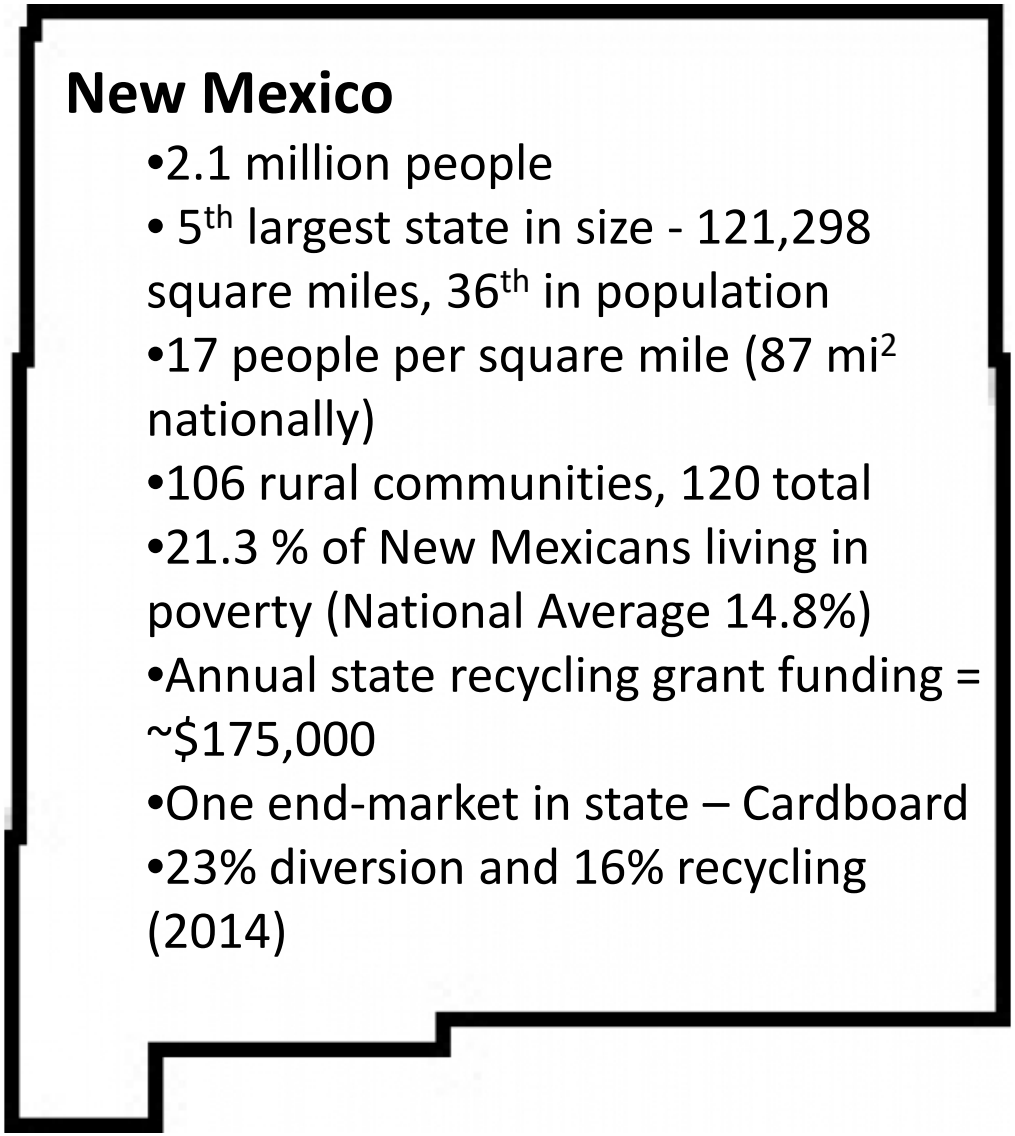
522 tons =

Gross Value	Avoided Landfill Tipping Fees	Avoided MSW Hauling Costs	Combined Value & Avoided Costs
$45,239	$12,535	$7,312	$65,087

Cost Comparison - Norfolk

	Source Separated Program with Processing	Dual Stream Program with Processing
Initial Capital Expense	$360,537	$393,760
Annual avoided landfill costs & recycling material revenue	($140,777)	($172,254)
Annual Operating Expenses	$ 142,982	$ 338,545
Totals	$ 362,742	$ 560,050

