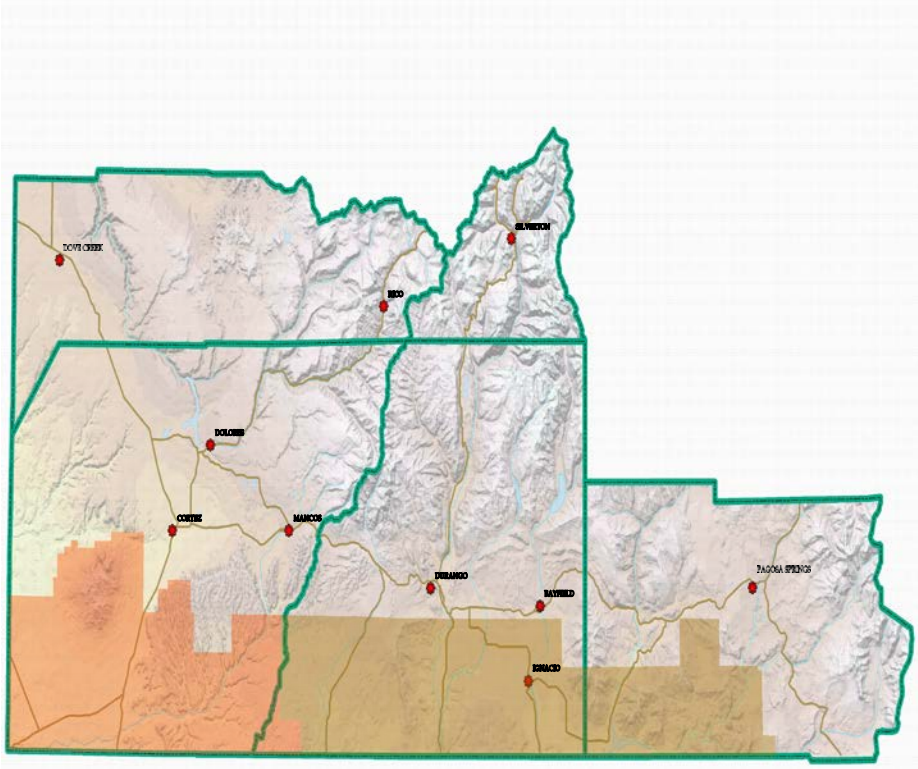
SOUTHWEST COLORADO COUNCIL OF GOVERNMENTS

SOUTHWEST COLORADO WASTE STUDY Volume II



LBA ASSOCIATES

June 2015

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APPENDIX A
WASTE QUANTITY PROJECTIONS

POPULATION PROJECTIONS[a]

	2010 POPULATION[b]	PROJECTED POPULATION[b]	
		2015	2025
Archuleta County	12,060	13,237	18,159
Pagosa Springs	*1,724*		
Dolores County	2,060	2,103	2,505
La Plata County	51,441	57,850	76,200
Durango	*16,906*		
Montezuma County	25,532	27,085	33,271
Cortez	*8,481*		
San Juan County	709	702	747
County Total	91,802	100,977	130,882
Increase Over 2015	na	na	130%

Notes:

[a] *Results are estimates only - accuracy should not be assumed beyond the nearest 1,000 people*

[b] CO State Demography Office, October 2013 (2010 actuals) & November 2013 (projections)

ACTUAL SWCCOG MUNICIPAL SOLID WASTE QUANTITY TOTALS[a] (tons unless otherwise noted)

		Landfill	Recyclables	Organics	Subtotal	Comments
Archuleta County						
	Archuleta County [b]	13,600	398	0	13,998	Recyclables brokered out of county LF tons incl 260 tons glass used for construction
	At Your Disposal	see County	120	0		R incl cardboard only (brokered out of county) Other R in Durango tons
La Plata County						
	City of Durango	see Bondad	4,240	50	4,290	City's 9,063 tons trash incl in Bondad LF total R incl 106 tons ewaste, HHW by city & county Incl R tons from Pagosa/LaPlata County haulers
	La Plata County	see Bondad	see Durango	not available	not available	
	Phoenix Recycling	see Bondad	276	625	901	R incl shreds only (rest in Durango tons) O incl wood chips (estimated at 500 #/CY)
	Durango Compost Company	0	0	1	1	Incl coffee grinds only (vermi-composting)
	CO State Demography Office, October 20	0	5,927	0	5,927	Incl ewaste
	Bondad Landfill	54,100 [b]	0	0	54,100	Incl T from Southern Ute Tribe
Montezuma County						
	Montezuma County [c]	23,118	287	294	23,699	Incl FCRI R & ewaste tons Incl T from Ute Mtn Tribe, NPS, etc.
	City of Cortez	see County	343	35	378	Organics chippped only
	Aramark (NPS concessionaire)	see County	37	0	37	
	Belt Salvage	0	710	0	710	UBCs, appliances
Other						
	Bruin Waste Mgmt (San Juan County) [b]	456	180	0	636	R incl scrap metal, ewaste T to Broad Canyon LF, R to Montrose MRF
	Waste Mgmt (Montezuma County)	219	214	0	433	T to Crouch Mesa LF, single-stream R to Four Corner EcoCenter at San Juan County LF
	National Grocery Stores [d]	0	1,000 (est)	see Food Banks	1,000	Cardboard managed outside region
	Food Banks [e]	0	0	700 (est)	700	Food donated by grocery stores & others
	MSW GENERATED	91,493	13,732	1,705	106,930	
	MSW GENERATION [f]				5.9	pounds/capita-day
	DIVERSION FROM RECYCLING ONLY				13%	
	DIVERSION FROM RECYCLING & ORGANICS				14%	

T = trash, R = recyclables, O = organics

a *Results are estimates only - accuracy should not be assumed beyond the nearest 1,000 tons*
- excludes industrial waste (i.e., Ska Brewery's diversion of 3,600 tons spent grain waste/NPS' 3,600 recycled C&D tons not included)

b Volume to weight conversion based on CDPHE (e.g., 1 ton MSW = 3.333 cubic yards) & national data for recyclables

c Includes tons from Dolores County managed at the Montezuma County Landfill

d Approximation based on cardboard bale quantity recycled by Durango Albertson's (pro-rated for other communities) - excludes plastic film recycling

e Approximation based on Durango & Manna Food Banks (pro-rated for other communities) - excludes donation to farmers, feedlots

f Based on 2010/2015 state populations pro-rated for 2014 (estimated) = 99,142

PROJECTED TOTAL SOLID WASTE GENERATION DIVERSION

- 2015 QUANTITIES[a] (tons/year)

	ASSUMED WASTE COMPOSI-TION[b] (by weight)	PROJECTED GENERATION		PROJECTED DIVERSION from RECYCLING[e]		
		Low Generation[c]	High Generation[d]	20%	25%	30%
				Material Recovery (based on average low/high generation)		
Paper						
Cardboard & Kraft Paper	7.2%	6,634	9,951	1,659	2,073	2,488
Office Paper with Shreds	2.0%	1,843	2,764	461	576	691
Newsprint	0.8%	737	1,106	184	230	276
Magazines & Catalogues	2.8%	2,580	3,870	645	806	967
Mixed Paper, Junk & Phone Directories[e]	4.1%	3,778	5,667	944	1,181	1,417
Chipboard/Paperboard[e]	4.7%	4,331	6,496	1,083	1,353	1,624
Aseptic Packaging[e]	0.9%	829	1,244	207	259	311
Other Paper (waxy cardboard, etc.)	1.7%	1,566	2,350	na	na	na
Total Paper	***24.2%***	***22,298***	***33,447***	***5,183***	***6,479***	***7,774***
Plastics						
PET #1 Bottles & Containers	2.1%	1,935	2,902	484	605	726
HDPE #2 Bottles & Containers	1.2%	1,106	1,659	276	346	415
#3-7 Bottles & Containers	1.3%	1,198	1,797	299	374	449
Plastic Film/Wrap/Bags	4.7%	4,331	6,496	1,083	1,353	1,624
Other Plastics (Styrofoam, PLA, etc.)	3.4%	3,133	4,699	na	na	na
Total Plastic	***12.7%***	***11,702***	***17,553***	***2,142***	***2,678***	***3,213***
Glass						
Glass Containers	8.5%	7,832	11,748	1,958	2,448	2,937
Other Glass	0.3%	276	415	na	na	na
Total Glass	***8.8%***	***8,108***	***12,163***	***1,958***	***2,448***	***2,937***
Metals						
Aluminum (cans, foil, pie plates)	1.5%	1,382	2,073	346	432	518
Tin Cans	1.6%	1,474	2,211	369	461	553
Other Metals	3.4%	3,133	4,699	783	979	1,175
Total Metals	***6.5%***	***5,989***	***8,984***	***1,497***	***1,872***	***2,246***
Organics[e]						
Food Waste	17.6%	16,217	24,325	1,014	1,520	2,027
Yard Waste/Untreated Wood	6.8%	6,266	9,398	392	587	783
Other Organics	13.1%	12,071	18,106	na	na	na
Total Organics	***37.5%***	***34,553***	***51,830***	***1,405***	***2,108***	***2,810***
Other / Special Waste						
Electronics	1.2%	1,106	1,659	na	na	na
C&D Debris	6.7%	6,173	9,260	na	na	na
Other Waste	2.4%	2,211	3,317	na	na	na
Total Other/Special Waste	***10.3%***	***9,491***	***14,236***	***0***	***0***	***0***
TOTAL SOLID WASTE	***100.0%***	***92,142***	***138,212***			
MRF RECYCLABLES				**10,781**	**13,476**	**16,171**
TOTAL DIVERSION FROM RECYCLING				**9%**	**12%**	**14%**
ORGANICS (without paper)				**1,405**	**2,108**	**2,810**
TOTAL DIVERSION FROM ORGANICS RECOVERY				***1%***	***2%***	***2%***
TOTAL RECYCLABLES + ORGANICS				**12,186**	**15,583**	**18,981**
TOTAL DIVERSION				***11%***	***14%***	***16%***

PROJECTED TOTAL SOLID WASTE GENERATION DIVERSION
- 2015 QUANTITIES[a] (tons/year)

Notes

[a] *Results are estimates only - accuracy should not be assumed beyond the nearest 1,000 tons/year*

Shaded quantities reflect materials targeted by SWCCOG study - other materials may be diverted through other programs

[b] Based on waste audits conducted by SWCCOG & Fort Lewis College interns between August and November 2014

[c] Assumed low generation (based on 2014 SWCCOG rate of 5.9 ppcd) = **5**

[d] Assumed high generation (based on 2014 SWCCOG rate of 5.9 ppcd) = **7.5**

[e] Assumed material recovery for organics = **5%** (low) **7.5%** (medium) **10%** (high)

PROJECTED TOTAL SOLID WASTE GENERATION DIVERSION
- 2025 QUANTITIESa (tons/year)

