



Ohio's Waste Management System

Briefing packet for members of the Ohio Materials
Management Advisory Council (MMAC)

3/18/2016

Introduction

Established in House Bill 64 of the 131st Ohio General Assembly, the Ohio Materials Management Advisory Council (MMAC) consists of 13 members representing the multitude of stakeholders involved in Ohio's solid waste management system. The 13 seats (and current appointments) are included at the end of this brief. The council is a result of a merger between two former councils: the Solid Waste Advisory Council and the Recycling and Litter Prevention Advisory Council.

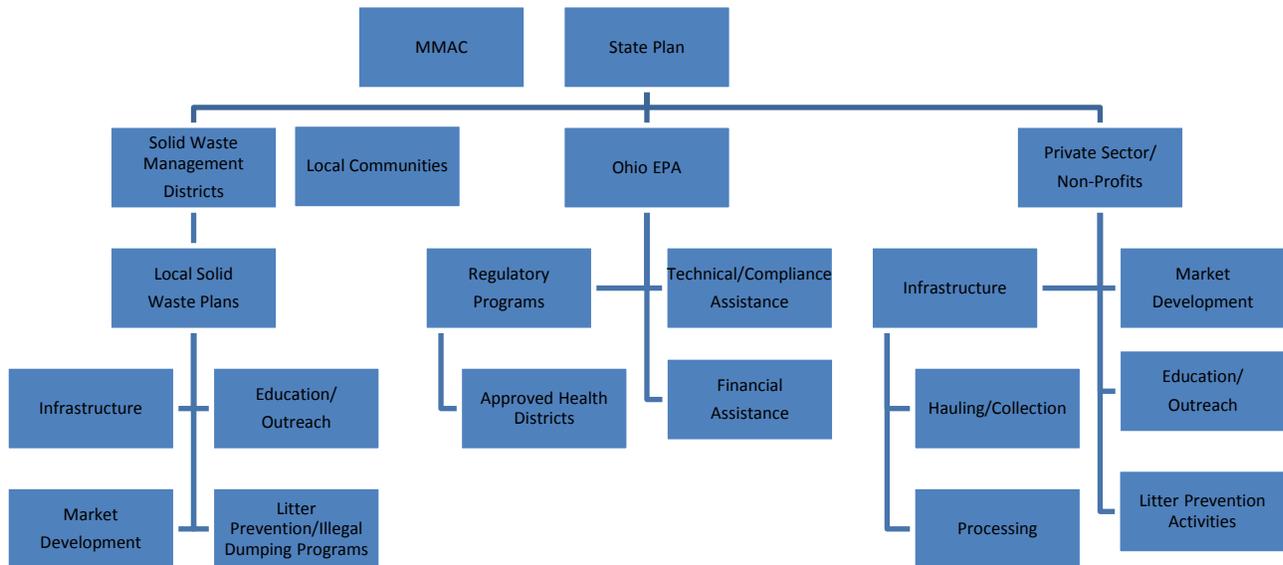
Statutory authority for MMAC is established out in Ohio Revised Code (ORC) 3734.49. Section (F) lays out nine tasks for the council:

1. Advise and assist the Ohio EPA Director with preparation of the State Solid Waste Management Plan (State Plan);
2. Approve or disapprove the State Plan;
3. Annually review implementation of the State Plan;
4. Prepare an annual report for the General Assembly;
5. Triennially conduct a full review of the State Plan;
6. Provide guidance and certification of eligibility for recycling grant awards from Ohio EPA;
7. Advise Ohio EPA in establishing statewide source reduction, recycling, recycling market development, and litter prevention programs;
8. Research and respond to questions from the Ohio EPA Director; and
9. Establish and develop formal/informal partnerships to foster a productive marketplace for the collection and use of recycled materials.

In order to achieve these goals, members will need to be familiar with Ohio's current waste management system as well as opportunities for advancement. This brief aims to provide a fundamental knowledge base to members so discussions can be fruitful from the very beginning. While the system is all interconnected, this brief addresses the system in modular sense for simplicity's sake.

Any questions on the information contained in this brief can be directed to Christopher Germain, Waste and Recycling Planner, at christopher.germain@epa.ohio.gov or 614-728-5317.

