OCRRA (Onondaga County Resource Recovery Agency)

Update to Comprehensive Recycling and Market Analysis

June 2011

RECENT AWARDS and RECOGNITION Received by OCRRA

2011 SWANA Excellence Award, Silver – Composting

2011 SWANA Excellence Award, Bronze – Integrated Solid Waste System

2011 SWANA Excellence Award, Silver – Marketing

2011 American Forestry and Paper Association Award for Community Recycling

2010 NYSAR^3 Recycler of the Year – Group/Team

2010 Keep America Beautiful Waste Reduction and Recycling National Award

2010 Keep America Beautiful Litter Prevention National Award

2010 US Composting Council – Composting Program of the Year

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Table of Contents

1. EXECUTIVE SUMMARY

This report submitted pursuant to NYSDEC Permit Number 7-3142-00028/00002-0, Certificate to Operate the Onondaga County Resource Recovery Facility; NYSDEC Permit Number 7-3156-00047/00001-0 Permit to Construct and Operate the OCRRA Landfill; NYSDEC Permit Number 7-3148-00048/00001-0 Solid Waste Transfer Station-Ley Creek and NYSDEC Permit Number 7-3142-00036/00001-0 Solid Waste Transfer Station-Rock Cut Road. Prepared in accordance with NYCRR Part 360-1.9(f).

The solid waste management system for Onondaga County (with the exception of the Town and Village of Skaneateles) is managed by OCRRA (Onondaga County Resource Recovery Agency). OCRRA's previous Comprehensive Recycling and Market Analysis Report was submitted in June 2008. The following report updates the previous report and highlights the following:

- Addition of items to OCRRA's mandatory recycling list: **#5 Plastics and Softcover Books**
- Launch of OCRRA's innovative commercial and institutional **food waste composting program**
- Promotion and continued success of a new public education campaign: "**Save the World a Little Each Day**," which focuses on capturing paper items for recycling
- Creation of a business recognition program, called "**Blue Ribbon Recycler**," which certifies local businesses that demonstrate recycling excellence
- Establishment of a **long-term contract** with two local Material Recovery Facilities, which reduces financial risk and increases market stability, allowing for a consistent definition of what is recyclable for residents
- Transition to **Extended Producer Responsibility** programs for electronics recycling
- Successful changes to OCRRA's popular **household battery collection program**
- Addition of a **non-ferrous metal separation system** at the Waste-to-Energy Facility, allowing for hundreds of tons of metal to be removed for recycling each year

2. RECYCLING IN ONONDAGA COUNTY

2.1 Current Program

Onondaga County currently has a population of approximately 467,000, with 183,000 occupied households[1]. Since the recycling program's implementation in 1990, more than 12 million tons of residential, commercial and institutional materials have been diverted to recycling. The program's efforts have been recognized with numerous state and national awards, including the 2011 American Forestry and Paper Association's Community Award, Keep America Beautiful's National Litter Prevention, as well as Waste Reduction and Recycling Award, and the US Composting Council's Composting Program of the Year Award (2010).

[1] Population data is from the 2010 Census. Household data are not yet available for 2010; a 2005-2009 average estimate is used. http://www.census.gov/

OCRRA has a strong recycling program due to its commitment to fund the processing and marketing of recyclables, its ability to maintain long-term contracts for services, including those with material recovery facilities, and its comprehensive and innovative public education campaign. The result is an extraordinary recycling rate for the community every year. In 2010, the total tonnage recycled through the mandatory source separation law, combined with the voluntary efforts of businesses and residents, resulted in 536,800 tons recycled, for a recycling rate of 60%; almost twice the national average[2]. OCRRA's service area has maintained a 60% or greater recycling rate for more than a decade.

The following are the materials currently directed for recycling in OCRRA's service area:

Material	Component Categories	Disposition
Paper	Newspaper	Diverted to recycling markets
	Magazines	Diverted to recycling markets
	Corrugated cardboard	Diverted to recycling markets
	Kraft paper	Diverted to recycling markets
	Gable-top containers	Diverted to recycling markets
	Paperboard	Diverted to recycling markets
	Office paper	Diverted to recycling markets
	Softcover books (**added 2011**)	Diverted to recycling markets
Plastic	PET (#1) bottles	Diverted to recycling markets
	HDPE (#2) bottles	Diverted to recycling markets
	PP (#5) containers (**added 2010**)	Diverted to recycling markets
Ferrous Metal	Food containers (Bi-metal)	Diverted to recycling markets
	Aerosols	Diverted to recycling markets
	White/enameled	Diverted to recycling markets
	Auto parts	Diverted to recycling markets. *Not counted in recycling rate.*
	Other ferrous	Diverted to recycling markets
Non-Ferrous	Aluminum cans	Diverted to recycling markets
	Aluminum foil	Diverted to recycling markets
	Other aluminum	Diverted to recycling markets
	Other non-ferrous	Diverted to recycling markets
Glass	Clear containers	Diverted to recycling markets
	Green containers	Diverted to recycling markets
	Brown containers	Diverted to recycling markets

OCRRA's community-wide recycling effort includes residential and commercial recycling mandates and enforcement, as well as tracking voluntary recycling in the commercial, institutional and industrial sectors. The OCRRA program also addresses unique wastes such as household hazardous wastes, yard wastes, household batteries, fluorescent light bulbs and material specific to individual business or industrial generators.

[2] US EPA. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2009. http://www.epa.gov/osw/nonhaz/municipal/pubs/msw2009-fs.pdf

The following chart lists items designated as mandatory recyclables and the effective date of implementation:

OCRRA Mandated Recyclables		
Effective date	**Action affecting Residential Generators**	**Action affecting Commercial/Institutional Generators**
July 1, 1990	Glass and metal food / beverage containers Plastic bottles #1 & #2 Newspapers	High grade office paper Corrugated cardboard Blue bin items as feasible
March 1, 1992	Magazines and catalogues	
April 1, 1992	Yard waste banned from MSW	Yard waste banned from MSW
Fall, 1992		Encouraged to recycle all office paper
January 1, 1993	Aerosol cans (non-paint), gable top milk and juice cartons and Kraft bags	All office paper mandated
July 1, 1994	Corrugated cardboard	Corrugated cardboard
July 1, 1995	Discarded mail and home office paper	Discarded mail and home office paper
July 1, 1996	Paperboard	Paperboard
April 1, 1999	Pizza boxes	
January 1, 2001	License plates	
January 1, 2006	Aseptic containers	
July 1, 2010	#5 plastics	
April 1, 2011	Softcover books	

To accomplish the maximum diversion of material to recycling, OCRRA currently contracts with two private vendors, Recycle America and Syracuse Recycling and Recovery, for the processing and marketing of the residential recyclables. In 2010, a new 4-year contract was negotiated (see *Section 4* for details).

OCRRA also operates two compost sites within Onondaga County. These provide residents with the opportunity to recycle their yard waste and take finished compost with them to use for their gardens from April until November each year. In 2009, OCRRA began a pilot program to compost commercial and institutional food waste at the Amboy Compost Site. This operation has grown over the last two years and plans are underway to expand and develop the site to handle 9,000 tons of food waste annually from commercial entities (See *Section 3.3* for more details).

The OCRRA recycling team includes three Recycling Specialists who visit hundreds of local businesses, apartment complexes and schools annually. They offer assistance in designing recycling programs and supply businesses, apartments and schools with recycling containers and decals to raise awareness about recycling. In addition, OCRRA employs a New York State certified teacher, who speaks to more than 12,000 local students in over 500 classes annually about recycling and waste reduction.

2.2 2005 Waste Q & C

In 2005, OCRRA contracted a consulting firm to conduct a county-wide waste composition study, known as the Onondaga County Waste Quantification and Characterization Study (Q&C Study). It sorted and quantified MSW and recyclables in the OCRRA system based on statistical criteria in which vehicle loads were sampled, manually sorted and weighed. The percentage by weight of each component in the sorted sample was then calculated.