	ASSUMED WASTE COMPOSI-TION[b] (by weight)	PROJECTED GENERATION		PROJECTED DIVERSION from RECYCLING[e]		
		Low Generation[c]	High Generation[d]	30%	35%	40%
				Material Recovery (based on average low/high generation)		
Paper						
Cardboard & Kraft Paper	7.2%	8,599	12,898	3,225	3,762	4,299
Office Paper with Shreds	2.0%	2,389	3,583	896	1,045	1,194
Newsprint	0.8%	955	1,433	358	418	478
Magazines & Catalogues	2.8%	3,344	5,016	1,254	1,463	1,672
Mixed Paper, Junk & Phone Directories[e]	4.1%	4,897	7,345	1,836	2,142	2,448
Chipboard/Paperboard[e]	4.7%	5,613	8,420	2,105	2,456	2,807
Aseptic Packaging[e]	0.9%	1,075	1,612	403	470	537
Other Paper (waxy cardboard, etc.)	1.7%	2,030	3,045	na	na	na
Total Paper	***24.2%***	***28,902***	***43,353***	***10,077***	***11,756***	***13,436***
Plastics						
PET #1 Bottles & Containers	2.1%	2,508	3,762	941	1,097	1,254
HDPE #2 Bottles & Containers	1.2%	1,433	2,150	537	627	717
#3-7 Bottles & Containers	1.3%	1,553	2,329	582	679	776
Plastic Film/Wrap/Bags	4.7%	5,613	8,420	2,105	2,456	2,807
Other Plastics (Styrofoam, PLA, etc.)	3.4%	4,061	6,091	na	na	na
Total Plastic	***12.7%***	***15,168***	***22,751***	***4,165***	***4,859***	***5,553***
Glass						
Glass Containers	8.5%	10,152	15,227	3,807	4,441	5,076
Other Glass	0.3%	358	537	na	na	na
Total Glass	***8.8%***	***10,510***	***15,765***	***3,807***	***4,441***	***5,076***
Metals						
Aluminum (cans, foil, pie plates)	1.5%	1,791	2,687	672	784	896
Tin Cans	1.6%	1,911	2,866	717	836	955
Other Metals	3.4%	4,061	6,091	1,523	1,777	2,030
Total Metals	***6.5%***	***7,763***	***11,644***	***2,911***	***3,396***	***3,881***
Organics[e]						
Food Waste	17.6%	21,020	31,529	7,882	9,196	10,510
Yard Waste/Untreated Wood	6.8%	8,121	12,182	3,045	3,553	4,061
Other Organics[f]	13.1%	15,645	23,468	2,553	2,978	3,404
Total Organics	***37.5%***	***44,786***	***67,179***	***13,481***	***15,727***	***17,974***
Other / Special Waste						
Electronics	1.2%	1,433	2,150	na	na	na
C&D Debris	6.7%	8,002	12,003	na	na	na
Other Waste	2.4%	2,866	4,299	na	na	na
Total Other/Special Waste	***10.3%***	***12,301***	***18,452***	***0***	***0***	***0***
TOTAL SOLID WASTE	***100.0%***	***119,430***	***179,145***			
MRF RECYCLABLES				**20,960**	**24,453**	**27,947**
TOTAL DIVERSION FROM RECYCLING				**14%**	**16%**	**19%**
ORGANICS (without paper)				**13,481**	**15,727**	**17,974**
TOTAL DIVERSION FROM ORGANICS RECOVERY				***9%***	***11%***	***12%***
TOTAL RECYCLABLES + ORGANICS				**34,441**	**40,181**	**45,921**
TOTAL DIVERSION				***23%***	***27%***	***31%***

PROJECTED TOTAL SOLID WASTE GENERATION DIVERSION - 2025 QUANTITIESa (tons/year)

Notes

[a] *Results are estimates only - accuracy should not be assumed beyond the nearest 1,000 tons/year*

Shaded quantities reflect materials targeted by SWCCOG study - other materials may be diverted through other programs

[b] Based on waste audits conducted by SWCCOG & Fort Lewis College interns between August and November 2014

[c] Assumed low generation (based on 2014 SWCCOG rate of 5.9 ppcd) = **5**

[d] Assumed high generation (based on 2014 SWCCOG rate of 5.9 ppcd) = **7.5**

[e] Assumed material recovery for organics = **30%** (low) **35.0%** (medium) **40%** (high)

[f] Assumes textiles diverted by 2025 USEPA 2012 MSW Facts & Figures found that textiles = **5.7%** of MSW stream

APPENDIX B
WASTE AUDIT RESULTS

SWCCOG RECYCLING STUDY WASTE AUDIT RESULTS[a] (% by weight)

MSW TRASH SAMPLE DESCRIPTION		COLORADO WASTE AUDIT AVERAGE[b]	PAGOSA SPRINGS AREA		CITY OF DURANGO		LA PLATA COUNTY			CORTEZ	MONTEZUMA COUNTY		SUMMARY ANALYSIS		
			RES	COM	RES	COM	RES	RES	RES	MIXED RES/COM					
			1	2	3	4	5	6	7	8	9	10			
	Recycling Program		County DOC (all materials); Elite/AYD curbside (SS w & wo glass)		Expansive City collection (80% residential, some commercial) - SS w/o glass (glass DOC)		Durango DOC (SS, OCC & glass); Bayfield & Marvel DOCs (ONP, plastics, metal, glass only); Phoenix curbside (SS wo glass)			City collection (all materials except plastics)	BSI/FCRI DOCs (fiber & metals only); BSI & WM curbside (source-separated)				
	Source		Pagosa Springs incl HH with YW, other organics & metal equipment	Area Near Wyndam (west end of PS) incl YW & restaurant FW (MacDs)	Southside neighborhood (older part of town) w YW, C&D (4 CY loose)	Downtown district incl concert venue incl OCC, C&D, Solo cups, restaurant waste (4+ CY compacted)	Load from unincorporated area E of Durango, W of Bayfield	Bayfield (1+ CY loose)	Ignacio (1+ CY loose)	Incl YW, other organics (3 CY compacted)	Unincorporated load E Montezuma/W La Plata - mixed load w OCC (3-4 CY compacted)	Self-haul from unincorporated area to LF w farm waste (2 CY loose)			
	Hauler		Waste Mgmt	Waste Mgmt	City of Durango	City of Durango	Phoenix	Transit	Transit	City of Cortez	Baker Sanitation or Waste Mgmt	Self-Haul			
	Other (weather, precip, etc.)		low, light breeze, sunny, 65F	low, light breeze, sunny, 65F	wet/damp no precip, cool temps	low moisture, no wind, sunny	dry & sunny	dry & sunny	dry & sunny	no moisture or wind	no moisture or wind	no moisture or wind	Residential Average (5 samples)	Commercial Average (2 commercial)	Overall MSW Average (10 samples)
	MATERIAL														
GLASS	Glass Food & Beverage Containers	5.0%	0.0%	9.8%	6.0%	1.8%	7.3%	**17.0%**	**26.7%**	4.4%	8.2%	4.1%	*11.4%*	*5.8%*	*8.5%*
GLASS	Other Glass	0.5%	0.0%	2.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	*0.0%*	*1.3%*	*0.3%*
GLASS	***Glass Totals***	***5.5%***	*0.0%*	*12.5%*	*6.2%*	*1.8%*	*7.3%*	***17.0%***	***26.7%***	*4.4%*	*8.2%*	*4.1%*	*11.4%*	*7.2%*	*8.8%*
METALS	Alum Food/Beverage Containers, Foil & Pie Tins	1.0%	2.0%	2.2%	1.5%	2.2%	2.0%	1.3%	1.5%	1.0%	1.0%	1.0%	*1.6%*	*2.2%*	*1.5%*
METALS	Steel/Tin Containers	1.0%	3.4%	1.2%	1.2%	0.1%	0.0%	2.1%	4.0%	1.6%	1.2%	1.4%	*2.1%*	*0.7%*	*1.6%*
METALS	Other Metal	1.5%	**9.9%**	0.4%	**5.8%**	0.9%	0.0%	1.9%	2.0%	1.7%	**11.0%**	0.0%	*3.9%*	*0.6%*	*3.4%*
METALS											incl mini refrigerator				
METALS	***Total Metals***	***3.5%***	***15.3%***	*3.8%*	*8.4%*	*3.2%*	*2.0%*	*5.2%*	*7.5%*	*4.3%*	***13.2%***	*2.4%*	*7.7%*	*3.5%*	*6.5%*

SWCCOG RECYCLING STUDY WASTE AUDIT RESULTS[a] (% by weight)

	MSW TRASH SAMPLE DESCRIPTION		PAGOSA SPRINGS AREA		CITY OF DURANGO		LA PLATA COUNTY			CORTEZ	MONTEZUMA COUNTY		SUMMARY ANALYSIS		
			RES	COM	RES	COM	RES	RES	RES	MIXED RES/COM					
PLASTICS	Plastic Bottles #1	1.5%	5.4%	3.0%	1.0%	3.5%	0.0%	1.3%	2.4%	2.1%	1.3%	1.4%	2.0%	3.3%	2.1%
	Plastic Bottles #2	1.0%	1.2%	1.4%	0.4%	2.6%	1.3%	0.5%	1.8%	1.2%	0.9%	1.1%	1.0%	2.0%	1.2%
	Rigid Plastic Containers #3-#7	1.5%	1.5%	3.2%	0.8%	0.9%	1.3%	1.0%	2.0%	0.7%	0.8%	0.3%	1.3%	2.0%	1.3%
	Bags, Film, Wrap	4.0%	5.6%	8.5%	3.4%	1.6%	6.4%	3.9%	6.1%	3.6%	6.8%	1.0%	5.1%	5.0%	4.7%
	Other Plastic	1.5%	5.1%	3.9%	2.3%	0.4%	2.6%	1.2%	6.1%	2.9%	2.3%	6.8%	3.5%	2.2%	3.4%
	Plastic Totals	*9.5%*	*18.8%*	*20.0%*	*7.8%*	*9.0%*	*11.6%*	*7.9%*	*18.4%*	*10.6%*	*12.2%*	*10.7%*	*12.9%*	*14.5%*	*12.7%*
PAPER	Cardboard/Brown Paper Bags	7.5%	1.6%	2.8%	2.2%	32.1%	1.2%	1.8%	3.1%	11.4%	10.7%	4.9%	2.0%	17.5%	7.2%
	Newspaper	4.0%	1.6%	2.6%	0.4%	0.6%	0.9%	1.0%	0.2%	0.9%	0.3%	0.0%	0.8%	1.6%	0.8%
	Office/School Paper & Shreds	2.5%	2.6%	0.2%	3.0%	0.2%	1.6%	4.7%	2.7%	0.8%	3.8%	0.1%	2.9%	0.2%	2.0%
	Food Boxes/Paperboard	1.5%	8.3%	7.8%	3.4%	1.6%	4.6%	7.5%	2.8%	6.0%	2.9%	2.6%	5.3%	4.7%	4.7%
	Junk Mail/Mixed	9.0%	7.4%	12.2%	2.1%	1.3%	6.5%	2.8%	2.0%	2.8%	3.0%	0.4%	4.2%	6.7%	4.1%
				food wrappers (McDs), hotel mags & brochures											
	Magazines/Catalogues & Telephone Directories	1.5%	3.2%	8.0%	1.1%	2.9%	3.1%	4.6%	2.0%	1.5%	1.3%	0.4%	2.8%	5.5%	2.8%
	Dairy/Juice Containers	0.5%	2.3%	0.0%	1.3%	0.0%	2.7%	0.0%	1.9%	0.0%	0.6%	0.1%	1.6%	0.0%	0.9%
	Other Paper	8.5%	0.5%	0.0%	0.0%	1.2%	0.2%	0.2%	0.0%	0.0%	0.2%	14.0%	0.2%	0.6%	1.6%
	Paper Totals	*35.0%*	*27.3%*	*33.6%*	*13.5%*	*40.1%*	*20.8%*	*22.7%*	*14.8%*	*23.4%*	*22.8%*	*22.6%*	*19.8%*	*36.9%*	*24.2%*

SWCCOG RECYCLING STUDY WASTE AUDIT RESULTS[a] (% by weight)