Hub & Spoke Case Study – New Mexico



New Mexico

- 2.1 million people
- 5th largest state in size - 121,298 square miles, 36th in population
- 17 people per square mile (87 mi^2 nationally)
- 106 rural communities, 120 total
- 21.3 % of New Mexicans living in poverty (National Average 14.8%)
- Annual state recycling grant funding = ~$175,000
- One end-market in state – Cardboard
- 23% diversion and 16% recycling (2014)

Historical Rural Recycling Challenges in NM :

- Limited population=limited materials
- Low volumes difficult to market
- Knowledge gap
- Cost to start/run program
- Lack of political support
- Lack of Infrastructure
- Historical dependence on disposal

Rural Recycling in New Mexico

- 2007 NM Environment Department Solid Waste Management Plan prioritized the provision of "Access to Recycling" for all New Mexicans
- Waste typically handled at *convenience centers* (roll-off based)
- Recycling & Illegal Dumping Grant fund – revenue from motor vehicle registrations
- NM Recycling Coalition received $2.8 million American Recovery & Reinvestment Act (ARRA) grant from DOE for rural recycling in 2010

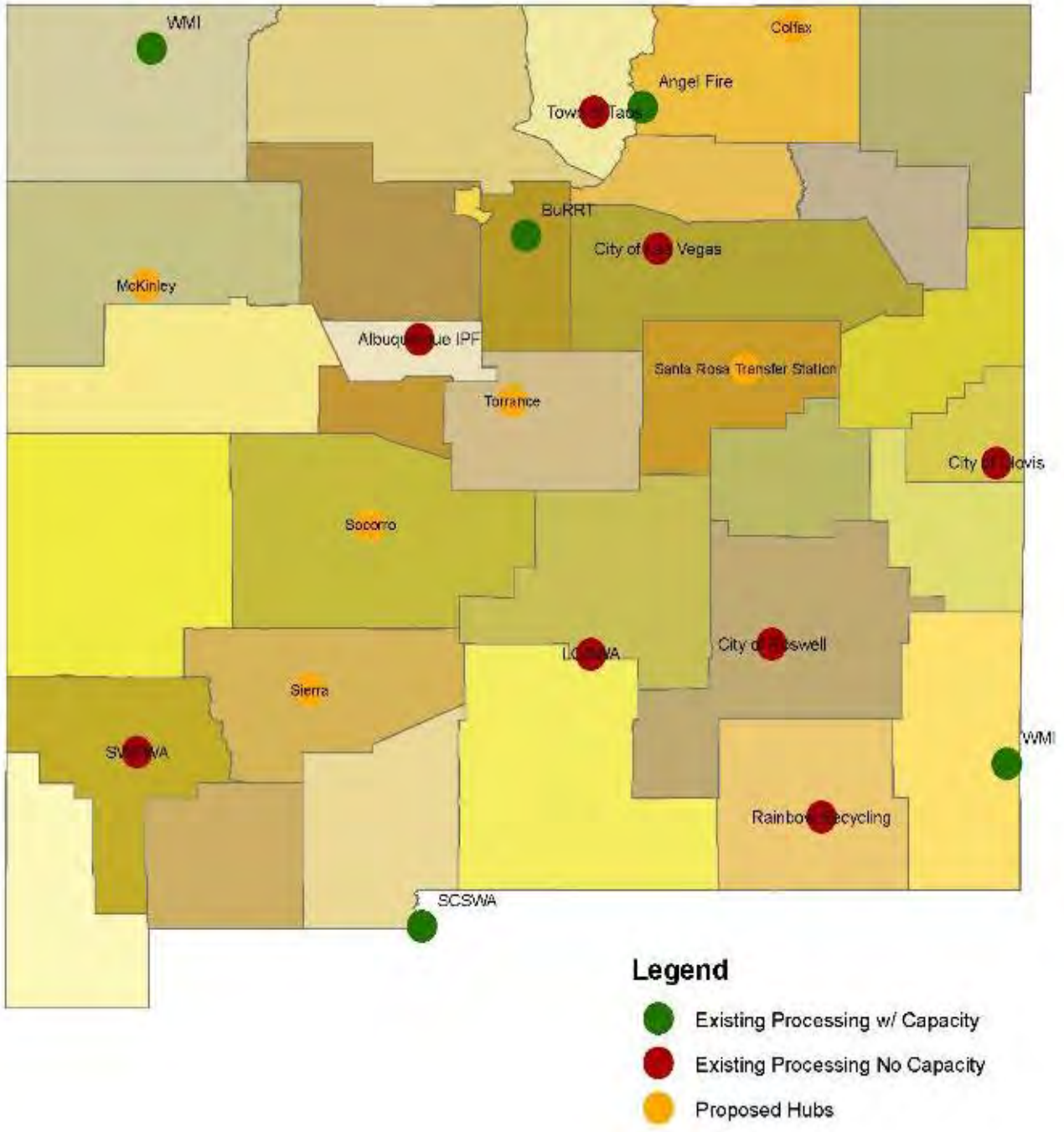
2009

Mapping Project

Strategic Planning

Regional Partnerships Developed

12% Recycling Rate



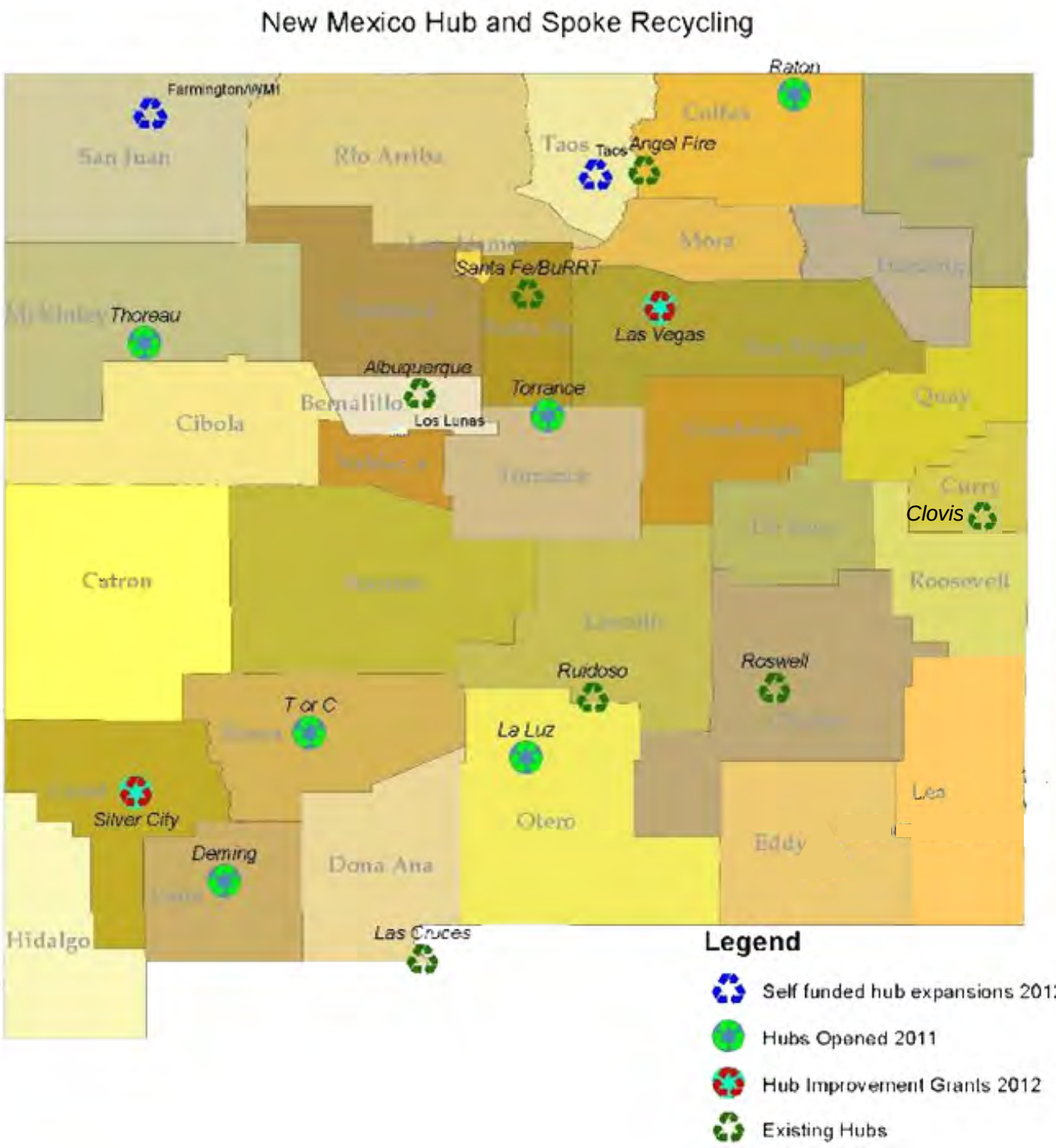
2017

17 processing hubs

40+ new drop-off sites

Regional partnerships

16% recycling rate



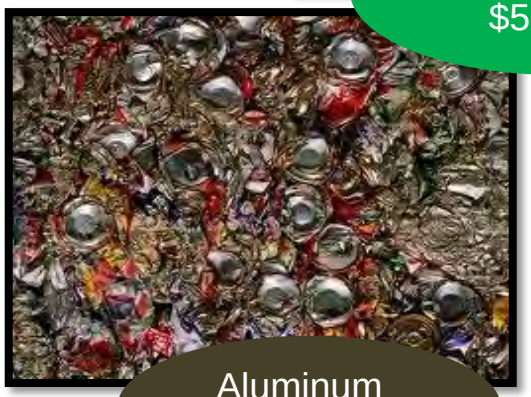
Household Recyclables Accepted in NM via Hub & Spoke

OCC
$60 / Ton

Mixed #1&#2 Plastic
$300 / Ton

Mixed Paper
$5 / Ton

Steel Cans
$190 / Ton



Aluminum
$1500 / Ton

Recycling Motivation: Citizen Demand, Long Haul to Landfill

BEFORE:

- 2010 only three household recycling drop-off sites countywide - only accepted cardboard. This is for a county larger than the size of the state of Connecticut.
- 2010 recycling rate was 2.71%
- High transportation expenses as local landfill is approximately 60 miles south of Alamogordo and the area's transfer station

AFTER:

- County received "hub & spoke" funding in 2011 and 2012
- 11 new drop-off sites created in rural and urban sites – new access to recycling created
- Materials collected expanded to aluminum, tin, mixed paper, cardboard, plastic #1 & #2.
- Increased recycling & reduced landfill transportation miles by 17,466 in one year alone.
- Increased public awareness lead to the creation of a local citizen activist group
- Joined the R3 Coop.
- With improved capacity to process recyclables, the county received a grant from the NM Enviro Dept for 5 containers to collect cardboard from businesses.
- Recycling rate rose from 10.19% in 2011 to 22.10% in 2012 (also due to organics diversion)
- The county brought on one new full time employee to help operate the recycling programs.
- Recycling facility operators report positive feedback from the community
- In 2013 and 2014 the county earned $19,970 from recycling sales
- Otero County's list of expanded services includes taking over glass recycling operations from the nearby Holloman Air Force Base. As of 2015, glass is accepted at the county's hub in La Luz, and it is crushed and hauled to Colorado to be recycled.

Case Study: Silver City ~ pop. 10,172 - State's only PAYT Community

Recycling Motivation: No Processing Capacity, Long Haul to Processor

BEFORE:

- Curbside, single-stream residential recycling program. However they had no way to sort or bale their material.