A previous Waste Q&C Study was performed in 1998. The following lists notable results from the 2005 study and comparisons to the 1998 study:

- About 15% of disposed MSW is comprised of **paper** that is currently recyclable in OCRRA's service area
- Proportion of **plastics** in disposed MSW increased (from approximately 11% in 1998 to 19% of total MSW in 2005)
    - The largest individual plastic category is #4 LDPE and LLDPE (8.6% of MSW). This consists of items such as film wraps, trays, plastic bags and lids.
    - Plastics categories #3, #6, and #7 were present in the waste stream at approximately 2% of total MSW.
- **Other paper** (non-recyclable paper such as tissues and paper towels) and **food wastes** continue to comprise relatively large proportions of the residential waste stream (approximately 13 and 14% of disposed MSW, respectively).
- There were declines in percent of disposed MSW from 1998 to 2005 in the following categories: Ferrous food containers, aluminum cans, glass and yard waste.
- 2005 was the first year electronics were evaluated. They constituted 1.2% of disposed MSW, which is consistent with the national average[3].
- Separation of most designated recyclables continues at relatively high levels, as measured by the relatively small quantities present in the waste stream.
- **Newspaper** comprises the largest portion of the recycling stream, at 42%.

Appendix 1 shows data from the Waste Q&C on the percentage of each commodity in the waste stream, as a mean between commercial and residential. Appendix 2 shows data on the percentage of each commodity in the residential recyclable stream.

As of 2011, the data acquired from the most recent study is 6 years old. More up-to-date information would be invaluable for further program evaluation; OCRRA is currently considering its ability to devote resources to planning and executing another large-scale Waste Q&C, but has made no concrete plans as of yet.

3. RECENT CHANGES TO THE RECYCLING PROGRAM

A 1989 Source Separation Law mandates that waste generators in Onondaga County separate designated materials for recycling. The law allows OCRRA to continually evaluate and add items to the list of recyclable materials when deemed appropriate. As markets are proven to exist and are stable and viable, OCRRA's Board of Directors is able to vote to add items to the list of mandated recyclables, both residential and commercial.

[3] US EPA. Statistics on the Management of Used and End-of-Life Electronics. http://www.epa.gov/epawaste/conserve/materials/ecycling/manage.htm

OCRRA's comprehensive integrated solid waste management program seeks to address all discards according to the federal and state established waste hierarchy: waste reduction and reuse, recycling, waste-to-energy, and landfill. To that end, OCRRA has established several strategies to maximize recycling in its service area.

In 2005, OCRRA conducted a Comprehensive Waste Quantification & Characterization (Q&C) study (See *Section 2.2*), which provided data on the presence of commodities in the waste stream. The data reported in the Q&C are important aspects of decisions to qualify materials as recyclable or to seek ways to reduce the presence of a specific material in the waste stream. Secondary research then focuses on the following to determine if the commodity can be added to the list of mandatory items:

- Analysis of alternative uses for the material;
- Analysis of markets for material, factoring in collection and hauling costs, processing costs, equipment costs and markets;
- Market surveys to determine price and identify any processing requirements; and
- The toxicity hazard. For example; OCRRA's Mercury Thermometer collection program is driven more by the hazardous nature of mercury than by simple economics.

OCRRA also conducts market surveys by contacting other municipalities, processors and manufacturers to determine prices of materials and to identify technology changes in processing requirements, new opportunities and obstacles to marketing material and regulatory trends.

3.1 New Additions

Beginning in July 2010, OCRRA's Board of Directors voted to add **#5 plastics** to the list of mandatory recyclables. OCRRA residents and businesses were asked to recycle #5 plastics, such as tubs, wide-mouth containers and prescription pill bottles. This decision was based on market research and consultations with the contracted Material Recovery Facilities.

In addition, **softcover books** were added to the list of mandatory recyclables, effective April 2011. Again, this decision was based on market research and consultations with the contracted Material Recovery Facilities. Residents and businesses are now asked to first determine if their old softcover books are in good enough condition to be donated to local charities or libraries; if not, they are asked to recycle them with the other mandatory recyclables. Hardcover books are not included, as these contain difficult-to-recycle covers and binding materials. OCRRA encourages residents to donate their hardcover books for reuse through the Salvation Army and other donation centers.

OCRRA currently recovers **ferrous metal** for recycling at its Waste-to-Energy (WTE) Facility. In addition to this ferrous metal recovery system, which recovers approximately 10,000 tons of ferrous metals annually for recycling, OCRRA and Covanta Energy jointly invested in a **non-ferrous metal** recovery system. The system consists of a special type of technology called an eddy current separator that induces a magnetic field in metallic objects that are not ordinarily magnetic, such as aluminum, copper zinc and brass. The non-ferrous system became operational in June 2008 and recovers approximately 400 tons of non-ferrous metals annually for recycling.

3.2 Material Recovery Facility Changes

OCRRA contracts with privately-owned Material Recovery Facilities (MRFs) to accept residential recyclables at no charge, sort and then market the material. In years past, two MRFs were in operation and under contract with OCRRA: Recycle America (part of Waste Management), a single-stream facility,

and Naef Recycling, a dual-stream facility. In early 2009, Naef Recycling was closed, leaving Recycle America as the sole MRF operating under OCRRA's contract for the remainder of 2009 and 2010.

In 2010, a new company was formed by an international corporation (CellMark) called Syracuse Recycling and Recovery. It began operations at the former Naef Recycling location after investing significant resources to upgrade and convert the existing dual-stream MRF into a high-tech single-stream facility. Syracuse Recycling and Recovery, which became fully operational in early 2011, has the ability to accept thousands of tons of commercial and residential recyclables each month.

During 2010, OCRRA began negotiations for a new long-term contract with MRFs. Both Recycle America and Syracuse Recycling and Recovery signed the new 4-year contract, which went into effect in January 2011. The details of this contract, which allows for market stability for the MRFs, financial stability for OCRRA and a consistent list of recyclables for the public, are outlined in *Section 4*.

The community now has two single-stream facilities that process the majority of residential recyclables. As a result, OCRRA's public education about sorting recyclables has become more streamlined, allowing them to mix all recyclables in the blue bins, instead of separating paper from containers (as it was before). This has helped to eliminate some confusion about recycling bin preparation, making curbside recycling a little easier for residents.

3.3 Program Expansion: Food Waste Composting

Since 1992, OCRRA has provided residents with the opportunity to recycle their yard waste at two compost sites. However, there have not been any substantial outlets in Onondaga County for **food waste**; the majority of the material currently goes to the WTE Facility. The 2005 Waste Q&C Study indicated that 14.6% of the waste stream consists of food waste; it is one of the largest components of disposed MSW, by weight.

Large volumes of organics in MSW are not only a local issue, but exist throughout New York State. According to the new state solid waste plan, "Beyond Waste," composting as an environmentally sound solution is a high priority for the NYS DEC. This plan emphasizes the direction of organic materials to their "highest and best use," i.e., composting for soil amendments.

In 2009, OCRRA began accepting institutional and commercial food waste at its Amboy Compost Site. OCRRA employs a technically sound and effective process called an extended aerated static pile system (EASP). In this system, food waste is mixed with ground yard waste, covered with finished compost and injected periodically with air via a blower system. This system allows the material to maintain aerobic conditions with minimal labor and handling. The project has met great success and continues to grow. In 2010, some 1,000 tons of commercial food waste were processed at OCRRA's Amboy Compost site on a minimal foot print, with minimal staffing and investment, and without regulatory violation. Included in this total are regular deliveries of food waste from Syracuse University's Food Services Department, as well as occasional food waste deliveries from the Syracuse City School District. The EASP system enables OCRRA to process both pre- and post-consumer foods, including meats, and has become a valuable resource for the region's waste diversion and recycling efforts.

OCRRA's goal is to develop the Amboy Site into an innovative 13-acre Yard and Food Waste Composting Facility to cost-effectively optimize the region's recycling and reuse opportunities. OCRRA projects that over 9,000 tons of institutional and commercial food waste will be processed at the facility annually by the year 2015. The project will serve as an environmentally sound model for replication by municipalities across New York State and ultimately generate some 36,000 cubic yards of compost annually.

However, to provide the community with more commercial composting capacity, the Amboy Site must be expanded and new equipment acquired. This $2 million expansion to handle more food waste is a major investment which entails a fair measure of financial risk. In the future, composting systems such as OCRRA's will be at risk from low pricing from landfills that desire organics for methane production, as well as competition for material from biomass energy systems (e.g., anaerobic digesters and biomass power plants). Since landfill gas-to-energy projects are incentivized by the New York State Renewable Portfolio Standard (http://www.nyserda.org/rps/index.asp), this issue must be addressed soon, as organics could become an increasingly sought after commodity, depending on the revenue provided – and disparate financial risks – due to various regulatory and tax-based incentives offered to differing organics management systems.