	MSW TRASH SAMPLE DESCRIPTION		PAGOSA SPRINGS AREA		CITY OF DURANGO		LA PLATA COUNTY			CORTEZ	MONTEZUMA COUNTY		SUMMARY ANALYSIS		
			RES	COM	RES	COM	RES	RES	RES	MIXED RES/COM					
ORGANICS	Food Waste	19.0%	22.6%	14.7%	19.9%	25.7%	20.6%	27.9%	9.2%	19.9%	15.0%	0.9%	20.0%	20.2%	17.6%
ORGANICS	Yard Waste/Untreated Wood	6.0%	13.1%	7.9%	17.0%	0.1%	7.2%	1.4%	2.1%	3.7%	14.2%	1.5%	8.2%	4.0%	6.8%
ORGANICS	Other Organics	8.0%	0.0%	2.6%	9.8%	1.1%	14.7%	16.2%	18.7%	29.1%	7.3%	31.1%	11.9%	1.9%	13.1%
ORGANICS					High quantities textiles & carpet in some samples							Animal manure			
ORGANICS	*Organics Totals*	*33.0%*	*35.7%*	*25.2%*	*46.8%*	*26.9%*	*42.5%*	*45.5%*	*30.0%*	*52.7%*	*36.5%*	*33.6%*	*40.1%*	*26.1%*	*37.5%*
OTHER /SPECIAL WASTE	Electronics	0.5%	0.6%	1.0%	0.2%	0.3%	6.1%	0.2%	0.0%	2.5%	0.9%	0.0%	*1.4%*	*0.6%*	*1.2%*
OTHER /SPECIAL WASTE	Other Consumer Products	see Other	1.4%	3.0%	1.6%	2.1%	0.0%	0.0%	2.6%	0.7%	2.7%	2.2%	*1.1%*	*2.6%*	*1.6%*
OTHER /SPECIAL WASTE	Motor Vehicle Waste	see Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	*0.0%*	*0.0%*	*0.1%*
OTHER /SPECIAL WASTE	Construction/Demolition Debris	4.5%	0.0%	0.7%	15.2%	16.1%	9.7%	0.0%	0.0%	0.2%	3.4%	21.9%	*5.0%*	*8.4%*	*6.7%*
OTHER /SPECIAL WASTE					some concrete	DIY improve. project									
OTHER /SPECIAL WASTE	Other Hazardous/Special Waste	6.2%	0.6%	0.0%	0.0%	0.0%	0.1%	1.4%	0.0%	0.1%	0.0%	0.0%	*0.4%*	*0.0%*	*0.2%*
OTHER /SPECIAL WASTE	*Other / Special Waste Totals*	*11.2%*	*2.6%*	*4.8%*	*17.0%*	*18.5%*	*15.9%*	*1.6%*	*2.6%*	*4.4%*	*7.0%*	*24.1%*	*7.9%*	*11.6%*	*9.8%*
RESIDUE			0.3%	0.1%	0.3%	0.5%		0.1%	0.1%	0.2%	0.1%	2.5%	*0.2%*	*0.3%*	*0.4%*
	Total Weight in Lbs		88.7	102.0	574.5	870.4	146.2	107.4	92.8	617.9	631.6	100.2			
	TOTALS		*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Total Sample Weight (pounds) = 3331

Average Weight/Sample (pounds) = 333

[a] Conducted by SWCCOG staff & Fort Lewis College interns between August and November 2014

[b] Waste audits conducted at Chaffee County (2006), Eagle County (2009), Garfield County (2009), Lake County (2006), Pitkin County (2009), City of Glenwood Springs (2009) & Milner Landfill (2004) by LBA Associates; at Larimer County (2006) & Meeker/Rio Blanco Samples (2012) by others

[c] Analysis completed by LBA Associates, Inc.

APPENDIX C
STAKEHOLDER CONTACT INFORMATION

SWCCOG RECYCLING STUDY STAKEHOLDERS

	NAME	ORGANIZATION	PHONE		E-MAIL
ARCHULETA COUNTY					
	Dave Sterner	Archuleta County Solid Waste	308-325-4015	cell	dsterner@archuletacounty.org davesterner@yahoo.com
	Greg Schulte	Town of Pagosa Springs	970-264-4151, x-236		gschulte@pagosasprings.co.gov
	Chris Tanner	Elite	970-731-2012		tanner@pagosarecycles.com
	Mark & Kathryn Young	At Your Disposal	970-731-4892		atyourdisposal13@yahoo.com
LA PLATA COUNTY					
	Susan Hakanson	LaPlata County Sustainability	970-382-6212		susan.hakanson@co.laplata.co.us
	Damian Peduto	LaPlata County Planning			damina.peduto@co.laplata.co.us
	Dan Murphy	LaPlata County Planning	970-382-6263		dan.murphy@co.laplata.co.us
	Mark McKibben	LaPlata County General Services	970-382-6471		mark.mckibben@co.lapalata.co.us
	Mary Beth Miles	City of Durango	719-580-0960 970-375-5063	cell office	marybeth.miles@durangogov.org
	Joey Medina	City of Durango	970-375-4834		joey.medina@durangogov.org
	Levi Lloyd	City of Durango	970-375-4999		levi.lloyd@durangogov.org
	Gloria Kaasch-Buerger	City of Durango			gloria.kaasch-buerger@denvergov.org
	Amber Blake	City of Durango			amber.blake@denvergov.org
	Mark Thompson	Phoenix Recycling	970-759-2076	cell	mark@phoenixrecycling.com
	Amanda Saunders	Phoenix Recycling	970-759-2076		kamandasaunders@gmail.com
	Tim Wheeler	Durango Compost Company	970-799-7614		info@durangocompost.com
	Bill Rose	WCA Corporation	505-947-4189	cell	wrose@wcamerica.com
	Matthew Alvarez	Recla Metals	970-249-7922		matt@reclametals.com
	Mike Bacus	Recla Metals	970-375-6330		mike@reclametals.com
	Greg Fulks	Recla Metals	970-769-0598		greg@reclametals.com
MONTEZUMA COUNTY					
	Shak Powers	Montezuma County Landfill	970-565-9858 970-739-6718	office cell	spowers@co.montezuma.co.us shak@q.com
	Larry Don Suckla	Montezuma County Commissioner	970-759-3940		lsuckla@gmail.com
	Phil Johnson	City of Cortez Recycling	970-565-8575		pjohnson@cityofcortez.com
	Eddy Vialpando	City of Cortez Recycling	970-565-7320		evialpando@cityofcortez.com
	Colby Earley	City of Cortez Recycling	970-565-7320, x-3352		cearley@cityofcortez.com
	Deborah Barton	FCRI	605-390-3096 970-564-1380	cell home	balegal.debby@gmail.com
	Loren Workman	Baker Sanitation	970-749-6135	cell	admin@bakersanitation.com

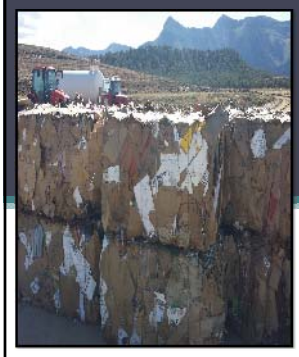
SWCCOG RECYCLING STUDY STAKEHOLDERS

	NAME	ORGANIZATION	PHONE		E-MAIL
			970-565-1212	office	
	Chris Belt	Belt Salvage	970-565-3059		belt.salvage@yahoo.com
	Kelly Belt	Belt Salvage	970-749-9757		belt.salvage@yahoo.com
DOLORES COUNTY					
	Ernie Williams	County Commissioner	970-677-2383		dcdolocnty@fone.net
	Julie Kibel		970-739-3306		dolocnty@centurytel.net
SAN JUAN COUNTY					
	Chris Tookey	Silverton	970-387-5522		chris@frontier.net
	Willy Tookey	San Juan County	970.387.5766	office	sanjuancounty@frontier.net
	Chris Trosper	Bruin Waste Services	970-428-1246 970-864-7531	cell office	chrisbruinwaste@aol.com
OTHERS					
	Pam Starr	San Juan RCD	970-392-9371		sjrcd@hotmail.com
	Ben Walsh-Mellett	Fort Lewis College			ben.walsh.mellett@gmail.com
	Dave Thibodeau	Ska Brewery	970-247-5792		dave@skabrewing.com
	Travis Apodaca	Waste Management	505-975-5355	cell	tapodaca@wm.com
	Steve Miceli	Waste Management	505-433-6053 505-974-1947	office cell	smiceli@wm.com
	Mickey & Jerrica Barry	Angel of Shavano Recycling	719-207-1197		shavanorecycling@gmail.com
	DanaLee Barton	Evergreen Cleaning	970-442-0183	office	cleaningevergreen@gmail.com
	Larry Gibson	Rocky Mountain Recycling	801-808-0863	cell	lgibbons@rockymountainrecycling.com
	Janalee Hogan	San Juan Basin Recycling	970-382-6430	office	janalee.hogan@co.laplata.co.us
	Bruce Valdez	Southern Ute Tribe/Utilities	970-749-1391	cell	bvaldez@sugf.com
	Haryes Briskey	Southern Ute Tribe/Utilities	970-563-5515		hbriskey@suitutil.com
	Julian Baker	Southern Ute Tribe/Utilities			
	Phillip Martinez	Southern Ute Tribe/Envir Program	970-563-0135		
	Graham Stahnke	Southern Ute Tribe/Growth Fund	970-764-6484		gstahnke@sugf.com
	Chuck Farago	Southern Ute Tribe/Growth Fund	970-563-5006		cfarago@sugf.com
	Tom Johnson	Southern Ute Tribe/Envir Program	970-563-0100, x-2229		
	Scott Clow	Ute Mountain Ute Tribe			sclow@utemountain.org
	Rachel Landis	Fort Lewis College	(970) 247-7091	office	rllandis@fortlewis.edu
	Cliff Spencer	Mesa Verde NP	(970) 529-4465	office	cliff_spencer@nps.gov
	Allan Loy	Mesa Verde NP Program Manager	970-529-5067		allan_loy@nps.gov
	Jim Broersma	Aramark (NPS)	970-903-7503	cell	broersma-jim@aramark.com

SWCCOG RECYCLING STUDY STAKEHOLDERS

	NAME	ORGANIZATION	PHONE		E-MAIL
	Cathy Lurie	PaintCare	720-481-8858		clurie@paint.org
	Kurt Schneider	4Core - Interim ED	970-259-1916 x113		kurt@fourcore.org

APPENDIX D
RECYCLING TASK FORCE MEETING MATERIALS



SOUTHWESTERN COLORADO RECYCLING STUDY

Southwest Colorado Council of Governments & LBA Associates, Inc.
January 2015

Today's Agenda

1. Introductions
2. Welcome
   - Miriam Gillow-Wiles, SWCCOG Executive Director
3. Study Findings & Observations
   - Laurie Batchelder Adams, LBA Associates
   - Ben Walsh-Mellett, Fort Lewis College
4. New Programs/Initiative from Audience
5. Group Discussion
6. Wrap-Up

So who is this SWCCOG?

- **Partners:**
  - Archuleta County
  - Town of Bayfield
  - City of Cortez
  - Dolores County
  - Town of Dolores
  - City of Durango
  - Town of Ignacio
  - La Plata County
  - Town of Mancos
  - Town of Pagosa Springs
  - San Juan County
  - Town of Silverton

SWCCOG

What does the COG do?

- **Goals**
  - Aging
  - Environment
  - Housing
  - Telecommunication
  - Transportation
  - Tourism

How we got here

- Identified Need/Desire
- Funding
- Recycling Task Force
- Intros
- Feb to June

Why Are We Here Today?

