

STATE OF MISSOURI ANNUAL RECYCLING REPORT



Acknowledgements

Published by the State of Missouri, Office of Administration, Division of General Services

*Special thanks to the **Department of Natural Resources' - Solid Waste Management Program, Missouri Interagency Recycling Committee (MIRC), Missouri's Market Development Program, and department recycling coordinators and purchasing staff** who contributed to this report. The Missouri State Recycling Program thanks all **state employees** for their ongoing efforts to reduce, reuse, recycle, and buy recycled-content products.*

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*A special thank you to the **Department of Economic Development's Energy Division** for calculating the economic and environmental savings of state government recycling (see p.14).*

Cover photos (clockwise from upper left corner): Jefferson City High School Green Team at Earth Day; Jack Pruitt baling stretch wrap; MO Interagency Recycling Committee members at Earth Day, Michaela Krause with a bale of stretch wrap; John Sooter preparing carpet tiles for recycling; Karen Boeger using the water bottle refill station; and Glenda Vanderfeltz at America Recycles Day event





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I am honored to present the Missouri State Recycling Program's Annual Report.

In accordance with RSMo 34.031, the Office of Administration is submits the Fiscal Year 2016 (FY16) Annual Recycling Report to summarize state government's accomplishments in the areas of recycling, waste reduction, and recycled content product procurement for the period of July 1, 2015 through June 30, 2016.

State law directs state agencies to implement policies for recycling, waste reduction, and procurement of recycled content products. The Missouri State Recycling Program, administered by the Office of Administration, Division of General Services, is responsible for assisting state agencies in these areas. The State Recycling Program works cooperatively with the Missouri Interagency Recycling Committee (MIRC) to facilitate recycling and waste reduction by state employees.

As a result of the efforts of state employees and MIRC, the Recycling Program continues to register solid financial returns and steady development of the State's recycling collection infrastructure. State employees continue to reduce the amount of waste generated at state facilities and the related costs of waste disposal. Recycling and waste reduction highlights from FY16 include:

-  11,872,971 pounds of materials recycled.
-  213 billion BTUs of energy saved from total pounds of material recycled. This is equivalent to the annual energy consumption of 1,858 homes.
-  \$13,316,704 of recycled-content products purchased.
-  \$156,226 in revenue generated for the state recycling fund.
-  \$274,303 in waste disposal costs avoided.

Waste reduction achievements of several agencies are summarized on pages 16 – 21 of this report. We appreciate the support of the General Assembly in our recycling efforts.

Sincerely,

A handwritten signature in black ink that reads "Cynthia A. Dixon".

Cynthia A. Dixon
Acting Division Director

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I. Missouri State Recycling Program Organization

What is the Missouri State Recycling Program?

The Missouri State Recycling Program (**MSRP**) was established in 1989 when legislation added sections 34.031 and 34.032 to Chapter 34 of the MO Revised Statutes. The purpose of the **MSRP** is to assist State of Missouri government agencies with:

- **Procurement** of products manufactured with recycled materials.
- Coordinating **waste reduction** strategies.
- Overseeing the **collection** of recyclables by establishing recycling services contracts.

Who is the MSRP?

There are three components to the **MSRP's** organizational chart.

The **state recycling coordinator** is dedicated to the planning and administration of recycling and waste reduction activities.

The **Missouri Interagency Recycling Committee** serves an important purpose by providing input on recycling initiatives and communicating with state employees about various recycling programs.

The efforts of **state employees** to recycle ensures the success of any recycling initiative. State employees that recycle are considered a part of the **Missouri State Recycling Program**.



Office of Administration | General Services | 573-751-3384

What is the Missouri Interagency Recycling Committee?

The Missouri Interagency Recycling Committee (**MIRC**) was established in 1994. It was recognized the **MSRP** needed a way to communicate procurement and recycling policies throughout state government. **MIRC** is a vital component of the **MSRP** and meets regularly to discuss recycling collection, waste reduction, recycling market conditions and recycled product procurement.

Who is MIRC?

The Recycling Committee is composed of representatives from various state departments (executive, judicial, and legislative). To learn more about recycling in your department, please contact your **MIRC** member.

A list of members is located on the internet at <http://oa.mo.gov/general-services/state-recycling-program/missouri-interagency-recycling-committee-mirc>

2017 Missouri Interagency Recycling Committee (MIRC)

MIRC members function as the core of the Missouri State Recycling Program (MSRP). The work of committee members varies from providing important input regarding MSRP projects such as recycling contracts and communicating to employees in their department about recycling initiatives.

Each year MIRC members are involved with the annual recycling award process and completing an annual recycling questionnaire. The questionnaire is a key component for collecting data for the annual recycling report. Results of the FY17 recycling questionnaire can be found on pages 20, and 24 - 27 of this report. The annual reporting process provides an important assessment of state government recycling efforts each fiscal year.



L. to R. Sitting: Debbie Davis (Credit Union), Kristin Tipton (EIERA), Sharman McPherson (DPS-MOANG), Beth Lambert (DOC), Angie Bisges (OSCA), Barbara Li (MDC) | **Standing:** Kevin Baclesse (DSS), Karen Wood (MDA), Greg Bernskoetter (DED), Sandy Withers (DESE), Rhonda Dormire (DHSS), Stacia Steinman (DPS-DO), Mike Haake (DMH), Tanya Eddy (Insurance), Rob Didriksen (OA), Jeff Thomas (MCHCP) | **Not Pictured:** Jonathan Thompson (OA), Glenda Vanderfeltz (OA), Alan Clements (MDA), Jim Aslakson (MDC), Jennie Rees (MVE), Ron Doerhoff (DED), Lisa Morris (DESE), Leroy Wade (DHE), Kim Sandbothe (Finance), Leann Lorts (PR), Terry Doerhoff (DOLIR), Anita Stansfield (DNR), Jeff Heisler (DNR), Deb Goodman (DPS-MOANG), Brenda Davis (DOR), Gary Burlingame (DOR), Mitch Kolb (Lottery), Melina Schepferle (STC), Kevin Kelly (MoDOT), Jon Varner (MoDOT), Ron Childs (MOSERS), Michelle Hallford (Governor), Kerry Kroll (AGO), Mark Henley (Auditor), Tom Nield (SOS), Nancy Tension (Treasurer), Don Dickey (Supreme Court), Greg Sandbothe (House of Reps), Jon Burton (Senate), Barbara Morrow (HSSU), Steve Mudd (HSSU), Hiedi Carlin (MSSU), Craig Darrrough (MWSU), John Viau (NWMSU), Angie Mitchell (SEMO)

In Memoriam: Gary Stoll – MIRC Member

Missouri Interagency Recycling Committee member Gary Stoll passed away unexpectedly in March, 2017. Gary represented the Department of Corrections on MIRC and his influence on the committee will be greatly missed.

Gary was a champion of recycling at work and at home. He thought of ways to reduce waste in ways that many would never consider. One great example of this was his determined effort that the contract providing batteries to offenders also include a requirement that the vendor take back used batteries to be recycled.

Gary also made sure to distribute information to employees on how they could recycle various items at home. The Missouri State Recycling Program lost a tremendous recycling advocate in 2017. Gary's leadership, sense of humor, thoroughness, and resolve to reduce waste will be deeply missed.



II. FY17 Overview

FY17 and FY18 Goals

FY17 Goals

Goal #1: Create a new process to measure paper procurement.

Result: This goal was developed to transition to new data collection strategies due to the implementation of the State's new online procurement system. MissouriBUYS will transform the way state agencies purchase commodities and consequently the way that information is measured. Full implementation of MissouriBUYS was postponed so the State Recycling Program utilized existing reports to capture paper procurement data.

Goal #2: Establish a pilot organics recycling service for state agencies in Jefferson City.

Result: The MO State Recycling Program (MSRP) worked closely with an organics recycler throughout FY17 toward this goal. The recycler would not start a collection route without nine locations. MSRP identified four viable state cafeteria locations in Jefferson City that agreed to participate. Unfortunately, the recycler has been unable to secure enough private sector partners to make the pilot program successful. This goal was not accomplished in FY17.

