

# Curbside Recycling Participation Study



## City of Charleston

## **Curbside Recycling Participation Study**

### **Purpose:**

The Public Works Office was directed to perform a study of curbside recycling in Charleston. The purpose being to acquire some type of data as to how many residence were participating in the City's curbside recycling program and what areas they were located in.

### **Method:**

It was decided the most accurate way to count participation was to have each Recycling Truck count the number of residents that were recycling. Each Driver was furnished with a hand clicker. They were instructed to click and count each residence they stopped at that was setting out recyclable goods in the proper manner as outlined by City Code (Division 4, Secs. 98-121). This was done over a 5 week period and tabulated daily.

The City Collectors office furnished the most recent data available regarding the amount of addresses that were on city fees.

The Refuse Department furnished their daily routes and assisted in collecting data.

# Curbside Participation Study

## Refuse Daily Route Areas

**Route 1** = All areas East of Edgewood Drive, including Garrison Ave, Bigley Ave, Hillsdale area and East end of Charleston

**Route 2** = Oakridge Drive, Bakers Fork, Wertz Ave and Kanawha City, South Park Road, Quarry Creek, South Ruffner Road areas

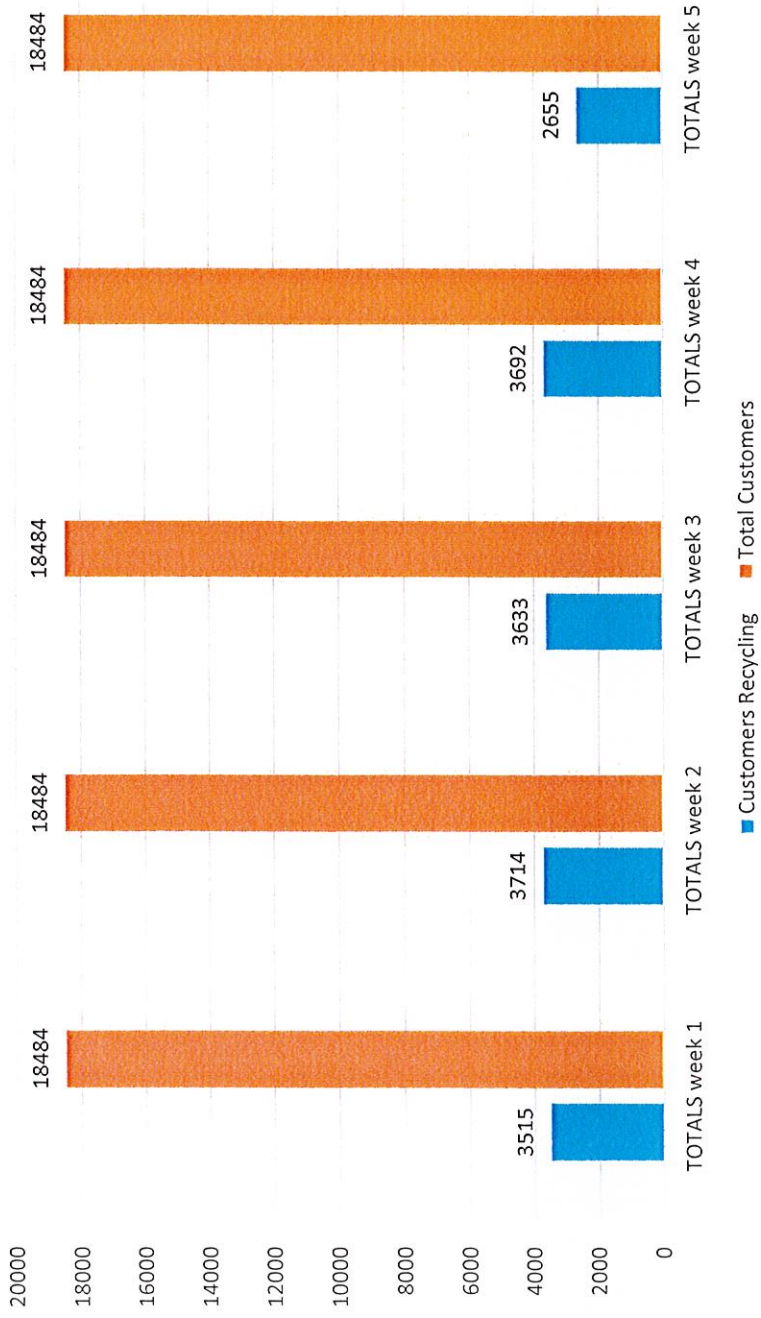
**Route 3** = South Hills, Fort Hill, Corridor G, Mountain Road, Smith Road, Huber and Parkwood Road areas.