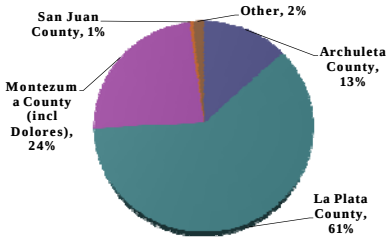
- Clarify what we want to accomplish
- Identify ways to improve diversion economics
- Consider a regional approach
- Decide how best to deploy a regional Recycling Task Force

GROUND ZERO

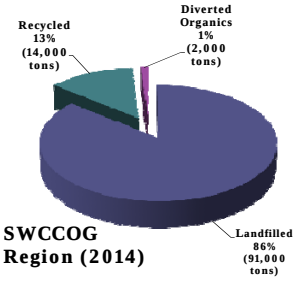
Organi-zation	Diversion Policy	Diversion Services	Solid Waste Facilities
Archuleta Cty (12,800)		Other stakeholders • Elite • At Your Disposal	• DOC (multi) • Landfill/transfer
La Plata Cty (56,000)	• Government recycling • Green purchasing		• 2 DOCs (multi) • SUIT DOC (multi)
Durango	• Mandatory pay up to 7 hhs • MFU > 7 hh must have R • New development R space	Curbside SS w/o glass • T $13-19.50/hh-mo • R $3/hh-mo add'l Other stakeholders • WCA (TS, LF) • Phoenix (SS) • Waste Management	• DOC for city & region (SS, multi) • R transfer
Montezuma County (26,500)		Other stakeholders • Four Corners • Baker Sanitation • Belt Salvage • Evergreen, WM	• FCRI, Cortez baling • Pilot YW compost • Landfill (incl Dolores County tons)
Cortez	• Mandatory pay up to 7 hhs	Curbside multi • T&R $18/cart	DOC at city service center
San Juan County (700)		Other stakeholders • Bruin Waste (T to Naturita, SS R to Montrose)	• Silverton TS for county • Collects T, R, other($) • $22/hh-mo

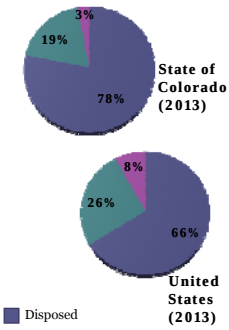
2014 Municipal Solid Waste Stats

- 99,000 people
- 107,000 total tons MSW
- 5.9 pounds/ capita-day (ppcd)

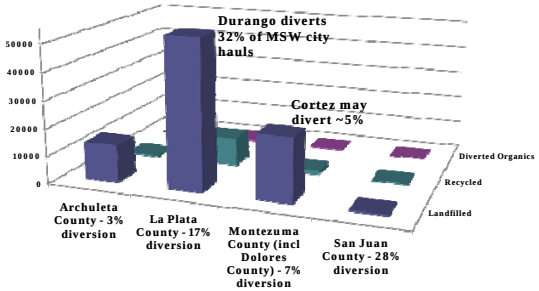


How Southwest Colorado Compares





Breakdown by County



Waste Audit - Archuleta

Waste Audit – La Plata DRO Commercial

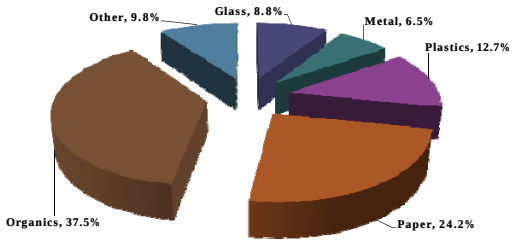
Waste Audit – La Plata DRO Residential

Waste Audit – La Plata Bayfield, Ignacio, and Phoenix

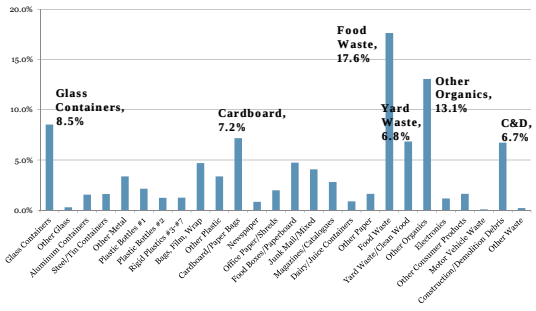
Waste Audit – Montezuma County

Waste Audit – Montezuma County, Cortez

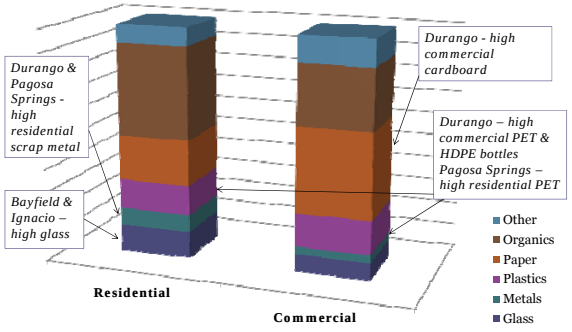
SWCCOG MSW Composition (by weight)



Composition by Individual Materials



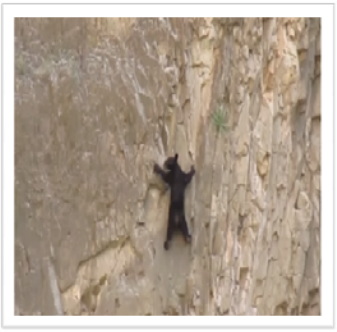
Residential v. Commercial (100% scale)



LANDFILL NUMBERS

- **Tip Fees for MSW***
  - Archuleta = $52/ton
  - Bondad = $46/ton
  - Montezuma = $39/ton
- **Landfill Capacities**
  - Archuleta – 20 to 30 years
  - Bondad – at least 20 years
  - Montezuma – over 40 years (full build-out)

* Fees converted to $/ton as needed



What We're Up Against

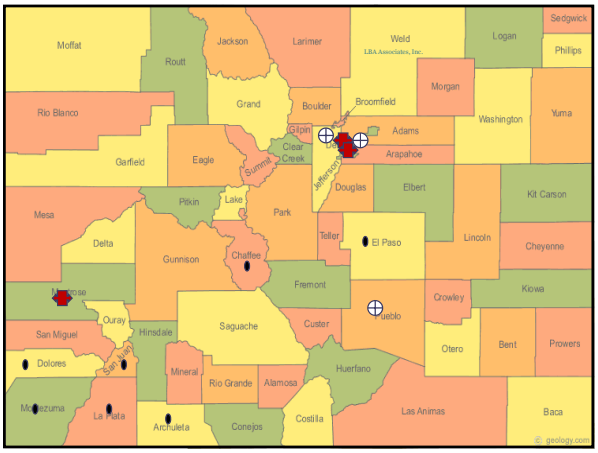
Every Rural Area Struggles with . . .

Low Recyclables Tons

- Low population/density
- Lack of policy incentives
- High unit costs

Long Hauls

- Higher costs/lower revenues for recyclers
- Bigger environmental footprints



Lotsa Small Programs . . .

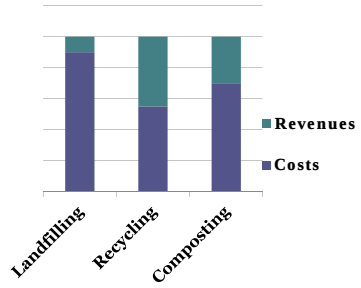
Decentralized Programs

- Even fewer tons/higher unit costs
- Reinventing the wheel - inefficient use of resources
- Every program
  - Collects different materials
  - Gives different messages
  - Uses different markets

Confused Public

- Frustrated by variability
- Inadequate motivation to participate

Challenging Communications



Those "Tough" Materials . . .

Glass

- Public expects glass will always be recycled
- Heavy weight helps data goals
- Breaks easily – contaminates other materials
- Limited Colorado market (at least for now) – use as LF cover in many communities

Organics

- Compost permits onerous
- Seasonal - high acreage req'd
- Insufficient local markets
- Need for tip fee
- 3% of CO organics recovered

Options for Getting Out From Under

Name of Game = Increasing Tons

Why

- Meet sustainability goals
- Improve system economics
- Improve stability & longevity of both public & private sector services

How

- Policies that drive diversion
- Regionalize
- Effective public education & outreach (both residential & commercial)
- Organics recovery

Diversion-Targeted Policies

- PAYT
- Disposal bans (e.g., cardboard, yard waste)
- Litter bans (cigarettes!)
- Fee programs (e.g., single-use bags)
- Universal residential collection (cities)
- Mandatory commercial recycling &/or food waste recovery

Implement "Hub & Spoke" Features

Establish Fundamentals

- Infrastructure capacity & change
- Program uniformity
- Improve material quality
- Increase marketing clout & pricing
- More consistency in terms of program services & pricing

Resource Sharing Benefits

- Program development
- Equipment purchase
- Collection
- Outreach materials

Education & Outreach

"Soft" Program Packs a Punch

- Outcomes
  - Debunk myths
  - Explain incentives
  - Encourage participation
- Components
  - Initial & on-going "campaigns"
  - Outreach materials – signage, brochures, website, messages on collection vehicles
  - Branding

Considerations for Organics Recovery

- Materials – yard & food waste
- Management options
  - Food waste donation
  - Chipping/mulching
  - Composting
  - Anaerobic digestion, etc.
- End-markets

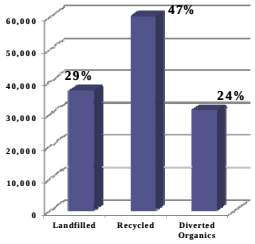
Colorado Success Stories

- Fort Collins
  - PAYT w/SS recycling
  - Cardboard disposal ban
  - ~45% diversion rate
- Loveland
  - PAYT w/SS w/o glass
  - Mandatory pay <3 units
  - Residential diversion 55%
- Aspen
  - SFU = PAYT w/SS
  - MFU & commercial = T+R pricing bundled
  - Yard waste disposal ban
  - 30% diversion rate
- Upper Arkansas Area COG (Chaffee, Custer, Lake, Fremont Counties)
  - UAR Recycling Program – DOC collection
  - IGA w/ counties
  - $0.79/capita-year

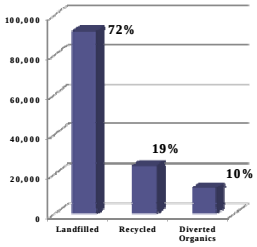
Are We Ready for Change?

What SWCCOG Can Achieve By 2025

If All Recyclables & Organics Recovered . . .



If Current Recovery Levels Are Doubled . . .



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   - Ben Walsh-Mellett, Fort Lewis College
4. **New Programs/Initiative from Audience**
5. **Group Discussion**
6. **Wrap-Up**

Discussion Questions

1. **What are common diversion goals?**
2. **How do we improve diversion economics?**
3. **What would regional collaboration look like?**
4. **What should Recycling Task Force's objectives goals be?**

Southwest Colorado Council of Governments

SWCCOG

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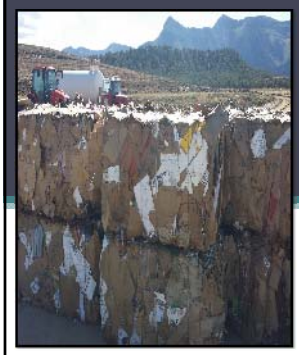


SOUTHWESTERN COLORADO RECYCLING STUDY

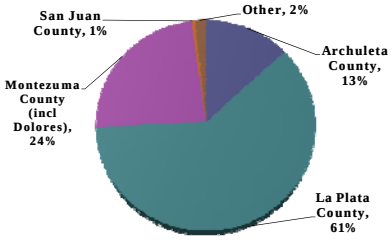
Southwest Colorado Council of Governments & LBA Associates, Inc.
March/April 2015

Workshop Agenda

- Baseline Findings Summary
- Drop-Site Needs
- Education & Outreach Opportunities
- Policy Potential
- Regional Waste Diversion Function
- Next Steps

Baseline Findings: 2014 Municipal Solid Waste Stats

- 99,000 people
- 107,000 total tons MSW
- 5.9 pounds/ capita-day (ppcd)