Goal #3: Establish a network of recycling teams at state buildings in St. Louis

Result: The ability to develop the recycling team network in St. Louis has been greatly increased by new contact lists being developed as a result of the recycling survey circulated last summer. This contact list makes it very easy to communicate by building, agency, and department. Messages can now be easily customized for different audiences. State Recycling was able to communicate information to recycling teams in St. Louis very efficiently in FY17. Recycling teams are comprised of the various stakeholders in the recycling process including employees, facilities management, custodial staff, and the recycling services contractor.

FY18 Goals

1. The Missouri State Recycling Program will explore options to promote Sustainable Materials Management strategies by partnering with State Surplus Property to encourage reuse of state property.
2. Establish baseline measures for the following:
 - a. Percentage of state employees familiar with the State Recycling Program.
 - b. State employee rating of the program.
 - c. Percentage of employees that view the State Recycling Program as a valued partner.

FY17 Overview

Recycling Rankings

Where Does All of This Information Come From?

Each year the State Recycling Program distributes the annual recycling questionnaire to state agencies through the MO Interagency Recycling Committee (MIRC). The questionnaire serves several purposes which include:

- Informing state employees and agencies about available recycling services.
- Communicating to employees the amounts of materials recycled via state contracts as well as dollar amounts of recycled products purchased from state contractors.
- Requesting collection data to quantify amounts of materials recycled.
- Requesting procurement data to quantify dollars spent on recycled-content products.

A summary of the results of this information gathering process is provided on this page. For more detailed information please see appendices A and B.

Top 3 Number of Gallons Recycled		
1.	Motor Oil	59,209
2.	Cooking Oil	4,430
3.	Gasoline	2,228

Top 3 Number of Items Recycled		
1.	Fluorescent Lamps	99,271
2.	Printer Cartridges	11,048
3.	Pallets	9,055

Recycled-Content Product Purchases Over \$100,000		
1.	Metal Products	\$4,227,350
2.	Paper Products	\$3,990,616
3.	Office Supplies	\$1,012,429
4.	Plastic Bags	\$839,773
5.	Remanufactured Printer Cartridges	\$431,340
6.	Cardboard Boxes	\$259,514
7.	Carpet / Construction Materials	\$218,384

Scrap Materials Where More Than 50,000 pounds Was Recycled		
1.	Scrap Metal	4,843,614
2.	Mixed Paper	3,466,469
3.	Cardboard	1,736,690
4.	Tires	771,035
5.	Tin / Steel Cans	751,253
6.	Electronics	306,009
7.	Food / Yard Waste	253,951
8.	Commingled Materials	212,042
9.	Aluminum	110,535
10.	Glass	125,366
11.	Plastic	92,213
12.	Rechargeable Batteries	54,840

State Agencies Recycling More Than 30,000 Pounds		
1.	MoDOT	4,567,087
2.	Department of Corrections	2,092,097
3.	Department of Revenue	630,803
4.	Northwest Missouri State University	609,410
5.	Department of Mental Health	518,308
6.	Department of Public Safety	324,921
7.	Department of Natural Resources	249,502
8.	Secretary of State	207,644
9.	Office of Administration	162,674
10.	Department of Conservation	79,591
11.	Department of Agriculture	39,765
12.	Supreme Court	33,561

FY17 Overview

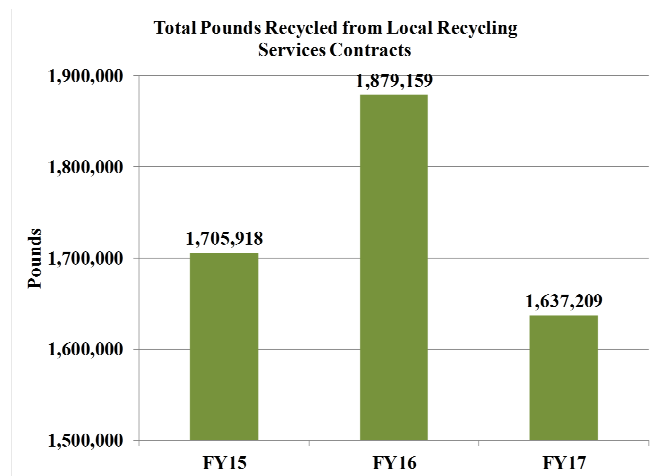
Local Recycling Services

During FY17 the Missouri State Recycling Program administered three local recycling services contracts. State agencies in Jefferson City and Kansas City had access to contractual recycling of office paper and cardboard. In the Jefferson City and St. Louis areas, the contracts provided state agencies with an option to recycle commingled materials such as plastic bottles and aluminum cans.

There was a 242,550 pound decrease from FY16 to FY17 for cumulative collection totals for the three local contracts (Jefferson City (JC), Kansas City and, St. Louis).

The biggest drop for FY17 occurred with mixed paper in JC where there was a decrease of 144,507 pounds from FY16 to FY17. Possible reasons for the drop:

- Increased use of onsite and/or offsite document destruction services.
- Decreased use of paper due to increased use of e-forms and online storage of documents. This observation is backed up by the large number of file cabinets that are posted to the surplus property listserv.
- 20,280 pounds of paper was credited to Conservation Department and normally would have been a part of the aggregate number for the JC contract.



Reporting for JC cardboard dropped 108,110 pounds from FY16 to FY17. This happened as a result of reporting changing from estimating weight to actual weight of cardboard collected. Actual weights were reported starting in February, 2017.

The other change that occurred with reporting in February, 2017 was the weight of commingled cans/bottles was included as part of the weight of cardboard reported. In other words the actual weights being reported now include the weight of cardboard, cans, and bottles combined. Prior to February, 2017 the weight of cans and bottles was also estimated and reported separately.

FY17 Summary of Total Pounds Collected from Local Recycling Contracts

	Kansas City	St. Louis	Jefferson City	Material Totals
Mixed Paper	6,620	—	1,107,862	1,114,482
Cardboard	8,026	—	416,929	424,955
Commingled	3,070	67,840	—	70,910
Aluminum	—	—	11,709	11,709
Plastic	—	—	12,574	12,574
Steel (tin) Cans	—	—	2,579	2,579
Total Pounds	17,716	67,840	1,551,653	1,637,209