System Overview



From a high level perspective the system is comprised of three groups of active stakeholders who provide input during the implementation of the State Plan (either via MMAC or during public comment periods). Once the State Plan is in place, currently the 2009 version, each group has a role in implementing the State Plan goals.

Local solid waste management districts (SWMD) write local solid waste Plans which promote the development of curbside and drop-off recycling infrastructure, establish education and outreach activities, and (often) include market development initiatives such as grants or technical assistance. SWMDs often partner with their local communities and these communities must ratify (approve) the updated local solid waste Plan every 4-6 years.

Ohio EPA, primarily the Division of Materials and Waste Management (DMWM), oversees the regulatory functions including permitting/licensing/inspecting of solid waste facilities, implementing a statewide scrap tire cleanup program, and providing emergency response assistance. The agency partners with approved Health Districts to implement many of these activities. Complementing the regulatory functions, the agency also provides technical and compliance assistance for facilities, SWMDs, and other interested parties.

Additionally, the Division of Environmental and Financial Assistance (DEFA) houses the recycling and litter prevention grant program which supports efforts to develop infrastructure, enhance

market development activities and assist with litter prevention programs. Several million dollars are awarded each year.

In many of the above mentioned activities, Ohio EPA and SWMDs partner with Ohio's robust private and nonprofit sector. Many of Ohio's landfills, material recovery facilities (MRFs)¹, transfer facilities, curbside collection programs, and material end users are owned and operated by private sector or nonprofit entities. Ohio benefits from significant investment over the past decade in recycling infrastructure and from overall long-term investment from the private/nonprofit sector in all facets of solid waste management.

Facilities such as landfills, solid waste transfer stations, composting facilities, and scrap tire haulers/facilities are well established within the regulatory framework. MRFs, haulers, and recycling transfer stations tend to be outside of the traditional regulatory system, though they may have interactions with other programs such as water, air or transportation. Ohio also has several waste streams which are defined separately from 'solid waste' including ash from coal power plants and construction and demolition debris (C&DD). Whether they are in the official regulatory system or not, all of these activities are interconnected and fall within the term 'materials management'.

All pertinent statutory references for these programs can be found in ORC 3734 (solid waste), 3736 (recycling and litter prevention), and 3714 (C&DD).

Each of the major components of the system are described in greater detail in the following sections of this brief.

¹ The industry term for a recycling center

State Solid Waste Management Plan

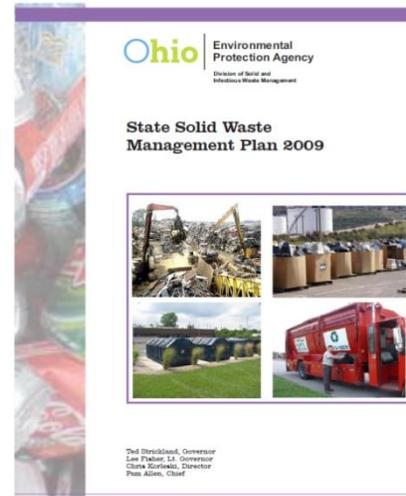
Ohio House Bill 592 (1988) established much of the current solid waste management system, including the State Solid Waste Management Plan. This plan, initially completed in 1989, was updated in 1995, 2001 and 2009. The State Plan has a number of required items – laid out in ORC 3734.50(A-H) – including reducing Ohio’s reliance on landfills, establishing state goals, establishing site criteria for facilities, and developing a strategy for tire management.

The primary purpose of the State Plan is to reduce Ohio’s reliance on landfills. It also evaluates progress since the last update and establishes the goals which the State and SWMDs must strive to meet. The 2009 State Plan contains nine goals:

1. **ACCESS:** Demonstrate access to infrastructure for at least 90% of a SWMD’s population;
2. **RATES:** Demonstrate recycling rates of 25%+ for residential/commercial and 66%+ industrial;
3. **EDUCATION:** Minimum requirements – website, inventory of infrastructure, comprehensive resource guide, presentation/speaker;
4. **EDUCATION:** Outreach Plan including target audiences, priorities and best practices;
5. **RESTRICTED (SPECIAL) WASTES:** Provide strategies for scrap tires, yard waste, lead-acid batteries, household hazardous waste, and electronics;
6. **ECONOMIC INCENTIVES:** Explore programs to incentivize source reduction and recycling programs;
7. **MEASURE GREENHOUSE GAS REDUCTION:** Use US EPA’s WARM model to determine impact of recycling programs on greenhouse gases;
8. **MARKET DEVELOPMENT** (optional): Develop programs to foster the development of end uses for recycling commodities and the use of recycled products; and
9. **REPORTING:** Provide annual report to Ohio EPA.