- Sending loose, non-baled recyclables at a cost of $18/ton.
- The high cost of recycling created a financial burden for the community.

AFTER:

- In 2012 Silver City received an "improvement" grant from NMRC as part of ARRA funding for a high-capacity horizontal baler, efficient conveyor system and yard ramp.
- City now bales their single stream material and "cherry pick" the valuable cardboard out of the process for sale, thus creating a more efficient process that generates a more valuable commodity
- Instead of paying $18/ton to process their recycling, the City receives $15/ton for the baled single stream material and has dramatically increased transportation efficiency.
- Load 23.3 tons of material per trip as opposed to an average of 10.56 tons per trip, saving an estimated 44 trips to the end market a year.
- Silver City was a member of the R3 Co-op, enabling them to receive fair market value for their cardboard.
- The financial benefit of the new recycling processing system is matched by improved staff morale because of the increased efficiency and drastically improved safety resulting from the new yard ramp.
- In 2014 community earned over $20,000 from recycling sales
- With these improved operations the community was able to focus on automated, cart-based curbside recycling programs. In February of 2017, Silver City replaced its 25-gallon tubs used in a manual curbside collection program with 65-gallon carts. It also upgraded commercial recycling operations by providing local businesses with 450-gallon recycling carts and took over the collection of the recyclables from the South Central Solid Waste Authority
- Then National Sword ….