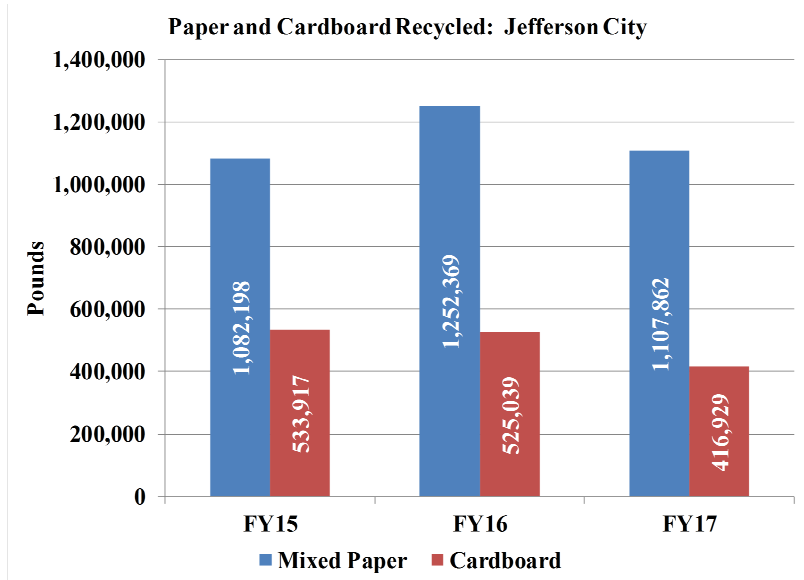
FY17 Overview

Local Recycling Services

Jefferson City

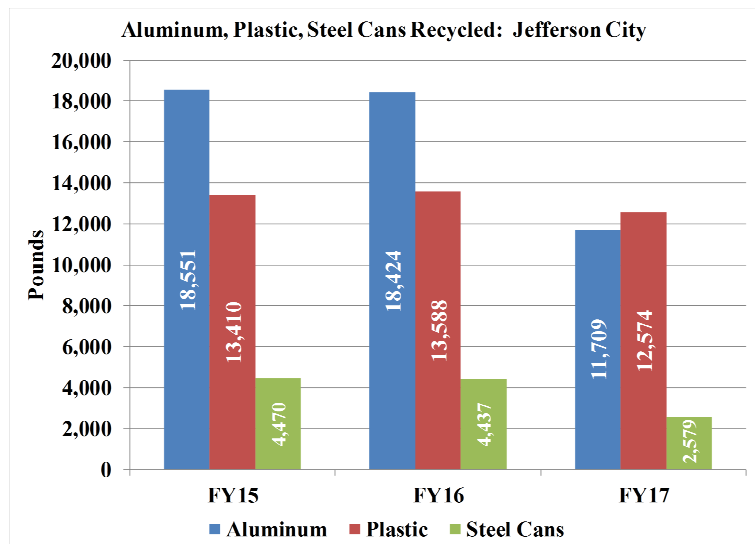
The Jefferson City contract experienced significant changes midway through FY17. A long-time recycling contractor, Kingdom Projects, discontinued its recycling services business in December, 2016.

There were several disruptions to collections during this time and a new contract was awarded with the transition to the new contract taking place during January, 2017.



The new contractor provided recycling dumpsters for collection of loose cardboard and bags of cans and plastic bottles which allowed the State Recycling Program to remove its fleet of recycling dumpsters from about 50 locations throughout Jefferson City. This was a plus for the State Recycling Program as management of the recycling dumpsters became the contractor’s responsibility.

The new contract also resulted in a different way of reporting the amount of materials recycled. Under the old contract the volume of cardboard, cans, and bottles collected was reported and then a weight was estimated. Under the new contract the State is getting actual weights of material collected and no longer relying on estimated weights. The actual weights received are an aggregate number for



cardboard, cans, and bottles combined. Starting in FY18 the weight of cardboard, cans, and bottles will be combined and reported as commingled material recycled.

Due to the new reporting method the amount of material recycled in Jefferson City in FY17 dropped compared to FY16.

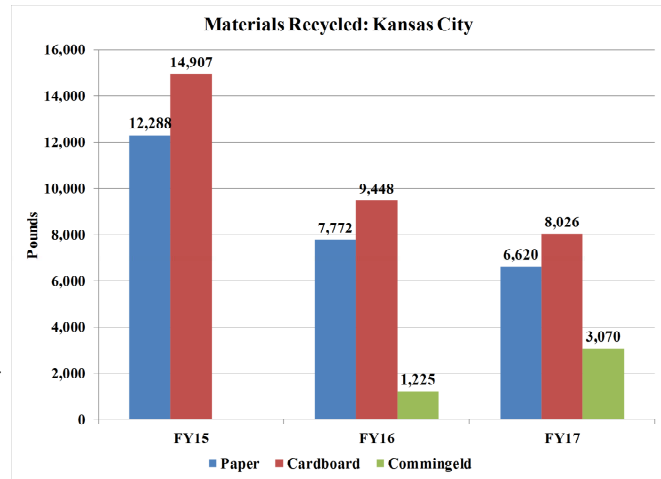
FY17 Overview

Local Recycling Services

Kansas City

In FY17 the State Recycling Program continued to work with the Fletcher Daniels State Office Building and a leased property located at 3717 S Whitney Ave to provide recycling services.

The total amount of paper and cardboard recycled at the Fletcher Daniels State Office Building in FY17 was 14,646 pounds. Total amount of commingled material recycled at 3717 S. Whitney in FY17 was 3,070 pounds. (see chart to right)



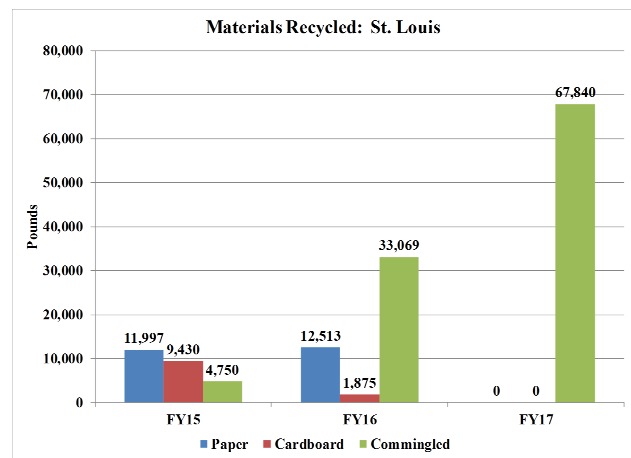
The State Recycling Program strives to be informed about recycling activities throughout state government; however, there are likely many recycling programs that are not known to State Recycling. With this being said, there are probably other state government offices where recycling is happening in the Kansas City area.

St. Louis

A new contract for recycling services in St. Louis was awarded in May, 2017.

The contract provides a recycling dumpster collection service where all materials (paper, cardboard, cans, and bottles) are collected in the same container. This is also known as commingled or single-stream recycling.

Consequently, in the chart to the right there is no weight information for FY17 for paper or cardboard since it was collected as one “stream” of material.



There were a total of nine state agency locations using the contract including - five state-owned buildings managed by the Office of Administration; two Conservation Department locations; one Natural Resources location; and one Department of Corrections location.

With the new contract the State transitioned from a cart collection system to a dumpster collection system which is a more economical way to collect materials for recycling. This is especially important in a geographically large area such as St. Louis where there is considerable distance between pickups.

The new contractor provided consistent pickups which resulted in a whopping 43% increase of material being recycled compared to FY16.

FY17 Overview

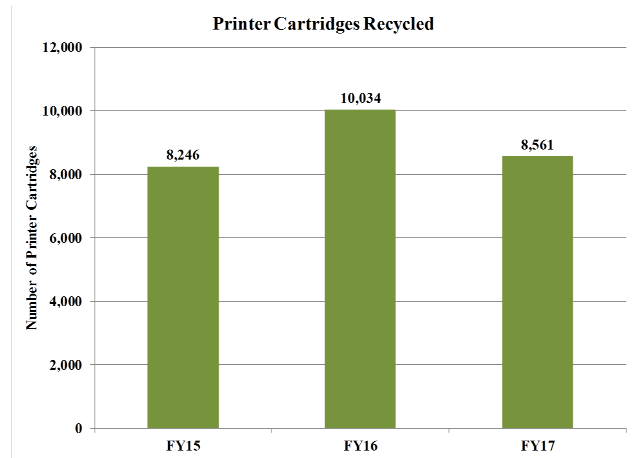
Statewide Recycling Services

No-Cost Services

The Missouri State Recycling Program administered two no-cost statewide recycling services for state agencies in FY17. These convenient services allowed state employees to recycle printer cartridges or rechargeable batteries.

Printer Cartridge Recycling

State agencies have numerous options for recycling printer cartridges. The chart to the right details only those recycling activities where state agencies used the State Recycling Program's printer cartridge collection service or Missouri Vocational Enterprises' (MVE) service. Agencies that returned printer cartridges to the "original equipment manufacturer" (OEM) are not accounted for in this chart. The total number of printer cartridges recycled or remanufactured through MVE and the State Recycling Program decreased 15% in FY17 as compared to FY16.

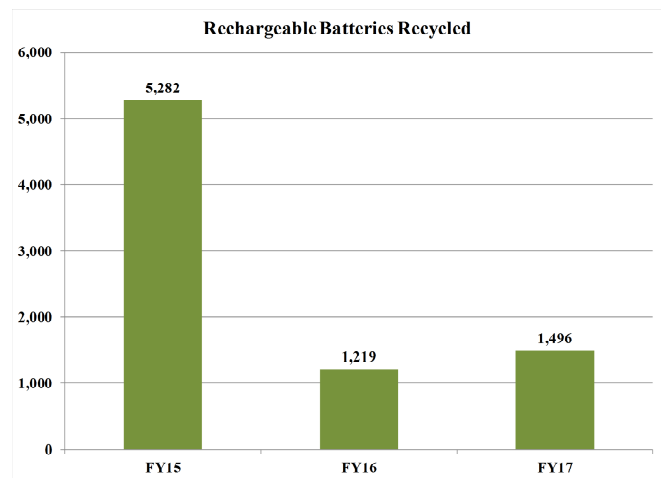


Part of this drop in collection numbers can be attributed to a load of five pallets of printer cartridges that were shipped but reporting from the company was never received.