Of additional concern is the trend toward allowing the unregulated application of food waste to farm fields. This practice undermines the investment in engineered systems and also creates the considerable potential for the spread of vectors or disease, including *E. coli*. OCRRA will be taking on significant risk and investing major resources into providing a large-scale food waste composting facility for the community. If these issues are not addressed by the DEC, OCRRA's food waste composting programs and other systems throughout New York State risk failure and financial hardships.

3.4 Program Enhancements

Household Batteries

For over a decade, OCRRA has provided a collection program for Onondaga County residents to properly dispose of their household batteries. These items are diverted from the WTE Facility, as certain types of batteries contain toxic material that should not be combusted. OCRRA partners with local Wegmans and other grocery stores throughout the County to provide convenient drop-off locations for batteries. In addition, OCRRA provides special bags for residents to fill with old batteries and place at the curb during the month of July. Haulers then pick these bags up and deliver them, separate from the trash, to OCRRA for proper disposal.

OCRRA's household battery collection program underwent changes in 2010 as a result of new federal transportation regulations aimed at reducing safety hazards associated with the transportation of batteries. The new regulations state: (1) batteries must be separated by type before they are transported by haulers and (2) rechargeable batteries must be placed in individual bags or have their terminals taped before they are transported. Previously, household batteries were collected at nine area grocery stores year-round and in bags collected alongside trash in July, with all types mixed together.

To comply with the new regulations, OCRRA created new collection containers for the local grocery stores that allow for the separation of alkaline, rechargeable and button batteries. This new system began in 2010. In addition, the annual July curbside collection changed to only allow alkaline batteries in the special bags distributed by OCRRA.

Not only do these program changes comply with new federal transportation regulations, it allows OCRRA to easily remove rechargeable batteries for recycling at no charge (though OCRRA still pays for the weekly collection of the batteries from local Wegmans, and for subsequent sorting services, provided by ARC of Onondaga County). Previously, OCRRA paid to have all mixed batteries properly disposed of. Now, because rechargeable batteries are separated, OCRRA is able to use Call2Recycle®, a no-charge rechargeable battery recycling organization funded by the battery industry. This is an example of an Extended Producer Responsibility program that is beneficial to both the environment and solid waste planning units. OCRRA sent over 8,000 pounds of rechargeable batteries for recycling at no disposal cost in 2010. According to Call2Recycle®, residents in the OCRRA service area are now recycling more

rechargeable batteries per capita than any other large community in New York State. Because of OCRRA's dedication to maintaining an innovative battery program, OCRRA's Director of Recycling and Waste Reduction was an invited participant in the 2011 Battery Recycling Summit, a dialogue created by industry and government stakeholders. Participation in this event provides a platform to continue some of the most effective battery collection efforts in the nation.

Public Education

In the 2005 waste study, recyclable paper was shown to be a smaller fraction of the waste stream than in previous years, but still a significant portion (15%). This includes items such as newspaper, magazines, corrugated cardboard, paperboard and office paper. As a result, OCRRA devoted much of its outreach resources to target paper recycling, as well as focus on major paper generators, such as businesses and schools. In 2009, OCRRA launched a new public education campaign, "Save the World a Little Each Day." This campaign is a change from OCRRA's "BlueBinIt" campaign; it put a laser focus on paper recycling and underscores how the simple act of recycling can have a big impact on the environment and make the world a better place for our children. The campaign, consisting of electronic and print media advertising, new promotional material and a new logo, has been extremely effective: in 2009, paper recycling increased by 14% from 2008, resulting in an additional waste reduction of almost 44 million pounds.

This message is communicated to the public in a variety of ways. OCRRA prints and distributes a popular quarterly newsletter, which reaches over 150,000 households. Bimonthly, OCRRA sends an email blast to a list of over 10,000 people, which highlights upcoming events, programs changes and recycling reminders. In addition, OCRRA's website (www.OCRRA.org) is a popular place for residents to access recycling information 24 hours a day. This site receives over 10,000 monthly visits. OCRRA also invests in a substantial print and electronic media to continually expose the public to the "Save the World a Little Each Day" message, consisting of a multitude of print, web, radio and television ads. Lastly, OCRRA staff regularly attend community events where thousands of informational magnets, brochures and other recycling and waste reduction prompts are distributed.

For businesses, OCRRA developed the Blue Ribbon Recycler program (www.BlueRibbonRecycler.com), a business certification program that rewards companies meeting specific recycling-related criteria. This has served as an incentive for business recycling, allowing them to use the recognition as a marketing tool. At the end of 2010, 43 businesses had been honored with this certification. In addition, OCRRA has continued extensive public education in Onondaga County schools. The School Recycling Pledge program remains the most wide-spread program, providing a custom-printed and framed poster to every school in Onondaga County. The pledge highlights school-wide commitments to recycling and has been effective in increasing recycling and raising awareness in the schools. More than 120 schools have signed on to the pledge. With the new public education campaign and innovative school and business programs, OCRRA is striving to capture more and more recyclable paper.

Community Collection Center (C3)

From 2007 to early 2010, OCRRA operated a year-round drop-off center for electronics, fluorescent bulbs, books, batteries, cell phones and smoke detectors for proper disposal. This provided a convenient means of proper disposal for many items for Onondaga County residents. However, the cost burden for the operation of the facility and the collection and recycling of these materials, particularly electronics, became too high to be solely OCRRA's responsibility. The center was closed in March 2010. While open, OCRRA accepted over 1.7 million pounds of electronics and over 700,000 pounds of books. OCRRA currently directs residents to other avenues for recycling of these items. In particular, a number of private electronic recyclers have come on board locally due to New York State's Extended Producer Responsibility law, which became effective in April 2011. In those previous years, at times OCRRA was the only local outlet for electronic wastes; at this writing nine local enterprises are listed on OCRRA's

website for convenient waste recycling (http://www.ocrra.org/recycling_c3.asp). Though the number of recycling outlets locally still do not meet the minimum requirements set forth for manufacturers in the state's Electronics Equipment Recycling and Reuse Act, the local community is well served, even with the closing of the C3.

Extended Producer Responsibility

Extended Producer Responsibility (EPR) was at the forefront of NYS solid waste policy debate in 2009 and 2010. EPR requires manufacturers and retailers to take responsibility for the safe and environmentally sound disposal of items they make and sell. This includes reducing toxic materials used for manufacturing, but the most relevant aspect for waste management is the requirement to implement some form of a take-back and reuse and/or recycling program.

In 2010, New York State passed the Electronic Equipment Recycling and Reuse Act, which ensures that manufacturers are responsible for the recycling costs of electronics, whether physically or financially. This law, which went into effect in April 2011, will be a welcome release from the cost burden of handling and recycling the electronic waste stream for many municipalities. According to the law, residents will have access to convenient drop-off locations at no charge. That, along with a phased in electronics ban from municipal solid waste, will incentivize recycling of e-waste and put the costs onto the manufacturers. There are already multiple take-back locations in Onondaga County for e-waste; OCRRA expects there to be more coming online this year.

In addition to e-waste, in 2010 New York State adopted legislation to require manufacturers of rechargeable batteries to provide recycling for their products, physically or financially. This entails manufacturers providing outlets for recycling at all retail locations that sell rechargeable batteries at no charge to the consumer. This is another welcome relief for municipalities. While OCRRA has used the no-charge Call2Recycle® program to recycle residents' rechargeable batteries, this legislation will give consumers even more convenient outlets, ultimately lessening OCRRA's labor burden to handle this material.

While these two recent laws address commonly disposed of items that contain toxic material, there are many other items that are currently managed by planning units that could be financed by the manufacturers. These include mercury-containing devices, such as old thermostats, thermometers and fluorescent light bulbs; CFC-containing appliances, such as air conditioners; old appliances; oil-based paint; and finally, packaging. These items are currently handled either in the MSW stream or as a household hazardous waste; all of which incur a cost to planning units. These costs become particularly difficult to absorb with the state's delays in releasing HHW grant funds to the planning units. While crafting EPR legislation for some items is more complicated than others (namely, packaging), the impacts these materials have on municipal waste systems make it beneficial for the state to continue to investigate and push for these types of laws.