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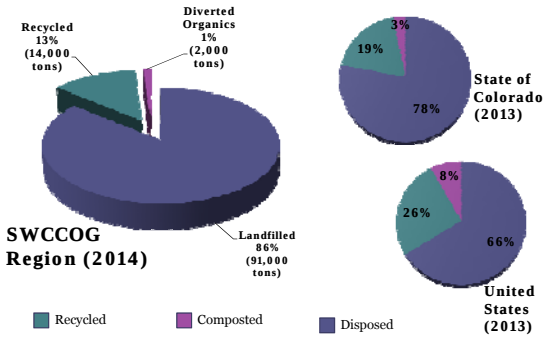
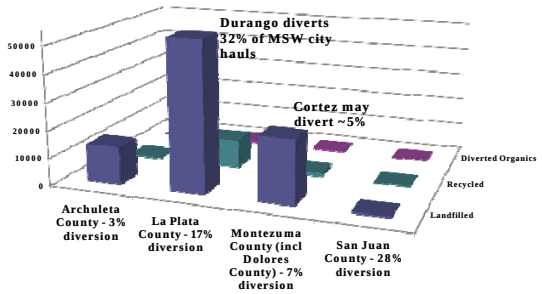
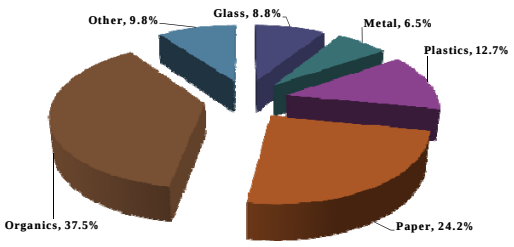


Breakdown by County



SWCCOG MSW Composition (by weight)



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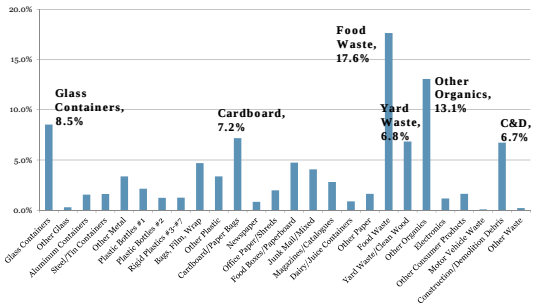
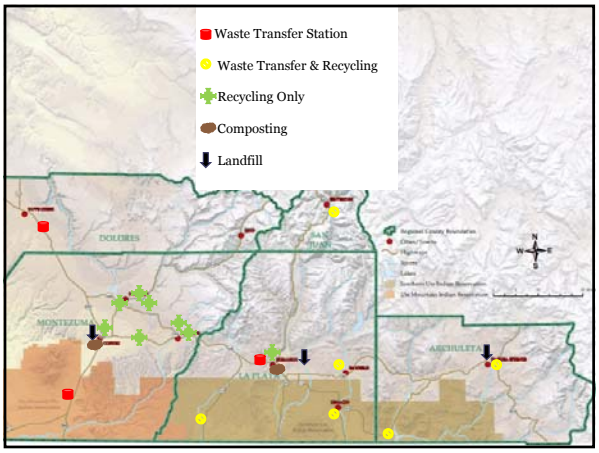


If the goal is to increase the economics of recycling, southwest Colorado needs to:

- Increase tons from residential, commercial & tourism sectors
- Treat recyclables as prized commodity
- Have more spokes & less hubs (i.e., collaborate versus compete)
- Maximize benefit for private haulers/processors & public programs

Increased Rural Recycling Drop-Sites



Alternative Drop-Site Concept

- Towable container configuration
  - Shared trailer for most/all sites
  - Towable by ¾-ton pick-up truck
  - Configure each box with up to 6 compartments

Pro-Tainer Pro Roll-Off System

LBA Associates, Inc.

TOWABLE TRAILER COSTS

- Costs
  - Capital equipment costs
    - New trailer = $21,000
    - Each roll-off box = $7,000
  - Annual hauling – multi-stream materials
    - 500-person service area (13 tpy) - $131/ton
    - 1,500-person service area (38 tpy) - $103/ton
  - Landfill versus recycling dollars
    - Conservative estimates = approx $5/ton avoided net tip fees & range of materials revenues ($0-$80/ton)
      - Net annual cost $640 to $880 per site

LBA Associates, Inc.

Education & Outreach

LBA Associates, Inc.

SOUTHWEST COLORADO RECYCLES!

- Wolf Creek to Hovenweep
- Ouray through Silverton!! to Durango
- Pagosa Springs to Chama
- Colorado to Utah & New Mexico . . .

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POSSIBLE E&O COMPONENTS

- Constant, regular message
- Consistent signage, websites
- Consistent list of materials collected
- Training/outreach –
  - Schools presentations
  - Campaigns for tourists, residents & businesses
- Toolkits for grass-roots support – civic groups, garden clubs, senior citizen groups, chambers of commerce

LBA Associates, Inc.

TOURISM IMPLICATIONS

- *90% of U.S. travelers surveyed said they would chose "green," environmentally-conscious lodging* (2010 TravelZoo survey)
- *93% of those surveyed felt that travel destinations should be responsible for protecting the environment* (2011 Conde Nast Traveler)

COSTS

- Annual $40,000
- If recycling increased by 25% = 3,500 tpy
  - Avoided net tip fees = $17,500
  - $0 - $280,000 revenues

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Waste Diversion Policies

Hauler Ordinance (basic)

POTENTIAL COMPONENTS	PROS	CONS
Annual registration	Insurance, vehicle safety standards	Minor admin for haulers
Annual data reporting (add HHW/e-waste)	Data for tracking progress	Haulers often feel this is proprietary information
List of recyclables for collection	Consistency for customers	
Offer recycling collection to all trash customers	Increases access to recycling	Potential hardship for small, trash-only haulers
Education/outreach to new & on-going customers	Augments municipal/regional E&O	Costs will be passed on to customers

Issues = lack of scales, combined loads, voluntary v. mandatory
Other data needs = periodic/seasonal waste audits

Hauler Ordinance w PAYT (advanced)

POTENTIAL COMPONENTS	PROS	CONS
Use PAYT trash pricing (can increase diversion by upwards of 100%) – residential tactic	Increased diversion Customer control "Good" recyclers pay less Many ways to implement (bag, tag, hybrid)	May need to adjust billing May need different container inventory Harder to implement in unincorporated areas
PAYT trash pricing for drop sites (pre-paid bag system)	Works well for public or private (best at staffed sites)	Need to retail bags Changes to existing system
Bundle trash & recycling - commercial tactic	Increased access Increased diversion	Overall pricing may be hardship for generators

If increase commercial diversion by 25% or 1,750 tpy - $44,000 net benefits

Hauler Ordinance Examples

Fort Collins

- Collection license ($100/veh-yr)
- Trash + recycling
- Annual reporting – quantity, accounts, pricing
- Collection frequency & container requirements

Aspen

- Business license & occupational tax ($150-$750/year based on # employees)
- Trash + recycling
- Annual quantity reporting
- Haulers may leave recyclables with 15% of more contamination

Others

- Loveland – hauler license $100/vehicle-year
- Larimer County – hauler license ($25/year) & recycling requirements for urban growth areas
- Vail – registration, 2x/year reporting

PAYT/Bundled Ordinance Examples

Contract Collections

- Edgewater - PAYT
- Golden – PAYT (70%)
- Lafayette – PAYT (100%) w/ yard waste

Public Collections

- Loveland – PAYT (100%)
- Thornton – PAYT (same sized carts)

Open Collections

- Aspen
  - PAYT - SFU (100%)
  - Bundled T/R – MFUs, biz
- Fort Collins
  - PAYT – SFU (100%)
- Vail
  - PAYT – SFU (80%)
  - Bundled T/R – MFUs, biz
- Private Grand County transfer station
  - PAYT trash ($5/bag)
  - Free recycling

Cardboard Disposal Ban

POTENTIAL COMPONENTS	PROS	CONS
Applicability to all generators (responsibility on generators)	Level playing field	Everyone must have access to reuse, recycling and/or compost options
	Good in towns	Hard to enforce in unincorporated areas
Establish conditions of violation & penalties	Without, policy has not credibility	Cost of enforcement
Couple with strong outreach	See E&O discussion	

Estimate 8,300 tpy cardboard in region's trash – represents $208,000 net benefits

Disposal Ban Examples

Fort Collins (Cardboard)

- 2 years (March 2013)
- Applies to all sectors
- Penalties $100 to $1,000
- Increased diversion
  - Increase in # of commercial accounts by 95%
  - Commercial tons up 19%
  - Residential tons up 12%
  - Overall tons up to 65% & waste generation down to 4.85 ppcd

Other Disposal Bans

- Aspen – yard waste
- Cedar Rapids/Linn County, IA (cardboard)
- Durham, NC – recyclables (alum, steel, glass, newspaper, cardboard
- Massachusetts – recyclables, yard waste, white goods, C&D, e-waste, motor vehicle waste

Regional Waste Diversion Function

To Do What & Why?

Benefits

- Increase efficiencies
- Reduce workload of individual communities
- Expand programming beyond existing level
- Increase quality tons to single hub
- Neutral third party

Possible Functions

- Rural drop-site collection
- Regional education & outreach
- Data collection & reporting
- Planning & policy development support
- Support hub MRF & establish prices by committing tons
- Grant & foundation funding
- Technical assistance

Issues to Consider

- Who would be "in charge? COG? New org?
- If MOU or IGA – how many local govts would join? How flexible would membership be?
- Would members cover costs? How?
- How would revenues be shared?
- Short-term or indefinite life span?

Similar Models

- New Mexico Recycling Coalition
  - Used federal $$ for H&S with technical assistance
  - Encouraged regional solid waste organizations
  - Cooperative marketing of hub materials – but now stopped
- Upper Arkansas Area COG (Chaffee, Custer, Lake, Fremont Counties)
  - DOC collection – compete with other haulers
  - Markets materials
  - IGA w/ county members – at cost of $0.79/capita-year
- Central Texas Recycling Assoc
  - 60 partnerships & 500 community members
  - Founded to bring recycling to rural areas (improve $$)
  - On-going technical assistance
  - Focus is growing quality & pricing over tons
    - NO single-stream
    - Staffed drop sites
    - Bale whenever >1 hr from MRF
    - Member contract
  - Cooperative marketing – contract with one processor
  - Earn 10% brokerage fees – off-set 1.5 staff/travel costs

Potential Organizational Costs

- Start-up E&O and data collection
  - Approx $40,000
  - Approx 0.3 FTE
  - Supported by grants (USDA, DOLA, etc.)
- On-going E&O and data collection
  - Approx $20,000
  - Approx 0.2 FTE

Photo by Jeb Wallace-Brodeur

Other Considerations

- Organics recovery
  - Biggest "bang for the buck" (37.5% of trash stream)
  - Montezuma County pilot program soon to be full-scale
  - Back-haul opportunities between Cortez & Durango?
- Glass to Montezuma County?
  - Haul costs about 20% less than other recyclables
  - $20/ton revenues (Durango)
- Tire management?
  - Montezuma County / Alamosa County shredder?
- E-waste management?
- Solid waste diversion goals?

Next Steps

- SWCCOG/LBA
  - Translate baseline findings & workshop input into waste diversion strategy
  - Finalize report
- SWCCOG Members & Regional Business Partners (i.e., all of you)
  - Implementation = ?

Southwest Colorado Council of Governments

SWCCOG

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APPENDIX E
GLASS & TIRE DIVERSION RESOURCES

Glass - Glass containers are generated at a rate of about 9,800 tons/year in the five-county area. The material is challenging to recycle due to its ability to contaminate other materials and low revenue potential. Glass contamination is currently minimized in regional programs by collecting it separately. However, there are no local glass markets, requiring shipment to the Denver metro area[1]. As all stakeholders struggle with glass, the collaborative could work to support the development of local processing and end use.

