



2010 - 2011



**RADFORD
UNIVERSITY**

ANNUAL RECYCLING REPORT



Executive Summary

Radford University continues to pursue new recycling options and enhance current operations at every opportunity. Recycling this year has proved very successful with higher construction material reuse and higher scrap metal recycling levels resulting in a record 51.68% recycling rate in comparison to last year's rate of 31.47%. Corrugated cardboard increased in the overall tons recycled and this is the second straight year that RU has achieved its highest recycling rate ever. Reflected below is a snapshot of the universities overall recycling statistics for fiscal year 2011:

Annual FY2011 Recycling Rate:		
51.68%*		
Total Recyclables: 1355.10 Tons	Total Solid Waste: 1266.88 Tons	Composting: 66.54 tons
Containers: 15.29 tons	Mixed Paper: 70.7 tons	Corrugated Cardboard: 91.23 tons

Using a simple calculation, by diverting 1355 tons of recyclables from the local landfill, Radford University had a cost e avoidance of \$43,360 in just tipping fees. This does not take into account, fuel, items that received a rebate, or any other costs.

The following snapshot derived from the Environmental Protection Agency's (EPA) WAste Reduction Model (WARM) Calculator reflects figures specifically from RU's three main recycling categories (Containers, Mixed Paper, and Corrugated Cardboard) with composting below:

- Total Change in Green House Gas (GHG) Emissions: **-725** MTCO₂E (Metric Tons of CO₂ Equivalent)** compared to **-735** MTCO₂E the previous fiscal year with a difference of **-10** MTCO₂E
- Total Change in Energy Use: **-6,095** million BTU** compared to **-6,237** the previous fiscal year with a difference of **-142** million BTU

(This is equivalent to 57 households' Annual Energy Consumption compared to 58 the previous fiscal year with a difference of 1 households); 1,051 Barrels of Oil (compared to 1,075 barrels of Oil the previous fiscal year with a difference of 24 barrels); or 49,038

Gallons of Gasoline (compared to 50,185 Gallons of Gasoline the previous fiscal year with a difference of 1,147 gallons)

- Total Change in Green House Gas (GHG) Emissions for Composting: **-43** MTCO₂E (Metric Tons of CO₂ Equivalent)** (compared to **-42** the previous fiscal year with a difference of **-1** MTCO₂E)
- Total Change in Energy Use for Composting: **6** million BTU** (compared to **5** million BTU's the previous fiscal year with a difference of **1** million BTU)

**Note: Recyclable construction waste may cause the overall annual recycling percentage rate to significantly fluctuate from year to year based on high tonnages recorded.*

***Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.*

(See appendix 1 for a breakdown of recycling categories and weights)

Highlights

- **Recycling**
 - **RU achieved its highest recycling rate ever, 51.68%**
 - **Scrap metal saw a more than four-fold increase with more than 319,000 lbs.**
 - **More than 1,632,000 lbs. of construction materials were reused**
- **Recycling Website**
 - **“Request a Bin” is now available online**

Below are highlights from different events and initiatives from this past year:

RecycleMania

RU competed in a national recycling competition for the third consecutive year achieving a cumulative competition recycling rate of 13.25%. RU increased its corrugated cardboard recycling per person and finished in sixth place in Virginia in the Waste Minimization category. This competition began in 2001 as a friendly competition between Ohio University and Miami University to promote recycling habits in residence halls and dining facilities on campus and has evolved into a nationwide competition between hundreds of schools. The inclusive period for this year's competition was January 23rd thru April 2nd. (See Appendix 2 for final results)

Y-TOSS

RU continues to partner with the YMCA to collect usable goods during student move-out. Y-TOSS is a program designed to collect unwanted items from students when they vacate their residence hall rooms during the Spring Semester. A preview sale of the donated items for RU faculty, staff, and students is held the following August. This year's program yielded a total of 298 donated items, with a total weight of 10,209 lbs. (5.10 tons). (See appendix 3 for a detailed list of donated items)



Tornado Relief Drive

On April 8th, a tornado touched down in neighboring Pulaski County causing significant damage. The Recycling department assisted the local community by providing humanitarian support for a campus wide Tornado Relief drive from April 14th thru April 22nd to collect household goods and clothing to assist those in need.