Rechargeable Battery Recycling

Nine departments utilized the rechargeable battery recycling service in FY17 recycling 1,496 pounds of rechargeable batteries.

There was a big drop in collection amounts in FY16 and FY17 as compared to FY15. This may be attributable to the number of inactive locations increasing from eight (FY15) to 16 (FY16) to 20 (FY17). An inactive location means the location is still registered, but did not ship any batteries during the reporting period.



Over the past ten years, Missouri state government efforts have resulted in the recycling of 34,364 pounds of rechargeable batteries. Twenty-five locations throughout Missouri utilized this service in FY17.

FY17 Overview

Statewide Recycling Services

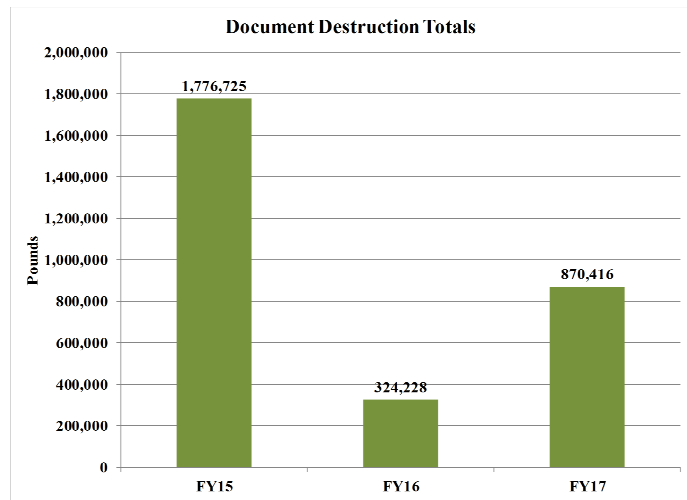
Fee-Based Services

The Missouri State Recycling Program administered three fee-based contracts for document destruction, tires, and lamp recycling.

Document Destruction Contract

FY17 marked the 1st full fiscal year this contract was in effect. The contract only covers the central, northwest, and Kansas City regions of the state. This explains the lower collection amounts compared to FY15.

Cost for services varied and was based on document volume and the location of the state agency.



Tire Hauling & Processing

The “Scrap Tire Hauling, Processing, and Recycling Services” contract went into effect in November, 2016. Prior to this contract many state agencies had utilized Missouri Vocational Enterprises (MVE) for tire recycling services. MVE shutdown its tire recycling operation in Summer, 2016.

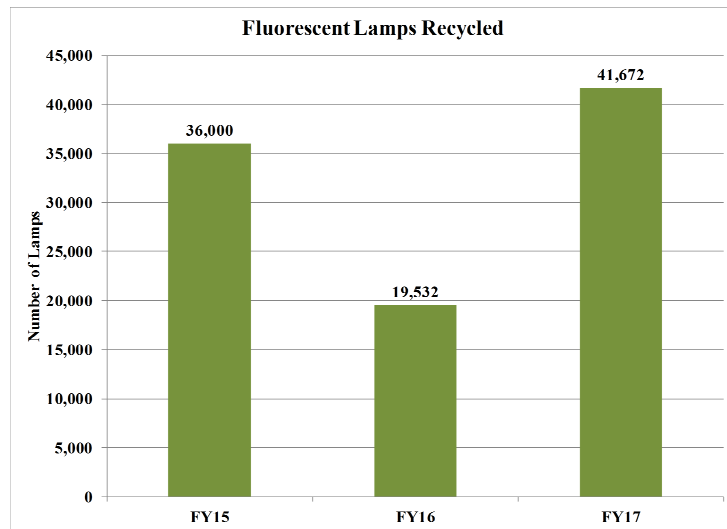
From November through the end of FY17 (June, 2017), for a fee contractors hauled 420,306 pounds of tires or 20,015 “passenger tire equivalents” (PTEs). PTE is used as a way to measure tires. Each PTE is considered to weigh 21 pounds.

Lamp & Ballast Recycling Contract

This contract allowed for the recycling of fluorescent lights and related equipment such as ballasts. In addition non-rechargeable batteries could be recycled through this service.

Due to the mercury contained in fluorescent lighting, used fluorescent bulbs are regulated as universal waste in Missouri. Special packaging, handling, and labeling requirements govern the disposal of fluorescent lighting.

The number of lamps recycled more than doubled from FY16 to FY17. This is likely due to demolition of buildings at the Fulton State Hospital and several projects where old lighting



was replaced with LED (light emitting diode) lamps. The State Recycling Program covered costs for several state agencies to recycle fluorescent lamps in FY17.

FY17 Overview

Measuring the Economic and Environmental Savings of Materials Recycled ¹

The Department of Economic Development, Division of Energy utilized the Environmental Protection Agency's Waste Reduction Model (WARM) as a way to measure the economic and environmental savings of materials recycled by state agencies in FY17.

Energy Reductions (Economic Benefits) Related to Recycling

The WARM model estimates the energy saved from the modeled recycling waste stream of the State of Missouri represents an estimated 213,640 million BTUs saved versus the waste stream entering a land fill. **This is equivalent to:**

- **Conserving 2,523 households' annual energy consumption, or**
- **Conserving 49,946 barrels of oil, or**
- **Conserving 2,335,744 gallons of gasoline**

Carbon Dioxide Reductions (Environmental Benefits) Related to Recycling

The green-house-gas emissions analysis from the WARM model estimates the modeled recycling waste stream of the State of Missouri represents a reduction of approximately 22,040 metric tons of carbon dioxide equivalent versus the waste stream entering a land fill. **This is equivalent to:**

- **Removing annual emissions from 4,640 passenger vehicles, or**
- **Conserving 2,480,050 gallons of gasoline, or**
- **Conserving 918,342 cylinders of propane used for home barbeques**

The WARM model helps us to better understand the benefits of alternative end-of-life waste management decisions such as recycling. This model is a lifecycle assessment tool which considers the energy usage and greenhouse emissions from raw material extraction until product disposal. This includes material assessment, all product transportation, manufacturing, and disposal. The model compares different disposal scenarios such as recycling, landfill, incinerating, composting, and source reduction.

The WARM model does not account for all materials listed in Appendix A of this report. The above carbon dioxide and energy reduction estimates do not include any of the items listed in the table entitled "Number of Items and Gallons Recycled" (books; cell phones; fluorescent lamps; printer cartridges; fuel/oil filters; pallets; anti-freeze; diesel fuel; gasoline; cooking oil; and motor oil). In addition, the following items from the "Number of Pounds" table in Appendix A are not included in the WARM model calculations: textiles; batteries (rechargeable/non-rechargeable); and ballasts.

1. Department of Economic Development, Division of Energy calculated these estimates utilizing the Environmental Protection Agency's Waste Reduction Model (WARM)



FY17 Overview

Annual Recycling Award

TEAM AWARD: The Missouri State Recycling Program congratulates Brandt Vocational Enterprises (BVE) on its selection for the 2017 team recycling award. BVE is a sheltered workshop program located at Fulton State Hospital (FSH). BVE began the recycling program at FSH in 1997 and over the past 20 years has recycled over 3.5 million pounds of material which would be equivalent to 88 tractor trailer loads or over 4 truckloads per year.

Over the past 20 years BVE's efforts to grow recycling programs have created a very strong recycling culture at FSH. BVE's nominator said, *"Departments and individual workers have changed the way they discard trash, no longer just 'throwing it away'."*



L to R: Chris Holt, Christina Mann, Jeff Galbreath, Pam Leeper, Janie Smith

The Missouri Interagency Recycling Committee was impressed with Brandt Vocational Enterprises long-term commitment to assuring the success of recycling programs at Fulton State Hospital. This commitment along with establishing recycling as a part of FSH's culture were key to BVE's selection as the team recipient of the 2017 State Recycling Award.