Considerations for processing glass locally will include equipment selection to match end-use needs (may be as minimal as a landfill compactor to provide cursory crushing, or could require a specialized crusher or pulverizer with capital costs in excess of $50,000); whether adequate quantity/quality is available (many uses will require a consistent quantity and minimum level of contamination); opportunities for backhaul within the region[2]; and overall economic sustainability as compared to existing revenues.

One current glass use is in landfill cell construction: both Archuleta and Montezuma Counties currently use in their leachate collection systems. Montezuma County alone estimates the need for 50,000 cubic yards - or roughly 18,000 tons[3] - for future expansion (at the region's current diversion rate, it would take several years to meet this single demand). Glass is also used commonly on landfill roads to provide drainage and traction. Other glass uses may include;

- Filtration - drainage, backfill, septic fields (many drainage and backfill applications can use a high percentage of cullet sometimes approaching 100%)
- Aggregate - embankments, landfill cover, oil spill clean-up, bedding (Bruin Waste uses a glass crusher to provide utility bedding for Mountain Village in San Miguel County)
- Glassphalt - base/surface course in roads, parking lots, driveways (may use 30% of less glass in these applications)
- Abrasives - sandblasting, sandpaper
- Landscaping - weed control, walkway aesthetics
- Miscellaneous glass products - bottles, fiberglass, art products, etc.

There are many other glass recycling resources - a sampling includes:

- Local Use of Glass Recycling Guide - New Mexico Recycling Coalition (May 2013); includes several pertinent case studies)
- Andela Products (glass processing equipment) - www.andelaproducts.com
- Clear Intentions (glass recycler) - www.clearintentions.glass
- Momentum Recycling (glass recycler) - www.momentumrecycling.com

[1] Durango is currently netting about $20/ton after transportation to the Rocky Mountain Bottling Company in Wheat Ridge. Two new glass recyclers (Clear Intentions in Denver and Momentum Recycling in Broomfield) have recently started up, however, and may increase available revenues.

[2] Arranging freight in the region has been a struggle (especially over the last several months). However, brokers are now observing increased truck availability (as the season changes and shipments are moving out of the west coast ports), and lower freight costs than paid during the summer/fall of 2014 (Sage Recycling - April 6, 2015).

[3] Montezuma County is currently considering the purchase of a glass crusher which could potentially be a regional resource.

- Bruin Waste - Chris Trosper, 970-428-1246, chrisbruinwaste@aol.com

Tires - Tire generation in the region estimated to exceed 1,000 tpy[4]. Banned from landfill disposal, there are limited recycling options for old tires not accepted by tire dealers, resulting in illegal dumping and stockpiles. There are many uses for baled tires, shredded tires and crumb rubber (requires further processing shreds) including retaining walls, rubber-modified asphalt, reclamation project and numerous civil engineering applications (including alternative daily landfill cover in facility-specific instances). Options for local processing (or transportation to processors) include;

- Existing balers - in Durango, Archuleta and Montezuma Counties (possibly Phoenix Recycling in the near future)
- Alamosa County mobile tire grinder[5] - available to any party at cost of about $175/hour plus mobilization (staff estimate at least 15,000 tires are needed for this unit to be cost-effective)
- Local tire dealers/recyclers - as well as CDPHE-registered tire haulers in the region (i.e., Just Like the Master in Pagosa Springs; Model Tire Store in Durango; and Williams Boyz Salvage in Dove Creek)

Note that some mobile tire shredders can also part of a shredder/wood chipper unit, providing additional capacity. Key to the shared use of a mobile unit is the accurate assessment of end-use requirements, quantity and quality, and appropriate ownership/operation responsibilities and costs[6].

Additional tire resources include:

- Alamosa County (tire shredder availability and pricing) - Tim DeHerrera (719-588-5248)
- Montezuma County - Shaq Powers (970-565-9858, spowers@co.montezuma.co.us)
- CDPHE Waste Tire & Hauler Registries - www.colorado.gov/pacific/sites/default/files/HM_sw-list-waste-tire-registrants.pdf; www.colorado.gov/pacific/sites/default/files/HM_sw-list-tire-hauler-registrants.pdf

[4] Based on the generation of 1 tire/person-year and 21 pounds/tire.
[5] Originally purchased by 22 member counties under the Colorado Counties Waste Tire Authority, this tire shredder/wood chipper unit produces 6" shreds. Due to inadequate funding to cover maintenance and repair, the authority disbanded in 2010 and is currently managed by Alamosa County alone.
[6] The Colorado Counties shredder/chipper cost about $250,000 in 2005 - these units can approach a $500,000 purchase price.

APPENDIX F
WASTE COLLABORATIVE COST ESTIMATE

WASTE COLLABORATIVE COST ESTIMATE[a]

OPTION	START-UP								ON-GOING [b]							
	General Duties	Mid-Level		Mgmt Staff		Legal		Ex-penses [c]	Sub-total	General Duties	Mid-Level		Mgmt Staff		Legal		Ex-penses	Sub-total
		hrs	$45	hrs	$85	hrs	$150				hrs	$45	hrs	$85	hrs	$150		
Grant Funding	Obtain initial grants (2 applications) for E&O, problem waste management	80	$3,600	32	$2,720	0	$0	$0	$6,320	Miscellaneous (1 every 2 years)	20	$900	8	$680	0	$0	$0	$1,580
Regional Education & Outreach[b]	Help standardize accepted materials, logo/signage format, messaging for multiple targets, maintain service/facility list, training materials	633	$28,485	0	$0	0	$0	$9,515	$38,000	Sporadically update messages; answer web queries; school tours	317	$14,265	0	$0	0	$0	$4,735	$19,000
Advocacy	Lead volunters - identify/support diversion objectives, develop diversion argument, educate officials/staff, assist with policy development	100	$4,500	50	$4,250	4	$600	$500 for misc-ellaneous travel, present-ation materials	$9,850	Continue start-up	50	$2,250	25	$2,125	4	$600	$500 for misc-ellaneous travel, present-ation materials	$5,475
Technical Assistance for Probem Waste Management[d]	Include hiring contractor, liaising with other counties	40	$1,800	16	$1,360	4	$600	$8,000	$11,760	Minor assistance only	8	$360	4	$340	2	$300	$0	$1,000
Quantity Data Collection	Standardize reporting & data analysis	40	$1,800	8	$680	4	$600	$0	$3,080	Annual data collection	24	$1,080	4	$340	0	$0	$0	$1,420
Totals																		
	Without E&O[e]	**260**	**$11,700**	**106**	**$9,010**	**12**	**$1,800**	**$8,500**	**$31,010**	**Wo E&O[e]**	**102**	**$4,590**	**41**	**$3,485**	**6**	**$900**	**$500**	**$9,475**
	All Programs	**893**	**$40,185**	**106**	**$9,010**	**12**	**$1,800**	**$18,015**	**$69,010**	**All Pgms**	**419**	**$18,855**	**41**	**$3,485**	**6**	**$900**	**$5,235**	**$28,475**

Notes:

a Hourly rates based on SWCCOG's 2015 labor categories (more conservative than those used by Montezuma or La Plata Counties) - all costs in 2015$

b On-going costs do not include salary increases for future years - assume 75% is salary for mid-level staff

c Based on assumed minimum $1/hh-year for start-up/new campaigns; minimum $0.50/hh-year for 38,000 hhs (rounded for 2015) (SWANA;s "Manager of Recycling Systems Training Manual," 2009)

d Assumed contractor assistance 80 hours at $100/hour (start-up only)

e Ideally grant funding will be obtained to cover start-up E&O costs

APPENDIX G
CTRA MEMBER CONTRACT

Membership Agreement
Cooperative Teamwork & Recycling Assistance and
"Seller"

This agreement is entered by and between the Cooperative Teamwork & Recycling Assistance ("CTRA") and "Seller" as Parties. **The terms of this agreement will apply to the recyclable materials, which are checked below:**

METAL

____ Aluminum Used Beverage Cans (UBC)
____ Steel/Tin Cans

____**RECHARGEABLE BATTERIES**
____**ELECTRONICS**

PLASTICS

____ PET #1
____ HDPE #2 Natural
____ HDPE #2 Colored
____ HDPE #2 and PET #1(Mixed)
____ LDPE #4

PAPER

____ Corrugated (OCC)
____ Newspaper #8
____ High-grade SOP (Sorted Office Paper)
____ White Ledger
____ Mixed Paper (Catalogs, Phone Books, Magazines, Junk Mail)

The following is understood and agreed by both parties:

CTRA shall be the exclusive agent for the "Seller" in the marketing and sale of the recyclable materials as indicated above. Monthly prices offered by CTRA shall based on an index amount defined by standard regional prices published in the first monthly issue of ***Recycling Manager, The Yellow Sheet, or other indices identified through contractual arrangements with the Recycling Contractor***. The price of certain baled recyclable material will not drop below indicated floor prices during the life of the contract. If volumes of plastic, paper or steel are sufficient, CTRA may market those commodities separately to receive the best prices. In return for the marketing and sale of the "Seller"' commodities and other member services, CTRA will receive ten percent of the total revenue received through the sale of any recyclable materials under this agreement.

When available from the Recycling Contractor, CTRA will provide, at no charge, Gaylord boxes and pallets for the transportation of loose materials to be marketed and sold under this agreement. Should the "Seller" require additional Gaylord boxes for collection, storage, staging of recyclable materials, and/or shipping CTRA will attempt to facilitate such arrangements at a minimal cost to "Seller".

"Seller" will be responsible for meeting standard contamination requirements, as described in Appendix A, in the collection of recyclable materials and for keeping all fiber recyclable materials (except corrugated cardboard) dry.

"Seller" will be responsible for transporting all recyclable commodities to the pickup point designated and agreed upon by "Seller" and CTRA, at its expense. CTRA will be responsible for scheduling transportation for the selected recycling commodities from the designated pickup point to the buyer.

"Seller" will notify CTRA one week before a desired pickup date. Pickups will be scheduled by CTRA based on achieving full loads and shared transportation costs with other CTRA members. Every effort will be made through scheduling to avoid a negative revenue situation where the transportation costs exceed the revenue generated from the sale of recyclable materials. If the recyclables loaded from "Seller" do not constitute a full load the transportation cost will be shared proportionately between all customers whose recycling materials are being transported. If transportation costs are incurred which exceed the revenue from the sale of the recyclable materials, the responsibility for paying these costs shall be the "Seller".

CTRA shall reimburse "Seller" for the total revenue received from the sale of any recyclable materials under this agreement minus the above referenced administrative fee and any agreed upon transportation costs. The cost to "Seller" shall be calculated based on actual CTRA transportation costs and the amount of recyclable materials loaded from "Seller" proportionate to the total truckload to be sold.

CTRA will perform all negotiations regarding the above referenced recyclable materials for the "Seller" and shall pay the "Seller" for said recyclable materials according to shipping records and this agreement. Such payment shall be made to "Seller" within forty-five (45) days from the end of the month in which "Seller"' commodities were sold. CTRA will, upon request, provide a certificate of destruction for all confidential papers.

The term of this agreement shall be two years (the "initial term"). Either party may discontinue this agreement with thirty (30) days written notice stating the reasons for cancellation.

The parties agree that CTRA is undertaking obligations set forth in this agreement for, and on behalf of "Seller". "Seller" shall hold CTRA harmless and indemnify CTRA, to the extent permitted by law, against any and all claims, damages, demands, losses, or liabilities of any kind or nature, including but not limited to negligence, including all expenses of litigation, which the CTRA or its officers, agents, employees, or representatives may sustain or incur, or which may be imposed upon CTRA because of, or arising out of or in any manner connected with action(s) attributed to the "Seller".

CTRA shall hold the "Seller" harmless and indemnify "Seller", to the extent permitted by law, against any and all claims, damages, demands, losses, or liabilities of any kind or nature, including but not limited to negligence, including all expenses of litigation, which "Seller" or its officers, agents, employees, or representatives may sustain or incur, or which may be imposed upon "Seller" as a result of, or arising out of or in any manner connected with action(s) attributed to CTRA.