New York's Bigger Better Bottle Bill

OCRRA was a strong advocate of expanding the NYS returnable container law (the Bigger Better Bottle Bill) to include non-carbonated products such as water for the purpose of requiring deposits. OCRRA's Waste Q&C indicated that beverage containers exempted by the previous bottle bill law were 2 to 3 times more likely to be trashed as those containers which require deposits.

OCRRA was pleased to see the expanded Bottle Bill become law in 2009, to include water and other non-sugared drink containers. Placing a value on the frequently trashed water bottles creates an incentive for recycling. OCRRA hopes that as a result of this new law, there will be more bottles returned and ultimately recycled, as well as fewer bottles littering roadways and parks. While this will not likely

increase the number of PET beverage containers recycled in the curbside blue bins (as they will be returned to redemption centers for refund), it will still be less likely that they show up in the trash.

4. COST OF RECYCLING PROGRAMS

4.1 Blue Bins

Perhaps the most visible item to the community distributed by OCRRA is the **blue bin**, which is a 14-gallon curbside recycling container. These bins are given to residents in OCRRA's service area at no charge. The 33 municipalities that are part of OCRRA's program house a supply of blue bins at their individual highway department facilities or town clerk's offices. This allows residents to have easy access to blue bins when needed. In addition, OCRRA keeps blue bins at many of its own facilities for users and hosts numerous "blue bin giveaways" at local grocery stores throughout the County.

In 2009, OCRRA invested over $500,000 to purchase 120,000 news blue bins for the community. Each year, thousands are given to residents that need a replacement bin, need additional bins to handle more recycling or are receiving a bin for the first time. There is still a small supply of blue bins left from the 2009 purchase; OCRRA plans to purchase more in 2012. OCRRA's curbside recycling program has been tremendously successful, capturing approximately 40,000 tons of material each year. A portion of this success can be attributed to residents' easy access to free recycling containers.

4.2 Blue Bin Items

Recyclables collected at the curb are taken for processing and marketing to material recovery facilities, (MRFs). Pursuant to OCRRA's contract with local MRFs, they receive residential recyclables collected by private haulers, municipal haulers and municipalities with private hauling contracts. The MRFs accept the recyclables at no charge to the waste hauler, even during material market low periods, and then sort, bale and market the recyclables. The OCRRA/MRF contract provides for a variable payment to the private MRF companies.

In 2010, OCRRA's five-year contract agreement with private local MRFs was set to expire. A new four-year contract was negotiated over 2010, to begin in 2011. Two private local MRFs signed the new long-term contract: Recycle America and a new company, Syracuse Recycling and Recovery (owned by CellMark). This contract reduces OCRRA's annual risk in connection with payments to the MRFs for material processing, potentially generates income for OCRRA under favorable market conditions and provides certainty and stability for the community's recycling system during commodity market lows. As a result of the contract, the MRFs accept recyclables at no charge to the waste haulers.

Taking into consideration the value of the commodities in the blue bin, OCRRA pays the MRF for processing and marketing residential recyclables using a formula adopted in the contract. Each year, the contracted MRFs pay OCRRA for residential recyclables processed, with agreed upon upper limits, which are used to cover a small portion of the costs for recycling outreach and education. Payments may be made from the MRFs to OCRRA, or from OCRRA to the MRFs, depending on the market prices of old corrugated cardboard (OCC) and old newspaper (ONP): consistent average prices below $60/ton may require a payment from OCRRA; market prices above $100/ton may require a payment to OCRRA from the MRFs.

The MRF contract is a valuable tool which allows OCRRA to formulate and maintain a uniform definition of "blue bin" recyclables. The contract also encourages stability in the local recycling program

by attenuating the sometimes volatile variation in global market demand and pricing. This uniformity helps facilitate the successful education and enthusiastic cooperation of the public.

Benefits of the long-term contract term between OCRRA and the two private MRFs include the following considerations:

- The MRF contract is a partnership between OCRRA and the private sector; a 4-year contract enhances the MRFs' ability to invest in capital improvements, which in turn improves the community's recycling infrastructure.
- A 4-year term is helpful to MRFs' ability to negotiate contracts with the mills which buy local recyclables, thus stabilizing the local recycling system and the marketing of materials to mills.
- Both MRFs indicate that a 4-year contract helps them stabilize their business, obtain loans for critical equipment, enter into more favorable and less volatile material sales contracts and shows a commitment to their operations. The contract also provides flexibility in that, if OCRRA were to consider opening its own MRF, there is a 3- or 4-year lead time prior to start up.

Fluctuations in the commodity markets are difficult to predict from year to year. As seen in the table below, the last several years of favorable market conditions for recyclable commodities required significantly lower MRF expenses than in 2001, 2002 and 2003. The abrupt market downturn of many commodities in late 2008 and into 2009 is apparent in the net payment to the MRFs for 2009. However, market conditions sustained high enough prices in 2010 that OCRRA again saw a net return from the MRFs.

Year	Total Payment to MRFs
1999	$369,506
2000	$74,043
2001	$432,000
2002	$334,970
2003	$173,347
2004	$19,804
2005	$74,727
2006	$68,668
2007	($66,820)
2008	($58,250)
2009	$158,106
2010	($37,256)

4.3 Costs of Other Selected Programs

Household Hazardous Waste

OCRRA has held at least two household hazardous waste (HHW) collection events each year from 1991 to 2010; in 2009 and 2010, three HHW collections were held each year. Every two years, contractors bid on providing the material handling and disposal services events. OCRRA's direct costs include the fee charged by the vendor to conduct the event (including waste transport and disposal). Indirect costs include OCRRA personnel to work the event, as well as personnel hours spent beforehand managing the email reservation system and sending out confirmation packets to residents with appointments for the event. As of 2008, OCRRA no longer accepts latex paint, as it is not classified as a hazardous waste. OCRRA provides instructions for residents to properly dispose of old latex paint with their regular trash. Each year, OCRRA applies for a NYS DEC grant to cover 50% of the costs of the HHW program. In 2010, the

NYS DEC has committed to reimburse OCRRA up to $80,000 to support the HHW program. HHW program costs were $124,000 for 2009 and $127,000 for 2010.

Household Batteries

Onondaga County Wegmans grocery stores and Green Hills Market, in Syracuse, are year-round collection points for household batteries. OCRRA workers collect batteries from these sites each week. Residents can also drop off batteries at the Rock Cut Road Transfer Station as well as participate in a curbside collection of batteries during July. Residents do not pay any fees for battery recycling. Batteries are currently separated, due to new federal regulations, into alkaline, rechargeable and button. Alkalines are currently sent to a nearby landfill for proper disposal, rechargeables are sent at no cost to Call2Recycle® for recycling, and button batteries are shipped for hazardous material removal and recycling. OCRRA's cost for proper disposal in 2010 was approximately $30,000, including disposal, transport, battery sorting and weekly battery collection costs from local Wegmans. OCRRA collected more than 81 tons of batteries in 2010, 6 tons of which were rechargeable (includes lead acid batteries and rechargeables sent to Call 2 Recycle®).

Electronics

Onondaga County residents were able to drop off old computer equipment and TVs at the Community Collection Center (C3) from 2007 to March 2010. Due to the high cost burden to operate this site, C3 was closed in early 2010. To ensure continued outlets for residents to recycle their electronics, OCRRA held two e-waste collection events in 2010, after C3's closure. A $10 fee was charged per TV, computer monitor and laptop; all other equipment was collected at no charge. Between C3 and the two collection events, Onondaga County residents dropped off 406,000 pounds (203 tons) of e-waste to OCRRA in 2010 for recycling.

The vendor costs to OCRRA for electronic recycling were approximately $10,000 in 2010. Indirect costs included OCRRA personnel to work at C3 and events, as well as behind the scenes activities such as coordination, advertising and fielding inquiries.

Since OCRRA's e-waste recycling program's inception in 2002, nearly 4 million pounds of e-waste has been collected for recycling in Onondaga County. Due to New York State's newly passed EPR law, which took affect in April 2011, OCRRA steers residents toward other local electronics recycling outlets. These locations are convenient and, according to the new law, will not charge a fee for electronic waste. This new legislation will be a welcome change, transferring the financial burden to recycle e-waste from local governments to manufacturers – which in turn will encourage manufacturers to design products that are easier to recycle.