INDIVIDUAL AWARD: Chris Terry earned the individual award with a combination of his great passion for recycling and rapport with his fellow employees. Chris's nominator said, *"Chris not only reaches out and coordinates efforts with leaders from various divisions, but strives to maximize productivity while minimizing the time and effort required to keep various recycling systems functioning."*



Sitting: Chris Terry | Front Row L to R: Kevin Klug, Larry Fowler, Diana Kempker, Maggie Eichholz, Donna Stovall | Back Row L to R: Jeff Herigon, Chad Buschjost, Darrell Taube, Eric Lecuru

Chris's leadership with recycling at the Highway Patrol has resulted in Troops throughout Missouri having access to recycling services that would not have been available otherwise. Chris has also made sure that many materials are recovered from the waste stream in a way that ensures maximum scrap value.

The Missouri State Recycling Program appreciates Chris's ongoing, long-term leadership to reduce waste throughout operations at the Missouri State Highway Patrol. p. 15

FY17 Overview

State Agency Accomplishments

State Agency Recycling Efforts Avoid Cost of Waste Disposal

The efforts of agencies statewide resulted in a combined total of **6,395** tons (see Appendix A) of materials recycled in FY17. If this amount of material had been sent to landfills it is estimated the State of Missouri would have paid at least **\$295,513** in waste disposal costs. It is possible to calculate this cost avoidance based on the average tipping fee charged to waste haulers in Missouri. Tipping fees are paid by waste haulers for each ton of trash disposed in Missouri's landfills. The average tipping fee in Missouri was \$46.21² per ton in FY17.

The tipping fee is only one cost of doing business as a waste hauler. In addition to the tipping fee, a waste hauler includes labor and transportation costs in the actual amount charged to its customers. Therefore, utilizing the average tipping fee to calculate cost avoidance represents a conservative estimate.

Over the past 10 years state employees have recycled over 78,000 tons of material saving the State of Missouri over \$3.3 million.

Recycling Internship

Michaela Krause returned for her second year interning with the State Recycling Program after completing her sophomore year at the University of Kansas.

Michaela stepped into the role resuming daily operational duties and working on many other projects.

Michaela took the lead on developing a statewide recycling survey where over 2,700 employees responded — making this the largest response of all surveys distributed by Office of Administration General Services Division.

In addition, Michaela wrote an executive overview of the survey results and made recommendations on how the State Recycling Program could utilize the employee feedback from the survey.

Michaela also helped out with the Missouri Recycling Association conference by developing the State Recycling Program's exhibit and assisting with recycling services for the conference.



Rob Didriksen & Michaela Krause @ MO Recycling Association Conference

Annual Recycling Award Honorable Mentions

The State Recycling Program thanks those who took the time to make a nomination and at the same time wants to recognize the patience, passion, and persistence the nominees have exercised with their efforts to reduce, reuse, and recycle state government waste.

- Department of Health & Senior Services | State Health Lab
- Department of Corrections | Missouri Eastern Correctional Center
- Department of Natural Resources | State Parks - St. Joe State Park

2. Tipping fee information acquired from Environmental Protection Agency's State Measurement Program. Utilizing 2016 average tipping fee as information for 2017 could not be found.

FY17 Overview

State Agency Accomplishments



Rob Didriksen & Nancy Tennison at MORA Conference

State Recycling Conference

The State Recycling Program participated in the Missouri Recycling Association’s 25th Anniversary Conference in 2017. In addition to setting up an exhibit to show state government’s successes with reducing waste, the State Recycling Program partnered with Republic Services, Ripple Glass, and Bluebird Composting to coordinate recycling services for the event. Republic managed the single-stream materials such as cardboard, cans, and plastic while Ripple Glass managed the glass and Bluebird Composting managed the food waste separately.

Earth Day and the Zero Waste Challenge

2017 marked the 10th year the Zero Waste Challenge (ZWC) has taken place at the Department of Natural Resources’ Earth Day event. In 2017 the Jefferson City High School Green Team helped with the ZWC Challenge by setting up containers, hauling materials, and operating the weigh station.

During the Earth Day event, all waste (trash and recycled material) are audited and weighed. In the last ten years, approximately 1,500 pounds of recyclables have been collected. Since the inception of the challenge in 2008, the amount of trash collected has been cut by 64% and the per capita waste (trash and recycled material) generated has been reduced by 40%.

The Department of Natural Resources distributes information to participants prior to the event to promote the ZWC. Ideas like pre-cycling are covered where participants are encouraged to only purchase items that can be recycled at the event.



JC High School Green Team Operating the Scale for the Zero Waste Challenge

One of the long-term goals of the ZWC is to strive for zero waste. The challenge for each year’s participants is to reduce the amount of waste (trash and recyclables) as compared to the previous year.

Zero Waste Challenge Measures	Trash (lbs.)	Material Recycled (lbs.)	Waste (trash + material recycled)	% of Waste Recycled	Headcount (number registered)	Per Capita Waste Generation (lbs.)
2015	110	90.7	200.7	45.2%	1,324	0.15
2016	139.3	90.8	230.1	39.5%	1,484	0.16
2017	107.6	122.0	229.6	53.1%	1,300	0.18

FY17 Overview

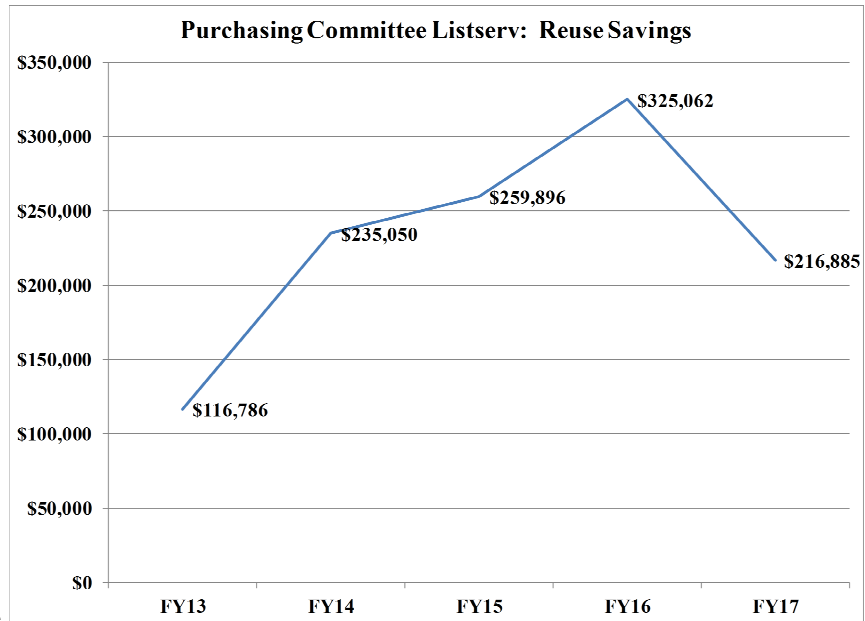
State Agency Accomplishments

Surplus Property Reuse Remains Strong

Over 500 state employees used the Purchasing Committee (purchcomm) listserv in FY17 to streamline the surplus property disposal process and save money. It is estimated state agencies saved over \$200,000 as a

result of utilizing the purchcomm listserv in FY17. The listserv is an email distribution list that allows agencies to communicate with other state agencies about property that is no longer needed.