Any amendments or changes to this agreement must be mutually agreed upon by both parties and must be in writing.

In the event CTRA or "Seller" shall be prevented from collecting, receiving, transporting, selling or buying any recyclable materials, or in the event CTRA or "Seller" shall be prevented from complying with the terms and conditions of this agreement due to governmental or administrative prohibitions, labor difficulties, acts of God, acts of public enemy, riot, accidents, breakdown of equipment, weather conditions, delivery interruptions or other causes beyond the control of CTRA or "Seller" as the case

may be, the party so prevented shall, upon notice to the other party, be thereafter released from its obligations hereunder so long as such causes continue.

Should the final judgment of a court of competent jurisdiction invalidate any part of this agreement, the remaining parts of this agreement shall be enforced, to the extent possible, consistent with the intent of the parties as evidenced by this agreement. This agreement is binding upon and shall inure to the benefit of the successors and assigns of the parties.

This agreement constitutes the entire agreement and understanding of the parties, it being understood that all other prior or contemporaneous agreements, negotiation memoranda, correspondence, and conversations between the parties hereto are terminated and superseded by this agreement. No subsequent modifications or amendments to this agreement shall be effective unless by written consent and signed by the parties.

Authorized representatives of the Parties hereby execute this agreement.

Authorized Representative of "Seller" **Date**

Print Name, Title

Rachel M. Hering, Executive Director Cooperative Teamwork & Recycling Assistance **Date**

Attached: Appendix A

"Seller" Contact Information:

Name

Phone/Fax#

Address/Mailstop

Email

APPENDIX A

FIBER GRADE DESCRIPTIONS

COMPUTER PRINTOUT PAPER (CPO)
Consists of one-part, continuous form sulphite paper printed on an impact printer (dot matrix, not laser or ink jet). Typically solid white paper but may include green, blue, or orange bars. Does not include carbonless (NCR), carbon interleaf, groundwood (recycled) papers, or pre-printed forms. Must be free of binders, Post-It notes, tapes, tabs, and any other papers. Paper clips and staples are OK.

WHITE LEDGER (Post Consumer)
Consists of typical single sheet, white bond office letterhead and copy paper. May contain laser printing and colored printing. This grade should be free of coated, treated, groundwood, carbonless, carbon interleaf, padded, or heavily printed stock. Computer paper may be included in the grade. Must be free of binders, Post-It notes, tapes, tabs, and colored papers. Paper clips and staples are OK.

SORTED OFFICE PAPER/WASTE (High Grade Office)
Consists of paper typically generated in offices. Contains primarily white and colored groundwood free paper, free of unbleachable fibers, (not brown boxes & wrappers & dark colored file folders). Includes carbonless paper, fax paper, envelopes, brochures, and **manila** file folders. May include 1% or less groundwood computer paper and newspaper. Must be free of binders, tapes, tabs, and plastic sheets. Paper clips and staples are OK. Pressure sensitive labels (postage stamps, post-it-notes) limited to trace amounts.

NEWSPAPER (DE-INK QUALITY #8)
Dry newspapers, not sunburned, including advertising inserts that are natural to newspaper distribution. Does not include magazines, junk mail, or other papers. No plastic or Kraft (grocery) bags, string, or tape.

MIXED PAPER
Old newspapers include those newspapers that are sunburned, old, or have been wet. May include magazines, junk mail, office/copy paper, and Kraft (brown grocery) bags.

OLD CORRUGATED CONTAINERS (OCC)
Empty Kraft corrugated boxes, including the staples, tape, and labels that may be on them. Does not include waxed boxes. May include other Kraft papers such as brown wrapping paper and Kraft envelopes. Minimum amounts of chipboard (like shoeboxes) are acceptable and less than 10% of in-ported containers.

CONTAMINANTS
The following items should not be included in any grade:

Paper Food Containers	Carbon Paper	Plastic (all)	Household Garbage
Paper Food Wrap	Paper Cups	Plastic Food Wrap	Metal
Photographs	Plastic Cups	Glass	Paper Towels
Plastic Food Containers	Tyvek Envelopes	Tissue Paper	Wood

PLASTIC GRADE DESCRIPTIONS

POLYETHYLENE TERAPHTHALATETE (PET #1)- Clear soft drink & water bottles, some shampoo
HIGH DENSITY POLYETHYLENE(HDPE Colored #2)- Thick colored plastic, examples- detergent bottles, household cleaners
HIGH DENSITY POLYETHYLENE (HDPE Natural #2)- Milk bottles/gallon jugs
LOW DENSITY POLYETHYLENE (LDPE #4)- CLEAN grocery, produce, dry cleaning, ice and bread bags

APPENDIX H
"CHANGING HOW WE DO GARBAGE" ARTICLE

Changing How We Do Garbage

Not surprisingly, solid waste decisions facing local governments have trended through multiple phases. In past decades, cities and counties worried about having enough landfill capacity. More recently, they focused on collection systems and facilities for diverted recyclable and organic materials. While governments still have these worries, today they are spending more and more time on policy. Policies to ensure that infrastructure and programming will be economically as well as environmentally sustainable require incentives—be they sticks, carrots, or both—that provide steady flows and continually foster waste diversion practices in our communities.

There are almost as many types of policy options and permutations as there are acronyms in the waste industry. More policies are implemented by municipalities than other governments (due to limitations on statutory policing powers and the need for states to address such broader issues as diversion goals, grant programs, bottle bills and disposal bans). A sample of policies that can be applied to different stakeholders at the local level include the following:

- ***Collection/disposal bans***—for materials with mature markets (some cities who don't have control of landfill operations have successfully implemented this: e.g., Fort Collins, CO has a collection ban on both e-waste and cardboard).
- ***Commingling levels for sorting***—such as single- versus dual-stream recyclables collection or even mixed-waste streams.
- ***Hauler rules for open market systems***—such as requiring trash haulers to collect diverted materials, establishing minimal list of recyclables and organics or requiring customer education (more aggressive hauler policies can include franchising and flow-control-like requirements).
- ***Waste generator rules***—such as required recyclables and organics collection service or mandatory program participation.
- ***Construction/demolition policy***—many cities have developed green building programs that establish minimum levels of green construction and deconstruction (and can include audit and reporting requirements, refundable deposits, penalties for lack of compliance, etc.).
- ***Diversion incentives***—such as PAYT, rebates, subsidies, recycling space in new construction, award programs, etc.
- ***Policy to fund infrastructure and programs***—can include facility and/or system user fees, material use fees (like those on plastic bags), taxes, revenue sharing, or other mechanisms (one unique approach that earns $1.7 million per year for Boulder, CO, is an occupational tax on haulers).

The good news is that many policies are low-cost for governments to enforce once they are implemented (think PAYT or mandatory collection services tied to utility bills). Some policies incur new or expanded enforcement expenses, of course, but these tend to be low compared to the investments needed for facility construction or collection fleet operation.

The bad news is that policies do have an initial implementation "cost." This may be limited to staff time needed to research other city programs, educate local leaders, undertake public outreach, and conduct inter-agency coordination. However, these seemingly basic efforts are often fraught with skeptical stakeholder groups, funding obstacles, and nervous council members. As a result, they can include multiple false starts. Additionally, many governments do not have solid waste staff trained in policy development and public facilitation. As a result, their ability to skillfully and effectively start-stop-start this process can be limited.

The growing focus on policy issues surrounding solid waste management and waste diversion in general will require governments to develop better ways to change how we, well…change. Listed below are several key strategies this author has observed and participated in that both improve policy development success and reduce frustration levels for government staff and politicians.

Determine the policy goal—Even though staff and city council may have a good idea of what specific policy components they'd like to see implemented, the most important decision will probably be why this policy is needed, i.e., what the outcome should to be. A more successful, less-contentious public process will likely result from a "what"-based platform that says, "Here's what we need to achieve; how can we collectively figure out how to get there?" as opposed to one that leaves no room for true stakeholder exchange on finding, compromising, and creating the right "hows."

Research similar policy efforts by other cities— "How do others do it?" will inevitably be a question that council or savvy stakeholders will ask, so be prepared. Identify a reasonable cross-section of cities that have successfully—and unsuccessfully—attempted similar policy (ideally with similar demographics to your community). Many cities researched will likely have gone through the same process. Staff may be able to piggyback on their efforts and minimize research.

Draft policy language with flexibility—Once the general policy content has been sketched out, be mindful of the need for flexibility that allows exemption for hardship conditions and targets appropriate audiences. Examples include allowing multifamily property owners/managers to be exempted from diversion if they prove that excessive cost would be incurred, and setting applicability thresholds for C&D policies (such as valuation or size level below which projects are not subject to regulation).

Educate and prepare political leadership early and throughout the process—The importance of this step cannot be over-emphasized. To the extent possible, allocate plenty of time to work with city council members before policy development becomes a public debate. This leadership step should focus on the following:

- ***Fully educating the council*** on all facts supporting and opposing the policy, implementation details from other

communities, estimated impacts (e.g., potential tons diverted, city capital/operating costs as well as user costs, job creation, greenhouse gas reductions, etc.)—this step will support consensus-building within the council, and provide individual members with a level of comfort in adopting a position they can maintain throughout the public process.

- ***Identifying the range*** of less-than-total-truths and myths that are part of most public processes—this will prevent council from being blind-sided and allow members to stay on-point with respect to their perspectives and positions.
- ***Prepare members*** for the overall process, which can be highly emotional and more protracted than most expect—the ability of council to fairly, firmly and consistently address stakeholder questions and reactions lends valuable credibility to the process.
- ***Finally, help the council understand*** that opposition to new policy will likely come from a very vocal but usually small portion of their constituency. Chances are good that an equal or larger portion of the community will be in favor of the proposal (most will be unaware or just plain ambivalent). But it's human nature to be much more passionate about changes we oppose than those we support. As a result, opponents may overwhelm proponents and appear to be the only voice in the process. Leadership should anticipate this dynamic and not be mislead about the level of policy support.

Lafayette, CO, took these steps when it moved from an open to single-hauler contract system. According to Doug Short, Lafayette's public works director, "The public process significantly helped smooth the political process and allowed our council to make a clear decision that supported change." Another Colorado Front Range city initiated a study to evaluate a potential move from an open-market to single-hauler system without spending time preparing their elected leaders. Council aborted the study shortly after the project was started following a barrage of opposition from small haulers and their customers.

Hire a good facilitator—Facilitating an onerous public process requires special skills and good experience with creative and effective strategies for defusing emotional dialogues, encouraging even-handed involvement from all stakeholders, and moving to constructive discussions. Jody Erikson, a senior mediator/facilitator with JSE Associates, advocates an approach that moves the process from an "us versus them" conversation to one that unites stakeholders in a "how can we figure this out together?" environment. Specifically, she notes that a focus on interests versus positions is an important basis for the process; in other words, why something is important (interest) versus a favorite solution (position). For example, when stakeholders simply assert their overall position (e.g., "I'm against any change in the status quo"), staff and council don't have much to work with in terms of discussion and compromise. If the conversation is moved toward what stakeholders' specific interests are, however (i.e., "I am on a fixed income and worried this policy will increase my monthly fees"), there will be more information for discussing and negotiating policy options with less negative impacts.

Provide timely and regular feedback to stakeholders—This step should include a process for sharing documentation (e.g., meeting notices; meeting summaries, documents and presentations; draft policy and report language) and obtaining feedback between public meetings (through hotlines, periodic teleconferences, or other means). This will allow stakeholders to keep current, verify that their input was registered and have a real say in the overall process. The Western Greater Yellowstone Consortium's Regional Recycling Study (currently ongoing in northeastern ID/northwestern WY) has used multiple project liaisons, website postings and regular teleconferences between face-to-face meetings to successfully keep a four-county stakeholder group active and engaged in the project.