Other Programs

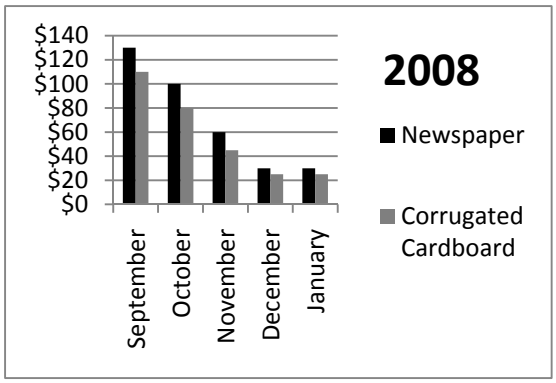
A discussion and overview of other small-scale recycling and reuse programs that OCRRA maintains can be found in the Annual Recycling Reports, submitted to the NYS DEC and published online: http://www.ocrra.org/about_annual_reports.asp. These include programs such as the fluorescent light bulb program, in which OCRRA partners with 15 local hardware stores to collect and recycle residents' fluorescent bulbs at no charge; and a mercury thermometer exchange program, where residents can bring old mercury thermometers to OCRRA's Rock Cut Road Transfer Station to be properly disposed of in exchange for a new digital thermometer. Old mercury thermostats are accepted as well. These two programs help keep mercury, a harmful chemical, out of the combustion process at the WTE Facility.

5. RECYCLING MARKET TRENDS

5.1 Recyclable Markets, 2008-2010

- Strong markets returned after precipitous decline in 2008, illustrating volatility of material values in wake of global economic trends.
- The continuing loss of newspaper in residential recyclables, though positive for waste reduction and greenhouse gas minimization efforts, may represent significant challenges for MRFs to remain economically viable.

In October 2008, the prices for recyclable materials such as paper, plastic and metal began to plunge dramatically, reflecting the worldwide economic downturn. By December 2008, values for OCC (old corrugated cardboard) and ONP 8 (old newspaper) had fallen 80% from September. Recycling markets had been relatively stable for the previous four years, occasionally achieving near record high levels. These drastic price swings in commodities, over relatively short periods of time, highlight pricing volatility for recyclable materials.



At that time, writing in ***BioCycle Magazine*** (November 2008), David Biddle, Executive Director of the Greater Philadelphia Commercial Recycling Council observed:

> "This precipitous fall in prices is already having major effects . . . processors and brokers cannot move a good deal of their material without losing an immense amount of money. Some are warehousing their product. . .Some are now charging inflated prices to accept material at their docks … Global demand for manufactured goods has decreased. China and India have effectively stopped buying recycled material from overseas and are willing to survive on inventories built up over the past year. Shipping costs are extreme and credit is tight. No one knows yet if we have hit the bottom here, or if we are in for further price reductions. … Recyclers with domestic mill accounts can at least move material even if they aren't going to make much money. Domestic mills are very likely ecstatic that they can now get feedstock at such cut-rate prices. This means, of course, they can pick and choose who they do business with and demand only the highest quality materials."

The article concludes with the following:

> "Hang in there. Markets will bounce back. We are about to see great changes in this country. And we should all, regardless of our politics, work to make this a better world, make that our mission and our challenge from here on out. The first step is for everyone to recycle everything they possibly can."

Mr. Biddle's prediction at that time was accurate; in early 2009, recycling commodity markets began to recover, and by September of that year, ONP 8 and OCC were valued in the $80/ton range. Recently (early 2011), fiber has again reached very strong pricing levels; OCC is valued at $160/ton, and ONP 8 is at $120/ton (Official Board Markets, 5/14/11).

The market prices for OCC and ONP significantly impact the profit/loss of the local MRFs (such fiber represents about 80% of total curbside blue bin materials by weight), and determine whether OCRRA receives revenue sharing dollars from these facilities or whether OCRRA pays for some market floor price support. Under "normal" market conditions (when commodity values for fiber are neither dramatically low, nor extraordinarily high) there is no financial support provided to the MRFs by OCRRA, nor is any financial support provided to OCRRA by the MRFs. Total financial exposure to OCRRA under worse case market conditions is approximately $200,000.

In the future, if all other economic factors remain constant, market prices for fiber are expected to remain relatively stable, particularly in light of decreasing supply of newsprint (see *Section 6* for discussion of newsprint).

5.2 Current Market Outlooks

The following are market outlooks for other materials (from Resource Recycling, January 2011):

- **Ferrous:** "Scrap prices rose sharply at the end of 2010. Industry analysts suggested that tight scrap inventories during a time of improved domestic and foreign demand for new steel led mills to push prices higher. With exporters remaining very active in the first days of 2011, industry analysts are predicting that scrap prices will continue to move higher in the first quarter."

- **Non-Ferrous:** "The aluminum recycling market moved higher at year's end. An improvement in metal demand during a period of low supplied led to the price increase."

- **Plastics:** "The value of recovered plastics continued to push upward at the end of the year. The primary cause was a series of price increases for ethylene, propylene and other monomers."

Projected trends for the beginning of 2011		
Material	**Demand**	**Price**
Ferrous	Very Healthy	Rising
Aluminum	Adequate	Slow increase
Paper	Bales will move	Upward bound
Plastic	No complaints	Flat to up

A recent trade journal article surveyed 200 MRF managers to get a better idea of where these facilities are heading in the future.[4] Some of the survey results included:

- There are markets for various recyclable materials, but respondents desired more domestic markets for plastic and paper.
- About half (48%) of survey respondents said they would be adding materials to their processing list in order to boost volumes of materials; plastics were a big part of this mix.
- Over 40% said that declining volumes of materials due to the economy was an obstacle to growth.

6. MATERIAL TRENDS AND IMPACTS

On the national level, there continues to be lack of federal support for recycling. Federal tax benefits favor the use of virgin material in manufacturing while there are no tax benefits to encourage the use of

[4] Resource Recycling, January 2011

secondary material. While recent markets have been strong, the lack of Federal support may limit the growth in demand for secondary material and keep the market prices down. There is a continued need for local financial support to sustain the collection, sorting and processing of recyclables. OCRRA's MRF agreements are recognized as supportive of stable and consistent demand for recyclable commodities. The MRF contract also provides a guarantee that local waste haulers will never pay a tipping fee for the residential recyclables they collect and also that those materials will be recycled.

In the OCRRA service area, recycling continues to be strong although several national and local trends tend to diminish the tonnage of material available for recycling. One factor, "thin-walling" or "lightweighting," reduces the weight of recyclable items by decreasing the material used in products. This is apparent in many products, including PET bottles, aluminum cans and corrugated cardboard items. The trend toward lightweighting now includes the replacement of heavier rigid containers with lighter weight flexible packaging. Examples include: readily recyclable paperboard cereal boxes and HDPE milk jugs being replaced with flexible bags, which are not easily recyclable and not accepted in most residential recycling programs. These trends save manufacturers on materials needed, transportation costs and potentially decrease the overall carbon footprint of a product, but can replace a recyclable material with a non-recyclable material that ultimately ends up in the trash.

Another trend involves newspapers, which make up the largest portion in OCRRA's residential recycling stream, at 42% of all curbside recyclables. The current trends are moving towards smaller and thinner newspapers. In general, papers like the New York Times and the Wall Street Journal are seeing lower circulation rates, partly due to increased internet use. A 2009 Zogby poll found that: "The internet is by far the most popular source of information and the preferred choice for news ahead of television, newspapers and radio. More than half of the people questioned in the Zogby Interactive survey said they would select the internet if they had to choose only one source of news, followed by 21% for television and 10% for both newspapers and radio. The poll reinforces the idea that efforts by established newspapers, television and radio news outlets to push their consumers to their respective websites is working." When asked to peer into the future, an overwhelming 82% said the internet would be the main source of information in five years time, compared to 13% for television ***and 0.5% for newspapers***. About 84% of Americans have access to the internet, according to industry studies."[5]

In October 2009, the digital journal reported that "as alternative media continues to gain respectability and readers go to the internet for their news, newspaper circulation is declining at a rapid rate with daily papers falling 10% . . . On average, daily circulation for 379 daily newspapers collectively waned 10.6%.[6]

As a result, newspaper advertising revenue has decreased, which again leads to a thinner newspaper as less ads are printed. Many newspapers are removing or consolidating sections to save money as well. In 2010, the local newspaper, the Syracuse Post Standard, had a circulation of approximately 89,800 newspapers each weekday and 142,600 Sunday papers[7]. This represents a circulation decrease of 21% for weekdays and 14% for Sunday from 2007. Due to these changes, OCRRA expects to see the tonnage of newspapers in the recycling stream decrease in the future.