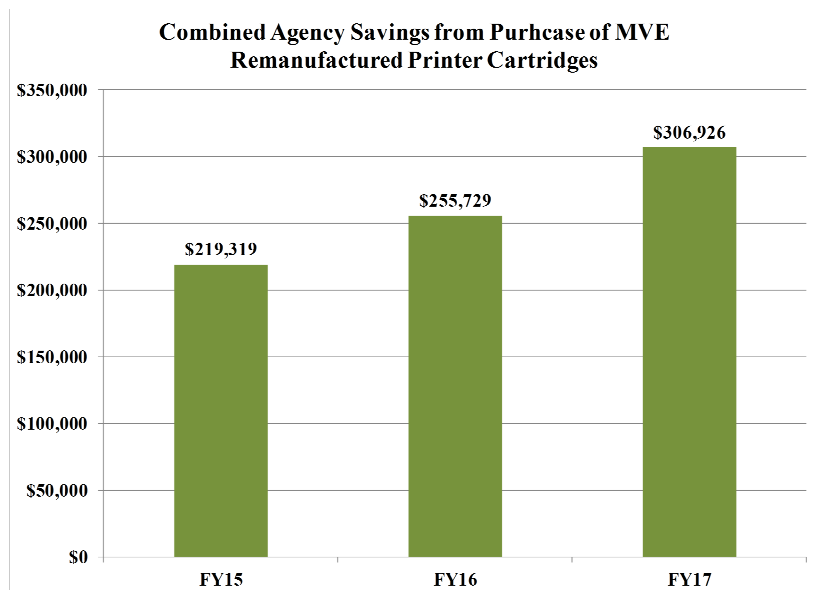
A state employee must subscribe to the listserv in order to participate with the purchcomm listserv. The Purchcomm listserv subscription page is available at <http://lists.mo.gov/mailman/listinfo/purchcomm>.



Remanufactured Toner Cartridges: State Agency Savings

From FY15 - FY17, state agencies saved over \$750,000 dollars by utilizing Missouri Vocational Enterprises' (MVE) Printer Cartridge Remanufacturing Service. This service provided state agencies an opportunity to realize significant savings and reduce waste by reusing toner cartridges.

The chart to the right illustrates the combined agency savings over the past three years for agencies that purchased remanufactured toner cartridges from MVE. Savings are estimated by calculating the difference in price between MVE toner cartridges and non-recycled toner cartridges available from the office supply contract.



FY17 Overview

State Agency Accomplishments



University of Missouri - Kansas City Places 3rd in National Recycling Competition

The University of Missouri - Kansas City (UMKC) finished strong by placing 3rd in the Diversion Competition for the 2017 national RecycleMania competition. UMKC's 82% recycling rate was an improvement from their 2016 rate of 81% when they finished 2nd in this competition. This means that only 18% of the waste generated at UMKC was sent to the landfill during the competition.

RecycleMania is a competition among colleges and universities in the United States that provides schools with a fun, proactive opportunity to increase awareness about waste prevention and recycling on their campus. Over a 10-week period, schools compete in different contests to see which institution can collect the largest amount of recyclables per capita; the largest amount of total recyclables; least amount of trash per capita; or have the highest recycling rate.

Other notable achievements for Missouri schools in 2017 include:

- After taking the year off in 2016, the University of Missouri - Columbia had strong showings by placing in the top 30 in three of the competitions.
- The University of Missouri - Kansas City continued to perform at high levels in the Diversion and Waste Minimization competitions.
- Northwest Missouri State improved its standing in the Organics Competition from 33rd place in 2016 to 25th place in 2017.
- Missouri State University repeated its 2016 32nd place finish in 2017 for the Paper Competition after finishing 58th in 2015.

Missouri Schools Placing in the Top 40 for RecycleMania Competitions

<u>Diversion Competition</u> (194 participating)
University of Missouri - Kansas City (3rd)
<u>Per Capita Classic</u> (248 participating)
Washington University - St. Louis (38th)
<u>Waste Minimization</u> (137 participating)
University of Missouri - Kansas City (11th)
<u>Total Recycling</u> (217 participating)
Washington University - St. Louis (22nd)
University of Missouri - Columbia (27th)
<u>Bottles & Cans Competition</u> (61 participating)
University of Missouri - Columbia (26th)
Northwest Missouri State University (31st)
Missouri State University (36th)
<u>Cardboard Competition</u> (76 participating)
University of Missouri - Columbia (32nd)
<u>Paper Competition</u> (73 participating)
University of Missouri - Columbia (13th)
Missouri State University (32nd)
<u>Organics Competition</u> (157 participating)
Northwest Missouri State University (25th)

In addition to the schools placing in the Top 40, the following Missouri schools participated in the 2017 national competition:

- ∞ Saint Louis University - Main Campus
- ∞ Missouri University of Science & Technology






The State Recycling Program applauds Missouri's colleges and universities for their participation in the national RecycleMania competition. (www.recyclemaniacs.org)

FY17 Overview

Recycled Content Procurement

State Agencies Close the Loop with Paper Procurement

In FY17 81% of agency paper purchases included recycled content. The State of Missouri spent \$190,372 on recycled “Fine Paper Products” in FY17 for approximately 7,336 cases of recycled paper. A majority of this paper is printer/copier paper made with 30% post-consumer recycled paper. Purchasing this type of recycled paper compared to purchasing the same amount of virgin paper translates into the following estimated savings³:

-  1,354 fewer trees
-  632,728 less gallons of water – enough to fill an olympic-sized swimming pool
-  116,663 fewer pounds of CO2 equivalent – 11 fewer cars / year
-  42,356 less pounds of solid waste – 2 fewer garbage trucks
-  609 million less Btu – enough energy to power 6 homes in Missouri for a year!

FY17 Purchases of Recycled Paper Compared to Virgin Paper

Product Category	Recycled Paper Purchases	Virgin Paper Purchases	Recycled Paper Purchases as a % of Total Purchases in Product Category		
	FY17	FY17	FY17	FY16	FY15
Fine Paper Products (office, copy, fax)	\$190,372	\$28,560	87%	35%	43%
Course Paper Products (napkins, towels, tissues)	\$2,652,240	\$12,246	100%	96%	92%
Forms (continuous & snap out)	\$1,013	\$308,494	0%	100%	100%
Envelopes (Plain or Printed)	\$547,450	\$3,458	99%	100%	99%
Printing by contractors (40% of total charge is attributable to paper - figures appearing in this row represent paper cost only)	\$599,541	\$604,039	50%	26%	24%
Overall Totals	\$3,990,616	\$956,797	81%	68%	66%

RSMo 34.032 established attainment goals for state agencies to purchase certain percentages of products made from post-consumer recovered materials. Starting in 1991 the goal was set at 10% of paper purchases were to be manufactured from post-consumer material. The goal was increased to 60% for the year 2000 - the last year a goal was specified. Note: See Appendix B for additional information about paper purchases as well as non-paper recycled-content product purchases.

3. Environmental impact estimates were made using the Environmental Paper Network Paper Calculator Version 3.2.1. For more information visit www.papercalculator.org.

FY17 Overview

State Recycling Fund

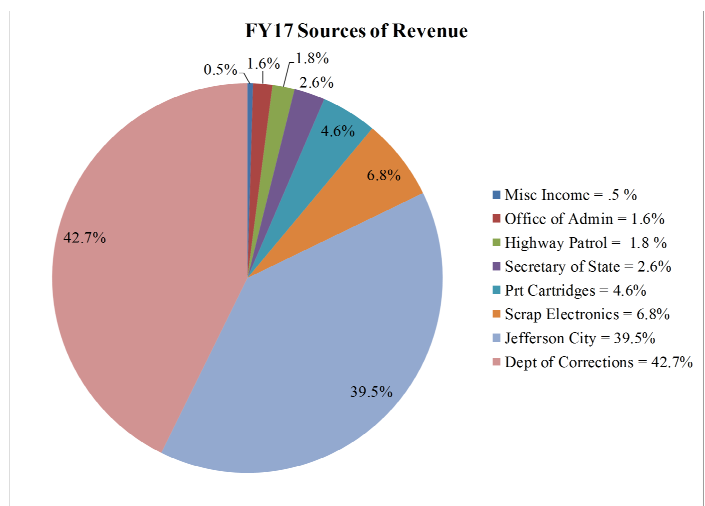
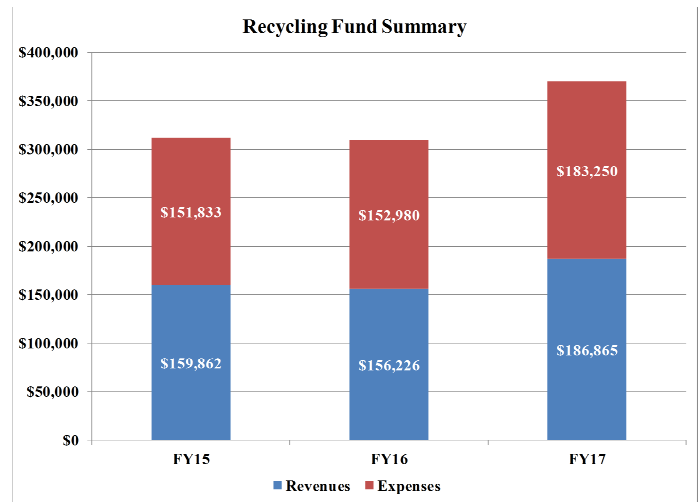
Missouri’s State Recycling Fund was established by RSMo 34.032 and states that “Proceeds from the sale of recycled materials may be used to offset costs of the recycling program.”