Results of Hub & Spoke Recycling

- Access to recycling = recycling is possible within a 30 mile radius
- From 2007 to 2013 115 new locations recycling locations created = 113% increase in Access to Recycling
- Launch of the hub and spoke program created a total of 39.43 direct FTE jobs & 96.4 Indirect FTEs

NM's Hubs and Spokes – where are we today?

Annual recycling tonnages at the ARRA-funded rural recycling hubs

Year	Otero County - La Luz	NWNMRSWA - Thoreau	Las Vegas	Truth or Consequences	Deming	SWSWA - Silver City*	Raton	Estancia Valley SWA – Torrance*
2010	413.27	481.39	129.60	192.19	60.75	1,347	0.00	217.00
2011	317.69	460.76	187.49	266.10	150.85	1,794	0.00	241.00
2012	294.24	950.09	207.50	292.12	142.79	1,329	61.90	190.53
2013	436.42	771.81	210.78	382.37	173.00	1,504	166.23	202.32
2014	473.63	650.16	399.12	362.66	88.54	1,680	211.54	240.17
2015	563.34	755.59	390.59	361.52	89.61	1,676	201.05	334.27
2016	676.79	898.39	278.63	415.84	81.28	1,414	192.55	375.87

The decline in tons in 2016 in Silver City is attributed to the city discontinuing its glass recycling operations, collection equipment issues during the year and the lack of a shipment of recovered electronics (e-scrap is only sent to market from Silver City every 14-16 months). In addition, the City of Deming removed its green waste and scrap tire diversion programs in 2014, causing the tons of material recycled to be lower. However, the quality of the city's traditional household recyclable materials has improved in recent years thanks to public education efforts. Similarly, the City of Las Vegas experienced a reduction in tons recycled in 2016 because of equipment issues with a yard waste grinder – these problems were resolved later in the year.

*Single Stream

NM's Hubs and Spokes – where are we today

How did NM's system consistently boost tonnages, even amid market challenges?

- Production of high-quality, source separated material
- Development of strong relationships with end markets
- Establishing solid waste rates that helped pay for recycling operations
- Included cost avoidance when evaluating expenses
- Continued outside funding efforts to improve programs
- Increasing spoke locations and services (cardboard business collection)
- National Sword – all of the source separated hubs are operating as usual, the two single stream hubs are having a harder time.
  - 4 weeks ago Silver City received a one sentence email from their MRF in Tucson that they would no longer accept their material
  - Estancia Valley SWA discontinued the collection of all mixed paper and plastics – returning to source separated metal cans and cardboard only

Recycling Phase I and Phase II in Norfolk

Phase I

- Source-separated, drop-off program with infrastructure capable of processing up to 1,500 tons of recyclables per year and three collection locations throughout town, including one at the Norfolk Transfer Station.
- Recyclables would be brought to the transfer station’s recycling hub, stored and baled when enough material is collected, and sold to market.

Recycling Phase I and Phase II in Norfolk

Phase II

- Curbside collection in Norfolk has a higher recovery potential than drop-off programs and could bring in an estimated 1,512 - 3,196 tons of recyclables for processing by the City.
- This volume of material could be managed at a facility designed for a source-separated program by adding at least one or two sort lines and conveyors.
- Additional storage capacity would further increase the capacity of the facility to process material

Recycling Additional Considerations

- Education and Outreach
- The impact on capture rates of fiber from the free drop-off programs provided by the local cellulous insulation manufacturer, Greenfiber
- The ability to ensure that recyclables collected within Norfolk come to the recycling center without a franchise agreement or flow control ordinance for municipal solid waste. Particularly applicable to curbside collections.

Thank You

Sarah Pierpont
sarah@recyclesantafe.org
505-603-0558