**Route 4** = All areas West of Edgewood Drive hill areas, Westside flats, North Charleston, Chandler Drive and Sugar Creek areas

Curbside Recycling Study conducted 9/29/15 thru 10/31/15

Date	Route	Customers participating in recycling				TOTALS	Total Customers	Percentage recycling
		Truck #141	Truck #143	Truck #102	Truck #101			
Tues 9/29/15	1	258	260		518	4987	10.39% daily	
Wed 9/30/15	2	396	303	367	1066	5345	19.94% daily	
Thurs 10/1/15	3	562	478	519	1559	4834	32.25% daily	
Friday 10/2/15	4	215	157		372	3318	11.21% daily	
<b>TOTALS week 1</b>		<b>1431</b>	<b>1198</b>	<b>886</b>	<b>3515</b>	<b>18484</b>	<b>19.02% weekly</b>	
Tues 10/6/15	1	291	256		547	4987	10.97% daily	
Wed 10/7/15	2	435	368	371	1174	5345	21.96% daily	
Thurs 10/8/15	3	589	509	533	1631	4834	33.74% daily	
Friday 10/9/15	4	227	135		362	3318	10.91% daily	
<b>TOTALS week 2</b>		<b>1542</b>	<b>1268</b>	<b>904</b>	<b>3714</b>	<b>18484</b>	<b>20.09% weekly</b>	
Tues 10/13/15	1	266	267		533	4987	10.69% daily	
Wed 10/14/15	2	403	366	371	1140	5345	21.33% daily	
Thurs 10/15/15	3	580	492	521	1593	4834	32.95% daily	
Friday 10/16/15	4	215	152		367	3318	11.06% daily	
<b>TOTALS week 3</b>		<b>1464</b>	<b>1277</b>	<b>892</b>	<b>3633</b>	<b>18484</b>	<b>19.65% weekly</b>	
Tues 10/20/15	1	279	266		545	4987	10.93% daily	
Wed 10/21/15	2	395	376	361	1132	5345	21.18% daily	
Thurs 10/22/15	3	610	493	523	1626	4834	33.64% daily	
Friday 10/23/15	4	235	154		389	3318	11.72% daily	
<b>TOTALS week 4</b>		<b>1519</b>	<b>1289</b>	<b>884</b>	<b>3692</b>	<b>18484</b>	<b>19.97% weekly</b>	
Tues 10/27/15	1	281	278		559	4987	11.21% daily	
Wed 10/28/15	2	387	320	365	1072	5345	20.06% daily	
Thurs 10/29/15	3	565	485	533	1583	4834	32.75% daily	
Friday 10/30/15	4	192	147		339	3318	10.22% daily	
<b>TOTALS week 5</b>		<b>1425</b>	<b>1230</b>		<b>2655</b>	<b>18484</b>	<b>18.56% weekly</b>	