Recycling revenues increased 20 percent from FY16 to FY17. This increase is likely due to strong scrap cardboard markets and mixed paper pricing that occurred during most of FY17.

In FY17 recycling funds helped to further the following recycling efforts throughout state government:

- Distribution of 10,000 plastic bags for can, bottle, and paper collection
- Purchase of over 250 recycling containers
- Distribution of 300 recycling labels and signs
- Purchase of a baler for Eastern Reception, Diagnostic and Correctional Center (Bonne Terre)
- Fluorescent lamp recycling fees
- Purchase of a baler for State Printing Center & Consolidated Warehouse (Jefferson City)
- Baler supplies and maintenance
- Supplies for in-vessel composters located at Ozark Correctional Center and Northeast Correctional Center

Expenses listed in the bar chart at the top of this page include operations, salary, fringe, and fund transfers to the Heating Assistance Program.



The top three sources of revenue in FY17 were the Department of Corrections (43 percent), the Jefferson City recycling contract (40 percent) and scrap electronics (7 percent). (see chart above)

Contributions to the Heating Assistance Program (Utilicare)

Excess revenues from the sale of recyclable materials are transferred to the Heating Assistance Program managed by the Department of Social Services pursuant to RSMo 34.032. The Heating Assistance Program (HAP), also known as Utilicare, provides financial assistance to low-income Missourians for heating their homes during winter months.

As a result of state employee recycling efforts, the MSRP made a \$30,000 contribution to the HAP in FY17. The \$30,000 transferred to the HAP in FY17 will help approximately 150 households in Missouri to pay their heating bills.

III. Recycling Resources

Missouri State Recycling Program

Office of Administration

Division of General Services

Internet: <http://oa.mo.gov/general-services/missouri-state-recycling-program>

Email: recycling@oa.mo.gov

Phone: 573-751-3384

The Missouri State Recycling Program (MSRP) works with state agencies to increase purchases of recycled content products, reduce their waste stream and increase collection of materials for recycling. The MSRP web page is a good resource for state contracts that offer recycled content products as well as recycling services.

Environmental Improvement and Energy Resources Authority / Market Development Program

Internet: <http://eiera.mo.gov/mo-market-dev-program/>

Email: eiera@dnr.mo.gov

Phone: 573-751-4919

The Missouri Market Development Program promotes the development of markets for recovered materials and recycled content products throughout Missouri by providing businesses, governments, and other organizations with financial assistance and information services

Solid Waste Management Program

Missouri Department of Natural Resources

Internet: <http://www.dnr.mo.gov/env/swmp/index.html>

Email: swmp@dnr.mo.gov

Phone: 800-361-4827 or 573-751-5401

The Solid Waste Management Program (SWMP) works with citizens, businesses, industry, and government to continue increasing material reuse and recycling. The SWMP web page is an excellent resource for information dealing with all aspects of solid waste management in Missouri.

Missouri Vocational Enterprises (MVE)

Missouri Department of Corrections

Internet: <http://www.doc.mo.gov/mve>

Phone: 800-392-8486 or 573-751-6663

The Department of Corrections vocational training program offers the following products and services that meet “buy recycled” criteria. MVE products and services are only available to state agencies and other tax-supported entities.

MVE Recycling/Remanufacturing/ Refurbishing Services

- Toner Cartridge Refill Service
573-751-3224 ext. 1260
- Furniture & Office Panel (cubicle) Refurbishing
573-751-6663 or 800-392-8486

MVE Recycled-Content Products

- Park Bench: Recycled Plastic
- Cardboard boxes: 65 percent post-consumer content
- Plastic bags: 30 percent recycled material
- Metal products: 28 percent post-consumer content
- Toilet paper: 100 percent recycled material
- Envelopes: 30 percent post-consumer content

IV. Appendices

Appendix A: Department reports of materials recycled

- ∞ Pounds
- ∞ Number of Items
- ∞ Gallons

Appendix B: Department reports of recycled-content product procurement

- ∞ Non-Paper Recycled-Content Products Procured
- ∞ Recycled-Content Paper Products Procured

Appendix A: FY17 Department Reports of Materials Recycled

Number of Pounds Recycled	Agriculture	State Treasurer	Conservation	Corrections	Economic Development	Elementary & Secondary Educ.	Health & Senior Services	Insurance, Finan. Inst., Prof. Reg.	MCHCP	Mental Health	Natural Resources	Northwest Missouri State University	Office of Administration	Public Safety	Revenue	Secretary of State	Senate	Social Services	Supreme Court	Transportation	Totals by Material
Aluminum ***	C	C	350 C	14,082 C	C	C	781 C	C		1,820 C	7,458 C	3,330	685 C	300 C	C	C	C	C	C	70,020 C	110,535
Ballasts			1,058						30	800			128							192	2,208
Batteries-Non Rechargeable			80							1,103	455			400						595	2,633
Batteries-Rechargeable			2,677	986		32				24	842		9,962	40,015						302	54,840
Cardboard ***	7,400 C	C	2,250 C	955,559 C	C	C	C	C	2,600	251,992 C	15,962 C		C	53,586 C	22,386 C	C	C	C	C	C	1,736,690
Commingled Materials ***			4,500								74,632									62,000	212,042
Electronic Scrap ***		57		1,115	857	1,326	817		2,000	363	1,341		14,927	20,581	537	3,624	1,327	6,812	1,561	138	306,009
Food-Yard Waste											7,117	246,160		674							253,951
Glass			1,000								12,366	112,000									125,366
Magazines & Catalogs										564	4,824			140							5,528
Mixed Office Paper ***	C	5,716 C	23,280 C	133,662 C	C	1,620 C	C	2,636 C	C	221,181 C	25,899 C	222,960	C	3,000 C	592,000 C	203,037 C	C	14,580 C	32,000 C	C	3,466,469
Newsprint	8,100		450	2,017						799	1,499										12,865
Plastic ***	4,000 C	C	2,510 C	23,123 C	C	C	3,220 C	C	260	11,099	C	24,960	1,548 C	200 C	C	983 C	C	C	C	C	92,213
Rubber, Tires ***	2,625		630							42	12,980		37,212	44,200						253,040	771,035
Scrap Metal	17,640		40,780	229,004			12,660		200	11,990	76,268		98,212	160,180	15,880					4,180,800	4,843,614
Telephone Books			26							280	34			10							350
Textiles				215										1,635							1,850
Tin / Steel Cans ***	C	C	C	732,334 C	C	C	C	C		16,251	89 C		C	C	C	C	C	C	C	C	751,253
Totals Reported by Agency	39,765	5,773	79,591	2,092,097	857	2,978	17,478	2,636	5,090	518,308	249,502	609,410	162,674	324,921	630,803	207,644	1,327	21,392	33,561	4,567,087	
Total Pounds Recycled in FY17:																				12,789,081	
																				6,395 Tons	

Note on Boxes with C's: A "C" in a box on this table indicates an agency recycled the designated item by utilizing the Jefferson City (JC) recycling services contract. Materials collected via the JC contract include **Aluminum, Cardboard, Mixed Office Paper, Plastic,** and **Steel (tin) Cans**. A box that has a number over a "C" indicates the agency reported material that was recycled statewide, but not reported in the JC contract figures. For example, Public Safety reported 300 pounds of aluminum recycled and Public Safety offices in JC utilized the JC Recycling Services contract to recycle aluminum.