Composting

Full scale composting operations at Dalton Dining Hall continued throughout the majority of this fiscal year yielding a total of 67 tons of compostable material. Radford University will continue to explore new and alternative options in composting and waste reduction as this is still an emerging field in Southwest Virginia.

Zero Waste Events

RU launched a total of three zero waste events this fiscal year diverting a total of 1,860 lbs. of compostable waste from the local landfill resulting in an average zero waste event recycling rate of 98%. (See appendix 4 for an overview of these events)

Fall 2010 New Student Move-In

Cardboard drop sites were designated outside all residence halls; each site was identified with a banner type sign. Hauling trailers were used to move the cardboard to the compactors for recycling. By closely monitoring key move-in dates and containers that are hauled, staff can consistently estimate cardboard tonnage during this phase (see figures below):

- 2008 – Cardboard recycled: 6.74 tons Landfill waste: 8.68 tons
- 2009 – Cardboard recycled: 4.81 tons Landfill waste: 10.25 tons
- 2010 – Cardboard recycled: 6.80 tons Landfill waste: 8.08 tons

E-Waste

The recycling department continues to stage and recycle all campus e-waste streams with responsible vendors. Once each year, the Apple Computer Company recycles e-waste items from campuses nationwide. This fiscal year Apple Computer recycled a total of 14 pallets of e-waste from RU totaling 9,840 lbs.



Recycling Website

A new on-line recycling bin request form was added to the recycling website this year. This allows users to request a recycling bin specific for their needs in a more accurate and timely manner.

Recycling & Special Events

The Recycling Department was proactive in supporting various recycling events campus wide this year. Activities include the “Bonnie Day’s of April”; this is a weeklong event at the Hurlburt Student Center comprised of a variety of activities hosted by various student groups. Other events include, Highlanderfest, Club Fair Day, sporting events at the Radford University Dedmon Center complex, and American Recycles Day, at this specific event the RU Environmental Club members promoted recycling by hosting a

contest referred to as “Cans for Cause” in which participants tossed recyclable containers into recycling collection bins and received a prize for their participation.

Earth Day

On April 20th, Radford University recognized the 41st anniversary celebration of Earth Day and many departments on campus participated. The Sustainability and Recycling departments set up static displays to educate and highlight their programs. The RU Environmental Club was also represented at this event. Outdoor recycling containers were provided for this huge event. In a continuing tradition, a tree was also planted on the Heth lawn near Young Hall in commemoration of this special day.



Construction Waste Recycling

The Recycling Department continues to serve as a liaison between designated contractors and various recycling vendors to recycle construction waste which typically includes cardboard from unpackaged building materials to various metals like steel, aluminum, copper, and brass. This year’s major construction recycling includes scrap metal and cardboard recycling from Jefferson and Madison Residence Hall renovation projects and scrap metal recycling at various mechanical rooms as air conditioning units and general plumbing was upgraded.

Future Plans

A number of first time initiatives have occurred this past academic year, the coming years will focus on improving on those successes and creating additional initiatives. Initiatives and opportunities will continue to evolve as increased awareness contributes to the amount of materials recycled and as the recycling market provides additional recycling streams. Some of the future initiatives being considered:

- Continue to evaluate expanding from recycling plastics resin codes #1 and #2 to plastics #1 thru #7.
- Develop a “Program-in-a-box” to educate and assist Residential Life staff to launch programmed events to raise recycling awareness for the annual Recyclemania Competitions and beyond.
- Evaluate new opportunities in recycling as they become available, one example would be ceiling tile recycling. Search for new markets for recyclables in a manner that mitigates financial expenditures and our carbon footprint.