For the unprepared, local solid waste policy development and associated stakeholder involvement may, at best, be overwhelming and frustrating with elusive results chased over a prolonged period. A well-strategized public process can be pivotal to new policy that is not only successfully implemented within a reasonable budget and schedule, but leaves staff, council and stakeholders in a frame of mind that is more receptive to the real change process that begins with the final council vote. MSW

Laurie Batchelder Adams *is president of LBA Associates Inc. and currently serves as president of the Colorado Association for Recycling.*

APPENDIX 1
DROP-SITE COST ESTIMATE MODEL

Project:	Southwest Colorado Recycling Study
Technology:	Recycling Drop Site - Recyclables
Date:	March-15
Cost Estimate Basis:	2015$ - Cost assumptions from vendors, costing manuals & project data
Location:	SWCCOG Region, Colorado
Worksheet:	**INPUTS**

Revise items in red for program and site specific information.

GENERAL INPUT ASSUMPTIONS

Interest Rate	5%		
Annual Escalation Rate	3%		
Labor Categories & Rates - U.S. Bureau of Labor Statistics for Colorado			
Equipment Operator	na	per hour	
Recycling Collection Vehicle Driver	$20.00	per hour	
General Laborer	na	per hour	
Maintenance Labor	$20.00	per hour	
		Labor Fringe Benefits =	25.0%
MRF/Recycling Processing Tip Fee	$0.00	per ton	

DROP SITE ASSUMPTIONS

Serves Residential Only - Service Area
Co-located with existing acceptable facility or land donated for use.

Recycling Trailer Type:	Qty*	Avg Price	
Roll-off Trailer	1	$20,000	Budgetary quotes, delivered, from Pro-Tainer
Roll-off Boxes (21 CY)	2	$7,000	
Gravity Trailer (20 CY)	0	$11,000	
Bin Trailer (20 CY)	0	$20,000	
Pro-Tilt Trailer (18 CY)	0	$12,000	

** Adjust for type selected.*
*** Each trailer assumed to have 3 to 6 compartments. Determine quantity need to handle multiple material groups.*

Spare Trailers (stored off-site) =	0		
Min. Area Required for Drop-Site =	800	Sq. Ft. per trailer/roll-off bo	*(Allows for box, truck-trailer, manuevering, etc.)*
Assumed Trailer/Roll-Off Box Size:	21	CY	*Adjust for actual trailer type*
Typical % Full at Collection =	90%		
Average Recyclables Density =	200	lbs/CY	*Adjust for actual local data, if available*
Assumed hook-up & unload time =	15	min per haul	*Increase to 45 minutes if gravity or forklift bin trailer*

Pick-up Truck:	Qty*	Avg Price	
Heavy-duty pick-up truck (4 WD, 3/4 ton, with trailer hitch)	1	$40,000	*range $35K-$40K, new truck price from Kelley Blue Book*

Drop-Site Surfacing:	For site development/improvements		
Gravel/Crushed Rock	NO	Insert NO if current site surfacing adequate	
Concrete	NO		
Asphalt	NO		
Access Stairs/Platforms?	NO		
Site Lighting?	NO		
Additional Security Fencing?	NO	NO - assumes existing sufficient	
	0	LF	If YES, identify lineal feet required
Video Survellience Package?	NO		
Personnel Convience Building?	NO	NO - assumes adjacent to existing facilities or unstaffed	

Multi-Drop Site Input:

	Site #1	Site #2	
No. of Covered Recycling Trailers	2	2	
Area Required (SF)	1600	1600	
* Distance to Durango Hub MRF (mi	60	60	
Average Speed to Facilities (mph)	45	45	
Tonnages:			
Drop-Site Service Population	1500	500	*Do not include population served by curbside collection*
Recyclables (avg lbs/capita/yr)	50	50	*Can range from 25 to 75 lbs/capita/yr*
Estimated Recovery per Drop-Site:			
Commingled Recyclables (tpy)	37.5	12.5	

* Distance is one-way miles.

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Location:	SWCCOG Region, Colorado
Worksheet:	**CAPITAL COST SITE #1**

Revise items in red for program and site specific information.

DROP-SITE CAPITAL COST **Site #1**

Item	Quantity	Units	Unit Cost	Total
Land Purchase (1)	0.04	Acres	$0	$0
Final Grading (2)	0	SY	$8	$0
Concrete Pad (2)	0	CY	$450	$0
Asphalt Pad (2)	0	SY	$35	$0
Wooden Rails (3)	2	sets	$50	$100
Crushed Rock/Gravel (2)	0	SY	$20	$0
Access Stairs/Platform	0	EA	$3,000	$0
Site Lighting (4)	0	EA	$5,000	$0
Drop-Site Signage	2	EA	$500	$1,000
Security Fencing (5)	0	LF	$27	$0
Video Surveillance System - Basi	0	EA	$4,000	$0
Personnel Convience Building (6)	0	EA	$12,000	$0
Subtotal Site Improvements				$1,100
Contingency (10%)				$100
			Drop-Site Improvements	$1,200
Mobile Equipment - Trailer/Containers (8):				
Covered Recycling Trailer				
Roll-off Trailer	1	EA	$21,000	$21,000
Roll-off Boxes (21 CY, 3-4 compa	1	EA	$7,000	$7,000
Gravity Trailer (20 CY)	0	EA	$11,000	$0
Bin Trailer (20 CY)	0	EA	$20,000	$0
Pro-Tilt Trailer (18 CY)	0	EA	$12,000	$0
Spare Recycling Trailer	0	EA	$20,000	$0
Subtotal Mobile Equipment				$28,000
Contingency (10%)				$2,800
			Mobile Equipment	$30,800
			Total Drop-Site Capital Cost	**$32,000**

Assumptions:

1 Land assumed to be existing city/county property or donated use.
See INPUTS sheet for area requirements.
2 Assumes existing site surface is adequate or improved by Owner. See INPUTS sheet.
3 Assumes wooden rails (4x4) under front of roll-off boxes to mitigate freezing.
4 Assumes site lighting provided by co-location.
5 Perimeter 6-ft chain link fence and gate. Assumes security provided by co-location.
6 Pre-fabricated convenience building (8'x8') installed. Electricity assumed available at site(s) selected.
No convenience building if unstaffed and/or co-located with existing facilities. See INPUTS sheet.
7 Unit price assumes compartmentalized recycling trailer such as Pro-Tainer Inc.

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Date:	March-15
Cost Estimate Basis:	2015$ - Cost assumptions from vendors, costing manuals & project data
Location:	SWCCOG Region, Colorado
Worksheet:	**OPERATIONS & MAINTENANCE COSTS**

Revise items in red for program and site specific information.

Item Description		Quantity	Units	Unit Cost		Total
LABOR						
Job Classification	**Qty**	**Labor Rate**	**Hrs/Yr (1)**			**Total**
Collection Driver	1	$25	26 hrs		$	700
				Subtotal	$	700
Notes:						
Existing personnel/driver checks drop-site and performs minor clean-up at specified # hrs per week =						1 hrs/week
Labor rate assumes fringe benefits	25.0%					
SITE MAINTENANCE & UTILITIES						
Item		**Quantity**		**Unit Price**		**Total**
Site Maintenance	2%	$1,200			$	-
Equip/Trailer Maintenance	3%	$30,800			$	900
Building Repair & Depreciatio	3%	$0			$	-
Electricity		000 kwh		$0.10	$	-
Heating (Bldg Space Heater)		000 kwh		$0.10	$	-
Sanitary Service	0	port-a-let service/month		$500 /month	$	-
Water	0	Existing on-site water/bottled water provid			$	-
Mobile Phone	0	phone		$100 /month	$	-
				Subtotal	$	900
Notes:						
Site co-located with existing facility; no separate building or utilities.						
Buildings at Drop-Site	0					
Building lighting based on	1.66	watts/sf	2080	hours/year		
Site Lighting	0	1000W Lights	620	hours/year		
				ANNUAL TOTAL O&M per Drop-Site	**$**	**1,600**

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Location:	SWCCOG Region, Colorado
Worksheet:	**HAULING COSTS**

Drop-Site Collection	**Drop-Site #1 MRF**	**Drop-Site #2 MRF**	***Comments***
No of Recycling Roll-offs/Trailer:	2	2	*From INPUTS sheet*
Container Payload (tons):	1.9	1.9	*Trailer/box CY, % full, density from INPUTS sheet*
Tonnages (tpy):	**38**	**13**	
Hook-Up & Unload Time (minutes):	15	15	
One-Way Distance (miles)	**60**	**60**	
Average Speed (mph):	45	45	
Average Trips/Year:	20	7	
Average Trips/Month:	1.7	0.6	
Average Trips/Week:	0.4	0.2	
Hours Per Trip	2.9	2.9	
Weekly Freight Hours:	1.2	0.6	
Wkly Prorated Veh Inspect/Breaks:	0.2	0.1	*Ratio wkly freight hrs to Total wkly inspect'ns/breaks*
Annual Freight Hours:	60.7	30.3	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr	2,400	840	
Annual Costs Assumptions:			
Fuel, Oil & Grease			
Fuel Cost per Gallon	$4.00	$4.00	*US Energy Information Rocky Mtn diesel price 10/14*
Miles per Gallon	7	7	*Estimate based on pick-up hauling trailer*
Oil & Grease ($/freight hour)	$0.25	$0.25	*Note: Federal mileage at $0.575/mile*
Tires			
New Tires Price	$500	$500	*For pick-up truck*
# New Tires Per 40,000 Miles	4	4	
Trailer Tires	$400	$400	*For recycling trailer*
# Tires Per 25,000 Miles	4	4	
Maintenance & Repairs			
Mechanic Labor annual salary	$41,600	$41,600	*See INPUTS sheet*
Mechanic Labor % per Truck	1%	1%	
Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	*Note: Federal mileage at $0.575/mile*
Driver Labor			
Driver % (based on freight time)	3%	1%	
Driver annual salary	$41,600	$41,600	*See INPUTS sheet*
Fringe benefits (% of salary)	25.0%	25.0%	*Benefits included in annual cost calculation*
Truck Amortization			
Capital Cost	$40,000	$40,000	*See INPUTS sheet*
Resale Value (% of truck $)	20%	20%	
Replacement Miles	150,000	150,000	
Replacement Schedule (years)	7	7	
Interest Rate	5%	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.1728	0.1728	
Recycling Trailer Purchase			
Capital Cost -- Trailers/Roll-offs	$0	$0	*Included in capital cost*
Replacement Schedule (years)	10	10	
Interest Rate	5%	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.1295	0.1295	
Insurance (per yr/truck) @ 2.5% $	$1,000	$1,000	*Estimate % of capital cost*
License Fees (per yr/truck)	$300	$300	*Estimate - varies by community ordinance*
Pro-Rated % of Time	4%	2%	

Annual Drop-Site Haul Costs:	**Drop-Site #1**	**Drop Site #2**		**Comments**
Fuel, Oil & Grease	$1,390	$490		Mileage & Time Based
Tires	$200	$70		Mileage Based
Maintenance & Repairs	$500	$180		Mileage & Time Based Pro-Rated
Driver Labor	$1,520	$760		Time Based
Truck Replacement*	$220	$110		Pro-Rated
Trailer Amortization	$0	$0		Included in Capital Cost
Insurance	$40	$20		Pro-Rated
Licensing & Taxes	$10	$10		Pro-Rated
Drop-Site Haul Cost	**$3,880**	**$1,640**		
Avg Haul Cost per Trip	**$194**	**$234**		
Avg Haul Cost per Ton	**$103**	**$131**		

* Assumes new pick-up truck used for all drop-sites and other county uses; pro-rated replacement contribution.