# Recycling Participation



Curbside Recycling Study conducted 9/29/15 thru 10/30/15

Date	Route	Pounds of curbside recycling collected			TOTALS	Total Pounds
		Truck #141	Truck #143	Truck #102		
Tues 9/29/15	1					
Wed 9/30/15	2	6320	5020			
Thurs 10/1/15	3			6645		
Friday 10/2/15	4	7380	6240			
<b>TOTALS</b>		<b>13700</b>	<b>11260</b>	<b>6645</b>		<b>31605</b>
Tues 10/6/15	1					
Wed 10/7/15	2	7820	6440			
Thurs 10/8/15	3			6780		
Friday 10/9/15	4	7940	6820			
<b>TOTALS</b>		<b>15760</b>	<b>13260</b>	<b>6780</b>		<b>35800</b>
Tues 10/13/15	1					
Wed 10/14/15	2	6880	6040			
Thurs 10/15/15	3			6690		
Friday 10/16/15	4	7600	6520			
<b>TOTALS</b>		<b>14480</b>	<b>12560</b>	<b>6690</b>		<b>33730</b>
Tues 10/20/15	1					
Wed 10/21/15	2	7060	6520			
Thurs 10/22/15	3			6630		
Friday 10/23/15	4	8000	6240			
<b>TOTALS</b>		<b>15060</b>	<b>12760</b>	<b>6630</b>		<b>34450</b>
Tues 10/27/15	1					
Wed 10/28/15	2	5860	4800			
Thurs 10/29/15	3			6735		
Friday 10/30/15	4		5800			
<b>TOTALS</b>		<b>5860</b>	<b>10600</b>	<b>6735</b>		<b>23195</b>

RECYCLING TRUCKS AVERAGE DAILY MILEAGE					
	Truck 141	Truck 143	Truck 102		
Route 1	45	69			
Route 2	44 + 124*	67 + 124*	68		
Route 3	58	70	63 + 124*		
Route 4	29 + 124*	38 + 124*			
*THE RALEIGH CO LANDFILL IS 124 MILES Roundtrip from Charleston					

## Curbside Participation Study

### Cost:

The average cost associated with a roundtrip to Raleigh County is estimated at \$200.00, using a denominator of 1.60 per mile. Included in that are fuel cost, tire wear, wear/tear on vehicle and Turnpike tolls. This does not include labor cost. Recycling trucks are making a total of five (5) trips per week to the Raleigh County facility.

$(5 \times 200.00 = 1000.00 \times 52 \text{ weeks} = 52,000.00 \text{ a year operating cost to travel})$

The increase from the original estimated cost of 40,000.00 is due to the 3<sup>rd</sup> Packer being utilized on Wednesday and Thursday due to the higher volume of recycled material being picked up and the inability of 2 trucks completing the routes and traveling to Raleigh County.

Using current cost to transport (1000.00 per week) and poundage being transported (average 33,248 lbs. per week) cost can be estimated at .03 per pound to transport material to Beckley.

The average household in Charleston recycles approx. 9.5lbs of recyclable materials.

This does not take into consideration tires (2700 tires yearly), e-waste (85.72 tons) and metal goods (115 tons). \*\*

Currently 19.5 % of customers recycle. The national average is 34.5% \*. As participation increases, so do operating cost. The chart shows a significant increase. The amount of additional trucks and manpower needed can only be estimated. However it is expected to drastically affect operations of the refuse department unless the additional equipment and personnel are provided.

\*US EPA study released 2014

\*\*Per Landfill Engineer Report



Estimated cost to recycle and continue to go to Raleigh County

Participation	cost per lb to transport	Customers Recycling	Average lbs weekly	weekly cost to transport	Annual cost to transport
19.50% current	0.03	3442	33248	997.44	\$51,866.88
34.50% nat.aver.	0.03	6377	60582	1817.46	\$94,507.92
50%	0.03	9242	87799	2633.97	\$136,966.44
75%	0.03	13863	131698	3950.94	\$205,448.88
100%	0.03	18484	175598	5267.94	\$273,932.88

Annual cost does not take into consideration the need for additional trucks and manpower

Average lbs weekly	Average lbs per truck	total loads to RC Landfill
33248	6640	5
60582	6640	9
87799	6640	13
131698	6640	20
175598	6640	26

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## Curbside Recycling Participation Study

### Summary:

The current method used to collect recycling is working. We have talked to the Raleigh County facility and they are pleased with the efforts we have made to clean up our recycling stream. While going to Beckley is not the most desirable means to dispose of recycling, it is the only option we have at this time.

If and when participation increases adjustments will need to be made to operations.

We have been in communications with the Kanawha County Solid Waste Authority and the WV DEP offices. We do not see in the near future any solution to the way we are handling our recyclables. We will continue to meet the guidelines as set forth by the State of WV and transport materials to Raleigh County.