- Evaluate options to reuse general office supplies by maintaining a central location on campus to stage donated supplies for reuse by faculty and staff.
- Develop new strategies to educate and increase awareness of proper procedures by students in residence halls with trash chutes.

Closing Remarks

Radford University continues to explore new and improved methods of recycling. RU has now completed a campus wide assessment to determine the university's carbon footprint, culminating in RU's first Greenhouse Gas Inventory. are underway to develop RU's first Climate Action Plan which includes campus recycling and waste figures and their associated green house gases. RU continues to strive and excel as a model for sustainable practices in the Commonwealth.



Appendix 1

Radford University Annual Recycling Rate

51.68%



Fiscal Year 2011 (Category Weights in lbs.) 1 Jul 10 - 30 Jun 11	Total
Cans/Glass/Plastic	30,580
Mixed Paper	141,409
Cardboard	182,460
Composting	133,080
Scrap Metal	319,642
Electronic Waste	21,785
Toner Cartridges	3,110
Fixer	770
Used Motor Oil	3,331
Used Antifreeze	784
Used Kitchen Grease	30,134
Auto & Misc Batteries	1,640
Tires (all sizes)	3,000
Pallets	129,881
Construction Material (Reused)	1,632,000
Yard Waste (Reused)	66,340
Y-TOSS (Items donated at move-out)	10,209
Total Overall Recyclables (lbs.)	2,710,205
Total Overall Solid Waste (lbs.)	2,533,770

Appendix 1 continued:

Radford University Archived Recycling Rates



Year	Solid Waste (lbs.)	Recyclables (lbs.)	Recycling Rate
CY-1992	2,598,000	452,000	14.80%
CY-1993	2,454,000	588,000	19.30%
CY-1994	2,650,000	770,000	22.50%
CY-1995	2,676,000	626,000	19.00%
CY-1996	2,780,000	438,000	13.60%
CY-1997	2,708,000	522,000	16.20%
CY-1998	2,780,000	474,000	14.60%
CY-1999	3,176,000	382,000	10.70%
CY-2000	2,277,484	265,701	10.50%
CY-2001	2,257,834	231,365	9.30%
CY-2002	2,493,957	274,597	9.90%
CY-2003	2,668,080	126,052	6.00%
CY-2004	2,932,220	206,351	7.90%
CY-2005	3,252,040	247,980	7.00%
CY-2006	3,489,440	368,149	9.50%
CY-2007	3,260,444	569,281	14.90%
CY-2008	3,143,610	1,185,328	27.38%
FY-2009	3,158,270	1,136,487	26.46%
FY-2010	2,262,640	1,038,887	31.47%
FY-2011	2,533,770	2,710,205	51.68%
Total	55,551,789	12,612,383	

Note: The recycling rate chart reflected above displays annual figures based on the calendar year (1 Jan – 30 Dec) period. All future recycling rate charts after 2008 are reflected based on the fiscal year (1 Jul – 30 Jun) period to better align with fiscal and academic calendars.

Appendix 2

Recyclemania 2011 – Final Results (Shown in US Pounds)

Week	Grand Champion		Per Capita Classic		Waste Minimization		Gorilla Prize	
	Weekly recycling rate (%)		lbs/ person		lbs/ person		lbs	
	2011	2010	2011	2010	2011	2010	2011	2010
1	11.31%	37.76%	0.89	0.99	7.90	2.63	9,160.00	9,780.00
2	11.78%	16.35%	0.92	1.15	7.85	7.02	9,480.00	11,300.00
3	9.23%	17.06%	0.80	0.93	8.71	5.44	8,240.00	9,140.00
4	12.22%	28.04%	0.86	1.11	7.05	3.98	8,840.00	10,980.00
5	11.78%	18.39%	0.83	1.42	7.09	7.72	8,560.00	13,980.00
6	9.06%	16.94%	1.10	1.45	12.16	8.54	11,300.00	14,240.00
7	13.12%	18.57%	0.95	1.35	7.24	7.28	9,740.00	13,320.00
8	18.32%	45.55%	1.01	1.35	5.49	2.97	10,320.00	13,320.00
9	18.05%	9.68%	1.12	1.00	6.19	10.34	11,460.00	9,860.00
10	21.63%	12.53%	1.22	0.96	5.64	7.65	12,520.00	9,440.00