The population of Onondaga County has been stable at roughly 450,000 since 1990. Despite the changes in packaging and production technology, which tend to decrease the per capita tonnage of recyclable materials available to a stable total population base, the community's ability and commitment to maintain both the tonnage and the percentage waste recycled is impressive. OCRRA continuously seeks to

[5] Reuters: http://www.reuters.com/article/2009/06/17/us-media-internet-life-idUSTRE55G4XA20090617
[6] http://www.digitaljournal.com/article/281092#ixzz1dgo3ttbk
[7] Audit Bureau of Circulations figures for six-month period ending 03/31/10.
http://www.burrellesluce.com/system/files/BL_2010_Top_Media_List_Updated_May202010.pdf

strengthen this commitment through education, financial and regulatory support of the local recyclable commodity market and the identification of new waste streams which can be tapped for diversion.

7. EVALUATION OF MATERIALS

The decision concerning what materials to recycle involves a number of factors. They include the ease with which people can sort and prepare the items for recycling; the cost and feasibility to collect the materials at the curb and sort at the MRFs; and, most importantly, the long-term stability of the market for the sale of the material. The materials collected in OCRRA's recycling program are not simply diverted into the curbside blue bin collection; they must also be materials that are recovered by recycling and converted into new products or materials.

The waste stream is diverse, as demonstrated in Appendix 1. While recycling and disposal are the main focus of most planning units, providing environmentally sound solutions means also devoting ample consideration and resources to source reduction and reuse options. For some materials, for example polystyrene, a recycling solution is not readily available and would require substantial resources and infrastructure that do not currently exist for residential programs throughout the US. Instead of budget-constrained solid waste agencies looking for recycling outlets for items that are not readily recyclable, it is more effective to encourage, promote and provide resources for source reduction and reuse options. Source reduction and reuse help save local planning units from devoting valuable resources to an expensive venture and empower businesses and residents to become more actively involved in the reduction of the community's MSW. And, according to the EPA[8] and the NYS DEC[9] waste hierarchies, source reduction and reuse are the most preferable options for handling solid waste. The success of these methods is difficult to measure, but any further waste characterization studies will shed light on the topic.

Below is a discussion of various materials that are not currently included in OCRRA's recycling program or are included on a limited basis.

#3, #6 and #7 Plastics: 2% of the waste steam

Plastic resins #3, #6 and #7 are not currently collected for recycling in OCRRA's service area. The demand for these plastics is not currently stable in the long term and there are few processing facilities for these materials. The demand for scrap plastics is dependent on these limited facilities purchasing and using the material to manufacture new products.

There is only a small quantity of #3, #6 and #7 plastics in Onondaga County's waste stream (~2%), according to the 2005 Waste Q&C. Collecting this relatively small amount of material would increase the cost of recycling by:

- Increasing the sorting costs to the MRFs. These plastics include many different shapes and sizes of materials; particularly #7, which is a category that includes all composite resins of varying mixtures. This would mean sorting items into potentially dozens of categories.
- Increasing storage costs. Since only truckloads of each item are shipped to a market, it could take months (or more) to collect a truckload of material for some of these plastics.

At present, the demand in the markets for #3, #6 and #7 plastics is not consistent. And, according to the MRFs in OCRRA's service area, the revenue generated by the added plastics would most likely not offset

[8] http://www.epa.gov/epawaste/nonhaz/municipal/hierarchy.htm

[9] Beyond Waste. A Sustainable Materials Management Strategy for New York State. NYS DEC. http://www.dec.ny.gov/docs/materials_minerals_pdf/frptbeyondwaste.pdf

the costs of the additional labor needed. These issues, along with increased storage and collection costs, do not make this a viable market for OCRRA to enter at this time. However, changing technology may alter the situation in the future. For example, the market and MRF conditions became viable enough to add #5 plastics to the list of recyclables in 2010. OCRRA continually tracks market economics and technological possibilities for recycling all types of plastics.

While recycling is not a feasible option for these plastics, OCRRA encourages residents, businesses and institutions to examine ways in which they can use less of this material by eliminating it altogether, reusing it or finding a recyclable alternative.

#4 Plastics: 8.6% of the waste stream

LDPE and LLDPE plastics (#4) are present in substantial amounts in Onondaga County's waste stream, particularly as film wrap and plastic bags. As with other materials, OCRRA encourages the reduction and reuse of the plastic bags by making the community aware of alternatives (reusable bags for sale at many grocery stores) and ways they can reuse existing plastic bags. The intent is to minimize the amount of bags that need disposal, as they often end up in the waste stream or as litter.

Plastic bags and films are recyclable; however these plastics pose problems that hinder them from being included in OCRRA's residential recycling program. First, #4 plastics create unique challenges for MRFs. They come in a variety of shapes and sizes: shrink wrap, bags or bulkier items such as trays. Separation of these assorted materials could significantly increase the amount of man-hours spent at a MRF and lead to greatly increased labor costs. In addition, plastic bags mixed with other recyclables cause problems with sorting machinery, which cost time and money to remedy. Second, markets for the majority of #4 materials are for plastic film wrap, which is required to be uniform and uncontaminated. This is difficult to achieve in any sort of residential collection, as these films are coming from multiple sources and have many opportunities to become contaminated with food or chemicals.

For these reasons, it is more effective for large companies to set up their own recovery systems for uniform plastic films. For example, Wal-Mart has implemented a system of baling its plastic shrink wrap within its cardboard and backhauling the bales to processors. This allows for efficiency, as the uniform and clean shrink wrap goes from the packages straight to the processors.

In January of 2009, the NYS DEC's Plastic Bag Reduction, Reuse and Recycling Act became effective. This requires all retail stores within New York State that are 10,000 square feet or more in size and that provide plastics bags to customers to establish and maintain a plastic bag recycling program. This law was established to ensure convenient recycling locations for consumers to drop off their used plastic bags. By requiring stores to report data on weight and end market, the NYS DEC has the ability to ensure that the bags collected are actually being recycled. OCRRA frequently promotes this plastic bag take-back program to the public. It is beneficial to the OCRRA system, as it aims to keep plastic bags out of the trash AND the blue bins, where they ultimately create problems with MRF sorting machinery.

It is not yet clear how successful this program has been locally or statewide. OCRRA looks forward to reviewing data from the NYS DEC concerning participation among retailers and the amount of plastics bags diverted from the trash to recycling.

Textiles: 5.8% of the waste steam

Textiles, comprising 5.8% of Onondaga County's waste stream, do have viable markets for reuse and recycling. There are ample opportunities for textile reuse in Onondaga County; OCRRA strongly encourages residents to donate these items. Two major charities, the Rescue Mission and the Salvation Army, along with other smaller charitable donation centers, collect old clothes and textiles at drop-off locations throughout Onondaga County. These locations not only collect re-sellable clothing items, but

old textiles that will be sent for recycling into rags. OCRRA informs the public of these donation centers via its public education campaign and helps support the mission of these charities by providing a credit towards their trash fees based on the amount of donations they collect.

Reuse does divert a significant amount of textiles from the waste stream; in 2010, more than 3,600 tons were collected by donation centers in the OCRRA service area. Curbside recycling of textiles is not practical for various reasons, such as the need to keep material clean and dry; a nearly impossible feat in Upstate New York weather. Thus, much of the collection would be rejected by the markets and would be considered trash. Also, a substantial portion of that 5.8% could be textiles not able to be recycled or reused, such as used oil rags. Therefore, OCRRA continues to pursue reuse as the most viable option for residents' used textiles.

Books: 0.6% of the waste stream

While books constitute a relatively small portion of the waste stream, demand for reuse and recycling outlets are great in Onondaga County. OCRRA's Community Collection Center (C3), open from 2007 to early 2010, provided a year-round recycling outlet for residents to drop off unwanted books. Local charities, non-profit groups and schools were encouraged to visit C3 and sort through books before they were removed for recycling. This way, as many good-condition books as possible were reused as opposed to recycled. From 2007 to 2010, 385 tons of books were recycled from C3, many of which were in too poor of a condition for reuse.