*****Note on "Totals by Material":** This column includes collection totals as reported by the recycling contractor for the following materials: **Aluminum, Cardboard, Carpet, Commingled, Electronic Scrap, Mixed Paper, Plastic, Rubber Tires,** and **Steel Cans**. Figures reported by the contractor do not appear in the table on this page. These figures are summarized in a table at the top of p. 25. Agencies that utilized a recycling contract, but do not appear in this table include: **Higher Education, Labor & Industrial Relations, Environmental Improvement Energy Resources Authority, Lottery, Tax Commission, MOSERS, Governor Office, Attorney General, Auditor, and House of Representatives**. Amounts of materials recycled by these agencies are included in the "Totals by Material" column. (see explanation under "contractual reporting" on p. 25.

Appendix A: FY17 Department Reports of Materials Recycled

Summary Information for Table on Page 24 for Contractual Reporting and Other Recycling Services

Total pounds recycled by agencies utilizing the Jefferson City, St. Louis, Kansas City, and Onsite Document Destruction recycling contracts are summarized in the table to the right. These figures are reported as cumulative totals. Due to contract reporting, data is reported by building and it is not feasible to separate data by agency where there are multiple agencies in the same building.

FY17 Total Pounds Recycled via Contracts	Jefferson City	St. Louis	Kansas City	Onsite Document Destruction
Mixed Office Paper	1,107,862		6,620	870,416
Cardboard	416,929		8,026	
Commingled		67,840	3,070	
Aluminum	11,709			
Plastic	12,574			
Steel Cans	2,579			

Pounds recycled by agencies utilizing other recycling service agreements is summarized in the table to the left.

FY17 Total Pounds Recycled via Other Agreements	Electronic Scrap	248,626
	Carpet Tiles	39,631
	Rubber, Tires	402,835

Number of Items and Gallons Recycled Table

Departments Reporting	Number of Items Recycled							Number of Gallons Recycled				
	Books, Bound Publications	Cell Phones	Fluorescent Lamps	Printer Cartridges	Fuel/Oil Filters	Pallets	Anti-freeze	Fuel, Diesel	Fuel, Gasoline	Oil, Cooking	Oil, Motor	
Agriculture								324	2,228	1,600	200	
Conservation		9	662	16			100				1,000	
Corrections			10,807	2,120		7,637						
Economic Development				2								
Elementary & Secondary Education				3								
Health & Senior Services				73								
MCHCP			80									
Mental Health	45	5	8,570	2,169		413			2,056	110		
Natural Resources			5,133	731	32	171					447	
Northwest Missouri State University			4,648									
Office of Administration		124	13,394	103		137	55				2,235	
Public Safety		250	49,000	3,243		697	150		774		12,979	
Revenue				55								
Social Services				106								
Transportation			6,977				330				42,238	
Treasurer's Office				101								
TOTALS	45	388	99,271	11,048	32	9,055	635	324	2,228	4,430	59,209	

Note on Total Printer Cartridges: 2,326 printer cartridges were recycled by employees using a statewide service for this item and are included in the TOTALS amount shown in this table. **Note on Agency-Specific Printer Cartridges:** Figures appearing for individual agencies may not be an accurate reflection of the number of printer cartridges recycled. In some buildings agencies utilize a centralized recycling drop-off for cartridges and it is not feasible to separate agency data once recycled. See p.12 "Printer Cartridge Recycling" for additional explanation.

Appendix B: FY17 Department Reports for Recycled Content Product Procurement

Non-Paper Recycled Content Procurement	Agriculture	Corrections	Economic Development	Elementary & Secondary Education	Health & Senior Services	Insurance, Financial Inst., Professional Reg.	Mental Health	Natural Resources	Office of Administration	Public Safety	Revenue	Secretary of State	Social Services	Treasurer's Office	Transportation	Category Totals
Batteries, Rechargeable	\$200						\$1,027	\$1,940		\$5,828						\$8,995
Carpet / Construction Materials		\$1,476					\$265		\$11,311				\$3,224			\$218,384
Cardboard Boxes		\$17,076	\$2,797		\$378	\$715	\$2,037			\$337				\$983	\$690	\$259,514
Janitorial Supplies		\$255,308	\$14	\$10,749				\$7,896	\$2,162	\$15,624						\$839,773
Metal Products		\$71,491		\$249				\$15,015		\$48,191	\$3,650,028	\$125,384				\$4,227,350
Office Supplies	\$1,085			\$37,637			\$7,027	\$11,989		\$3,450				\$1,163		\$1,012,429
Park Playground Supplies		\$8,436					\$670									\$9,106
Printer Cartridges, Remanufactured	\$869	\$189,865	\$260	\$128	\$7,753		\$122,391	\$29,015	\$10,148	\$53,855	\$6,732		\$10,325			\$431,340
Promotional Products									\$523							\$523
Recycling Containers & Equipment					\$146				\$34,426							\$34,572
Remanufactured Furniture																\$88,198
Vehicle Maintenance Supplies		\$110		\$128			\$1,095		\$29,271						\$20,958	\$51,562
Agency Totals	\$1,954	\$543,762	\$3,071	\$48,891	\$8,276	\$715	\$133,485	\$63,915	\$87,841	\$121,457	\$3,656,760	\$125,384	\$13,549	\$2,146	\$21,648	

Total Dollars Spent on Non-Paper Recycled-Content Products in FY17 = \$7,181,748

Notes: When adding figures in each row the following needs to be considered. **Carpet contractors** reported agency purchases of \$114,375. **Construction Materials** contractors reported purchases of \$87,733. **Office Supplies** contractors reported purchases of \$988,476. MVE provided procurement figures for **Cardboard Boxes** (\$258,387); **Janitorial Supplies-plastic bags** (\$839,773); **Metal Products** (\$577,322); and **Remanufactured Furniture & Recycled Fabric** (\$88,198). When adding the figures in each row -- these amounts need to be included in the sum. For additional information on recycled-content products and services from MO Vocational Enterprises see p. 22 of this report.

Appendix B: FY17 Department Reports of Recycled and Virgin Paper Purchases

This table provides detail for the summary chart appearing on page 20 of this report.

GRAY HIGHLIGHT = VIRGIN

GREEN HIGHLIGHT = RECYCLED

FY17 Department Detail of Recycled & Virgin Paper Purchases	Fine Paper Products (printer/ copier paper)	Course Paper Products (toilet paper / paper towels)	Forms - Continuous & Snap Out (high speed printers)	Envelopes	Printing by Contractors
Judiciary (100)	\$1,890				
SOS (231)	\$9				\$110,994
Auditor (251)					
STO (272)	\$18,074	\$438			\$1,586
	\$5,639	\$76		\$13,425	
AGO (282)	\$112				
OA (300)	\$5,711		\$305,768		\$1,189,871
	\$152,483				
MDA (350)	\$4,089	\$3,432			\$19,185
DIFP (375)				\$2,395	
MDC (400)		\$1,007			\$12,196
DED (419)				\$458	
DESE (500)		\$1,815		\$44,424	
DHE (555)					
DHSS (580)					\$56,211
MoDOT (605)		\$690			
DOLIR (625)				\$1,595	
DMH (650)	\$273	\$1,514	\$2,651	\$263	\$3,464
	\$3,871	\$2,598	\$1,013		\$150
DNR (780)	\$16,132	\$7,020		\$10,022	\$1,738
	\$413	\$6,000		\$1,600	\$12,261
DPS (812)	\$2,433	\$11,549		\$5,821	\$172,383
DOR (860)	\$1,770				
DSS (886)	\$6,032			\$47,266	\$27,553
DOC (931)		\$862	\$74		\$7,055
		\$1,385,618		\$8,788	\$377,970