Targeted Materials Competitions

Week	Paper		Corrugated Cardboard		Bottles and Cans		Food Service Organics	
	lbs/ person		lbs/ person		lbs/ person		lbs/ person	
	2011	2010	2011	2010	2011	2010	2011	2010
1	0.34	0.47	0.45	0.43	0.11	0.09	0.30	0.00
2	0.34	0.47	0.48	0.57	0.11	0.11	0.38	0.00
3	0.27	0.47	0.40	0.35	0.13	0.11	0.35	0.00
4	0.27	0.47	0.50	0.46	0.09	0.18	0.38	0.00
5	0.27	0.82	0.42	0.41	0.14	0.18	0.30	0.00
6	0.42	0.82	0.54	0.48	0.14	0.15	0.37	0.00
7	0.42	0.82	0.39	0.38	0.13	0.14	0.19	0.00
8	0.42	0.82	0.45	0.38	0.13	0.14	0.56	0.00
9	0.65	0.43	0.36	0.42	0.10	0.14	0.42	0.00
10	0.65	0.41	0.46	0.41	0.11	0.14	0.47	0.75

Appendix 3

2011 Y-TOSS Results

2011 Y-TOSS Recycling Weight Estimates



Item Description	Qty	Unit Weight	Total Weight (lbs.)
4' x 6' Rug	10	6	60
5' x 7' Rug	17	9	153
8' x 10' Rug	12	20	240
9' x 14' Rug	10	32	320
Small Bath Rug	20	2	40
Mattress	2	55	110
Futon Mattress only	1	40	40
Bed Headboard	4	57	228
Ottoman / Footrest	3	41	123
Folding Chairs	7	16	112
Computer Chairs	10	32	317.6
Desk/Hutch	2	146	292
Night Stand	2	60	120
Bookcase / Shelves	3	110	330
Wood Shoe Rack	6	25	150
Misc Storage Bins	24	9	216
Lamps	19	3	62.89
Microwave	1	50	50
Vacuum	4	22	88
TV (13")	3	8	24
TV (19")	5	12	60

TV (25")	3	14	42
TV Stand	4	36	144
Refrigerator - Tall	7	72	504
Refrigerator - Short	5	43	215
Desk Fan	9	8	72
Box Fan	15	14	210
Mirror	12	9	108
Waste Can	36	3	108
Box - Small House-wares	1	135	135
Box - Clothes (Usable)	17	135	2,295
Box - Clothes (Textiles)	9	135	1,215
Box - Linens	8	135	1,080
Box - Toys	1	135	135
Box - Shoes	3	135	405
Box - Food	1	135	135
Box - Misc Items	2	135	270
			10,209

Appendix 4

RU Zero Waste (“ZeWe”) Events

Estimated Statistics:

10/2/2010 – RU Welcome Back Reunion / Soccer Tailgate (Cupp Stadium)

Trash = > 1 lbs.

Recycling = 8.2 lbs.

Compost = 39.2 lbs.

Total poundage diverted from the landfill = 47.4 lbs.

Diversion rate = 97.93%

1/29/2011 – RU Homecoming / Chrusties Celebration & Dread the Red BBQ (Dedmon)

Trash = 2 lbs.

Recycling = 70 lbs.

Compost = 90 lbs.

Total poundage diverted from the landfill = 160 lbs.

Diversion rate = 98.77%

5/12/2011 – RU Staff Picnic (Dedmon, Lot Z Parking Lot)

Trash = 25 lbs.

Recycling = 3 lbs.

Compost = 1,650 lbs.

Total poundage diverted from the landfill = 1,653 lbs.

Diversion rate = 98.51%