Due to economic constraints, C3 was closed in March 2010 (see *Section 3.4* for discussion). This removed the convenience of an OCRRA-run year-round book recycling location; however, residents were encouraged to bring books to local charities such as the Rescue Mission and Salvation Army, as well as libraries.

After market examination and discussions with the local MRFs, in April 2011 OCRRA's Board of Director's voted to add softcover books to the list of acceptable items for the curbside recycling program. Residents are still encouraged to donate books (soft and hardcover) in good condition to local charities and libraries before considering recycling to promote reuse. Hardcover books were not included in the addition, as they present special problems for recycling because covers and glue backing need to be removed before the paper can be recycled. Therefore, hardcover books are encouraged to be reused, or if in poor condition, trashed.

Food Waste: 14.6% of the waste stream

The 2005 Waste Q&C Study indicated that 14.6% of the waste stream consists of food waste. This is the second largest component of disposed MSW, after "Other Paper" (See *Section 2.2*).

Because food waste constitutes such a large portion of the MSW in Onondaga County and is a material that can be readily composted, OCRRA instituted a commercial food waste composting pilot program in 2009. OCRRA employs a technically sound and effective process, called an extended aerated static pile system (EASP), where the food waste is mixed with ground yard waste, covered with finished compost and injected periodically with air via a blower system. This system allows the material to maintain aerobic conditions with minimal labor and handling. The project has met great success and continues to grow. In 2010, some 1,000 tons of commercial food waste were processed at OCRRA's Amboy Compost Site on a minimal foot print, with minimal staffing and investment and without regulatory violation. Included in this total are regular deliveries of food waste from Syracuse University's Food Services Department, as well as occasional food waste deliveries from the Syracuse City School District. The EASP system enables OCRRA to process both pre- and post-consumer foods, including meats, and has become a valuable resource for the region's waste diversion and recycling efforts.

OCRRA's goal is to develop the Amboy Site into an innovative 13-acre Yard and Food Waste Composting Facility to cost-effectively optimize the region's recycling and reuse opportunities. OCRRA projects that over 9,000 tons of institutional and commercial food waste will be processed at the facility annually by the year 2015. The project will serve as an environmentally sound model for replication by municipalities across New York State; and ultimately generate some 36,000 cubic yards of compost annually.

This program will effectively recycle thousands of tons of food waste each year, keeping this material out of the waste stream. There are currently no plans to extend this to residential food waste composting, as the costs of collection are too great and it is not clear that there will be an overall environmental benefit from adding new collections, based on fuel usage and greenhouse gas emissions. Currently, OCRRA encourages and provides informational resources for residential backyard composting, via the OCRRA website, email blasts and printed brochures.

Electronics: 1.2% of the waste stream

While electronics constituted a relatively small percentage of the waste stream (1.2%) in the 2005 Waste Q&C, the EPA states that the generation of this material is consistently increasing nationwide[10]. If predicted trends occur, this percentage could significantly increase in the coming years.

Reuse and donation of electronics is encouraged; OCRRA asks residents to check with donation centers for their ability to resell certain items first. However, electronics' function quickly becomes obsolete as new products emerge and many donation centers have strict criteria when accepting items like TVs and computers. Therefore, reuse is not always a viable option, particularly for older items.

Onondaga County residents were able to drop off old computer equipment and TVs for recycling at the Community Collection Center (C3) from 2007 to March 2010. Due to the high cost burden to operate this site, C3 was closed in early 2010. To ensure continued outlets for residents to recycle their electronics, OCRRA held two e-waste collection events in 2010, after C3's closure. A $10 fee was charged per TV, computer monitor and laptop; all other equipment was collected at no charge. Between C3 and the two collection events, Onondaga County residents dropped off 406,000 pounds (203 tons) of e-waste to OCRRA in 2010 for recycling.

Since OCRRA's e-waste recycling program's inception in 2002, nearly 4 million pounds of e-waste has been collected for recycling in Onondaga County. Due to New York State's newly passed Extended Producer Responsibility law, which took effect in April 2011 and puts the financial burden for end of life costs onto the manufacturers, OCRRA steers residents toward other local electronics recycling outlets. These locations are convenient and, according to the new law, will not charge a fee for electronic waste. This new legislation will be a welcome change, transferring the financial burden to recycle e-waste from local governments to manufacturers – which in turn will encourage manufacturers to design products that are easier to recycle.

It is still too early to determine how effective the newly enacted state law is. However, OCRRA anticipates, as the manufacturers and local retailers become accustomed to the changes, electronics recycling will become more efficient and convenient, helping to keep this material out of the waste stream.

[10] US EPA. Statistics on the Management of Used and End-of-Life Electronics. http://www.epa.gov/epawaste/conserve/materials/ecycling/manage.htm

8. CONCLUSION

OCRRA's recycling program continues to evolve each year as the waste stream changes, as markets fluctuate and as new technology emerges. In order to stay ahead of the game, OCRRA continually evaluates materials to determine the most environmentally sound and economically feasible method of keeping items out of the trash. In many cases recycling is the best method, as items are easily separated and marketed, as is the case with PET bottles, corrugated cardboard, etc. In some cases, reuse is found to be the ideal choice, as recyclable markets may not stable and there are numerous reuse outlets, such as with textiles. Finally, source reduction may be a focus, as some items may be difficult and expensive to recycle with limited markets, as is the case with polystyrene.

By undertaking continual program evaluation, OCRRA made positive program changes from 2008 to 2010. Recent examples of program additions and expansions include:

- The addition of **#5 plastics and softcover books** to the recyclable list, which are expected to allow the community to recycle hundreds, perhaps thousands, more tons of material each year.
- The implementation of an innovative system for **commercial and institutional food waste composting** and the program's continued expansion.
- The modification of OCRRA's **household battery collection program** to comply with new federal regulations, which has been met with great success – over 81 tons of batteries diverted from MSW in 2010.
- The continued focus on capturing more paper from the waste stream. The **Blue Ribbon Recycler**, a business-recognition program and the **School Recycling Pledge**, an innovative school recycling program, both help further the goal of recycling more paper in Onondaga County.
- The introduction of **Extended Producer Responsibility** into the electronics recycling sector. This is intended to ease the cost burden OCRRA and other local municipalities face when addressing e-waste.
- The operation of a **non-ferrous metal recycling system** at OCRRA's Waste-to-Energy Facility, allowing the recycling of hundreds of tons of non-ferrous metal annually.
- The renewal of a **long-term contract with two local MRFs**, which allows for stability and consistency in the recycling program in Onondaga County.
- The significant success of a **new public education campaign**, "Save the World a Little Each Day."

The last three years of recycling and waste reduction programs in Onondaga County have demonstrated innovation, resilience and creativity. The public education was fine-tuned, additional materials were added to the recyclable list, more recyclable paper was captured and many of OCRRA's programs were recognized nationally and state-wide as among the best. These factors help the community consistently recycle 60% or better of its waste each year. These numerous accomplishments place OCRRA at the forefront of effective and environmentally viable solid waste management.

APPENDIX 1. 2005 WASTE Q&C:
SUMMARY OF DISPOSED MUNICPAL SOLID WASTE* COMPOSITION

Material Components	Summary			
	Mean	Standard Deviation	Upper Confidence Limit	Lower Confidence Limit
PAPER				
Newspaper	3.4%	2.7%	4.2%	2.7%
Magazines	1.6%	1.5%	2.0%	1.2%
Corrugated	3.9%	5.2%	5.4%	2.5%
Corrugated Waxed	0.7%	1.0%	1.0%	0.5%
Gable Top	0.2%	0.2%	0.2%	0.1%
Aseptic Containers	0.0%	0.1%	0.0%	0.0%
Paper Board	1.7%	1.9%	2.2%	1.1%
Books	0.6%	1.0%	0.8%	0.3%
Office Paper Mixed	3.3%	5.0%	4.7%	1.9%
Other Paper (Not recyclable)	12.8%	5.4%	14.3%	11.3%
SUBTOTAL:	28.2%			
PLASTICS				
PET #1 Bottles	1.0%	1.0%	1.3%	0.8%
Bottle Bill - PET #1 Bottles	0.3%	0.4%	0.4%	0.2%
PET #1 Containers	0.1%	0.2%	0.2%	0.1%
HDPE #2 Bottles Natural	0.4%	0.4%	0.5%	0.3%
HDPE #2 Bottles Color	0.5%	0.5%	0.6%	0.3%
HDPE #2 Containers	0.2%	0.7%	0.4%	0.0%
LHDPE #2	1.0%	0.9%	1.2%	0.8%
LDPE #4, LLDPE #4	8.6%	6.0%	10.3%	6.9%
PVC #3, Poly. #5, #6, #7 (combined) (See Note 1)	2.4%	1.7%	2.8%	1.9%
PVC #3	0.0%	0.0%	0.0%	0.0%
Polypropylene #5	0.1%	0.2%	0.2%	0.1%
Polystyrene #6	1.5%	0.9%	1.8%	1.2%
Plastic Composites #7	0.2%	0.3%	0.3%	0.1%
Other Plastics	4.6%	4.8%	5.9%	3.2%
SUBTOTAL:	19.1%			
FOOD WASTE	14.6%	10.9%	17.7%	11.6%
TEXTILES AND LEATHER	5.8%	7.3%	7.8%	3.8%
RUBBER	1.0%	1.9%	1.5%	0.4%
DIAPERS	2.4%	3.0%	3.3%	1.6%
FERROUS METALS	0.0%	0.0%	0.0%	0.0%
Food / Bimetal Cans / Aerosol Cans	1.0%	1.0%	1.3%	0.8%
Automobile Parts	0.8%	2.1%	1.4%	0.2%
Other Ferrous	1.6%	3.8%	2.7%	0.5%
SUBTOTAL:	3.5%			
NON-FERROUS METALS	0.0%	0.0%	0.0%	0.0%
Aluminum Cans	0.1%	0.2%	0.2%	0.1%
Bottle Bill Aluminum Cans	0.2%	0.5%	0.4%	0.1%
Aluminum Foil	0.4%	0.4%	0.5%	0.2%
Other Non-ferrous Metals	0.4%	0.8%	0.6%	0.2%
SUBTOTAL:	1.1%			

Material Components	Summary			
	Mean	Standard Deviation	Upper Confidence Limit	Lower Confidence Limit
ELECTRONICS	1.2%	2.2%	1.8%	0.5%
GLASS	0.0%	0.0%	0.0%	0.0%
Bottle Bill Glass	0.3%	0.5%	0.4%	0.1%
Clear Glass Containers	0.7%	0.9%	1.0%	0.5%
Amber Glass Containers	0.1%	0.2%	0.1%	0.0%
Green Glass Containers	0.2%	0.6%	0.4%	0.0%
Flat Glass	0.2%	0.9%	0.5%	0.0%
Other Glass	0.3%	0.7%	0.6%	0.1%
SUBTOTAL:	1.8%			
WOOD	3.2%	3.9%	4.3%	2.1%
RUBBLE	0.6%	1.6%	1.0%	0.2%
YARD WASTE	1.2%	2.8%	1.9%	0.4%
DIRT / FINES	4.2%	3.2%	5.1%	3.3%
HAZARDOUS / PAINT	0.0%	0.0%	0.0%	0.0%
Household Hazardous	0.4%	0.8%	0.6%	0.2%
Lead and Dry Cell Batteries	0.0%	0.1%	0.1%	0.0%
Other Hazardous	0.0%	0.1%	0.1%	0.0%
SUBTOTAL:	0.5%			
MISCELLANEOUS	11.7%	6.9%	13.6%	9.8%
TOTAL:	100%			

* Commercial and residential data were evaluated separately during the study. This table displays data that is a mean between commercial and residential data.

NOTE:
Samples taken during a portion of Monday and Tuesday during the first week were sorted with PVC (#3), Polypropylene (#5), Polystyrene (#6) and Plastic Composites (#7) mixed into a single category. However, these materials were sorted into separate categories beginning on Tuesday and for the remainder of the week. For the samples in which #3, #5, #6, and #7 were collected separately, both the combined and separated data are shown.

Only the combined #3, #5, #6, and #7 is included in the plastics subtotal.

APPENDIX 2. 2005 WASTE Q&C:
SUMMARY OF RESIDENTIAL RECYCLABLES COMPOSITION

Material Components	Weighted Mean	Standard Deviation	Upper Confidence Limit	Lower Confidence Limit
PAPER				
Newspaper	41.9%	7.6%	56.8%	26.9%
Magazines	8.1%	4.2%	16.3%	0.0%
Corrugated	11.1%	4.8%	20.6%	1.6%
Corrugated Waxed	0.4%	1.0%	2.4%	0.0%
Gable Top - Milk Cartons	0.5%	1.1%	2.6%	0.0%
Aseptic Containers	<0.1%			
Paper Board	5.6%	3.6%	12.6%	0.0%
Books	0.9%	1.4%	3.7%	0.0%
Office Paper Mixed	4.3%	3.1%	10.4%	0.0%
Other Paper	1.1%	1.6%	4.2%	0.0%
SUBTOTAL PAPER	73.8%			
PLASTICS				
PET #1 Bottles	3.1%	2.7%	8.4%	0.0%
Bottle Bill - PET #1 Bottles	0.2%	0.6%	1.3%	0.0%
PET #1 Containers	0.3%	0.8%	2.0%	0.0%
HDPE #2 Bottles Natural	2.1%	2.2%	6.4%	0.0%
HDPE #2 Bottles Color	2.8%	2.5%	7.8%	0.0%
HDPE #2 Containers	0.2%	0.7%	1.5%	0.0%
HDPE #2 Grocery Bags	0.1%	0.6%	1.2%	0.0%
LDPE #4, LLDPE #4	0.1%	0.4%	1.0%	0.0%
PVC #3, Poly. #5, #6, #7	N/A			
PVC #3	<0.1%			
Polypropylene #5	0.3%	0.8%	1.9%	0.0%
Polystyrene #6	0.1%	0.6%	1.3%	0.0%
Plastic Composites #7	0.1%	0.5%	1.2%	0.0%
Other Plastics	0.7%	1.3%	3.2%	0.0%
SUBTOTAL PLASTICS	10.1%			
FOOD WASTE	0.1%	0.6%	1.2%	0.0%
TEXTILES AND LEATHER	0.1%	0.4%	0.8%	0.0%
RUBBER	<0.1%			
DIAPERS	<0.1%			
FERROUS METALS				
Food / Bimetal Cans	4.5%	3.2%	10.8%	0.0%
Automobile Parts	0.0%	0.0%	0.0%	0.0%
Other Ferrous	0.1%	0.5%	1.0%	0.0%
SUBTOTAL FERROUS	4.6%			
NON-FERROUS METALS				
Aluminum Cans	0.1%	0.5%	1.2%	0.0%
Bottle Bill Aluminum Cans	0.1%	0.4%	0.9%	0.0%
Aluminum Foil	<0.1%			
Other Non-ferrous Metals	0.1%	0.6%	1.3%	0.0%
SUBTOTAL NON-FERROUS	0.4%	1.0%	2.3%	0.0%
ELECTRONICS	<0.1%			

Material Components	Weighted Mean	Standard Deviation	Upper Confidence Limit	Lower Confidence Limit
GLASS				
Bottle Bill Glass	0.7%	1.3%	3.3%	0.0%
Clear Glass Containers	6.2%	3.7%	13.4%	0.0%
Amber Glass Containers	0.7%	1.3%	3.2%	0.0%
Green Glass Containers	1.2%	1.7%	4.5%	0.0%
Flat Glass	0.3%	0.9%	2.1%	0.0%
Other Glass, Ceramic, Light	0.6%	1.2%	3.0%	0.0%
SUBTOTAL GLASS	9.7%			
WOOD	<0.1%			
RUBBLE	<0.1%			
YARD WASTE	<0.1%			
DIRT / FINES	0.8%	1.4%	3.5%	0.0%
HAZARDOUS/PAINT				
Household Hazardous	<0.1%			
Lead and Dry Cell Batteries	<0.1%			
Other Hazardous	<0.1%			
SUBTOTAL HAZARDOUS/PAINT	<0.1%			
MISCELLANEOUS	0.3%			
TOTAL	100%			

Note:
PVC #3, Polypropylene #5, Polystyrene #6, and Plastics Composite #7 were sorted into separate categories throughout the second week of the Q&C Study. Therefore, the mixed category above is marked as N/A (not applicable).