Development and review of the State Plan is a primary role of MMAC. The State Plan is required by statute to be fully evaluated every 3 years, but there is no required timeline for updates. If MMAC decides the State Plan should be updated, Ohio EPA personnel will guide the council through the process.

Ohio EPA has developed a fact sheet on the State Plan which can be accessed [here](#).



2009 State Plan (click for document)

Solid Waste Management Districts

Each of Ohio's 88 counties belongs to a solid waste management district (SWMD) resulting in 52 SWMDs overall. Most (37) are comprised of a single county and tend to operate as a county department while 15 are part of a multi-county SWMD which generally has offices separate from county operations.



SWMD Quick Facts

- Every county must belong to one
- Total: 52 (37 single, 15 multicounty)
- Governance: District (47) or Authority (5)
- Population: 22,000 – 1.23 million
- Total Income (2014): \$79.001 million
- Total Expenses (2014): \$72.076 million
- Median Recycling Rate (2014): 49.83%
- Total Recycling (2014): 13,306,043 tons
- Planning Cycle: 4.5 – 6.5 years

SWMDs have two governance options. The most common is a District structure which is governed by a Board of Directors consisting of all three Commissioners from each county (i.e. the Stark-Tuscarawas-Wayne SWMD Board of Directors is all nine commissioners and the Medina SWMD is just three). The other form is an Authority which is governed by a Board of Trustees that lays out minimum representation (such as a Commissioner, City, Health Department, etc.), but allows for additional seats as desired.

The Local Plan and Programming

The primary purpose of SWMDs is to develop and implement a local solid waste plan that meets the goals of the State Plan. This approach allows for highly customized programming at a local level. For example, some SWMDs have curbside recycling programs in every city, village and township while others have none and instead manage a system of recycling drop-off sites. Most fall somewhere between those two extremes.

In order to develop the plan, the SWMD must go through a process that includes program evaluation, draft development, revisions, public comment, and local ratification (approval). Ohio EPA must also approve the ratified plan. There are fact sheets available that provide more information on the [plan](#), the [planning process](#), and [local ratification](#).

Some of the common activities/services SWMDs provide include:

- Development and maintenance of a recycling drop-off system;
- Technical and/or financial assistance for curbside collection systems;
- Education and outreach activities;
- Yard waste/tires/electronics/household hazardous waste and other special materials programs;
- Market development programs; and
- Technical and contracting assistance to institutions (such as schools and government offices) and businesses.

Additionally some own infrastructure such as transfer stations, MRFs, and recycling trucks.

Finances

In order to implement this programming, SWMDs are authorized to raise revenue. There are a number of ways this is achieved including Disposal Fees (\$/ton for every ton of waste disposed at a landfill within the SWMD), Generation Fees (\$/ton for every ton of SWMD-generated waste disposed of at any Ohio landfill) and contract fees (effectively a Generation fee but enforced by contracts). SWMDs may also raise funds through recycling revenue, user fees, county contributions or parcel fees. Revenues and expenditures vary dramatically from SWMD to SWMD depending on the population, fee type and programming slate.

Rules and Authorities

SWMDs are authorized in statute to exercise certain authorities if their local communities allow. These can include inspecting out-of-state waste, maintenance of solid waste operations and flow control (the ability to designate where waste generated in their borders is disposed). Fewer than half of Ohio's SWMDs exercise flow control and most which do exercise a form known as "designation" which actually designates multiple facilities and is used to ensure fees are collected at both in-state and out-of-state facilities.

SWMDs operate a trade association, the Organization of Ohio Solid Waste Management Districts (OSWDO); the organization operates as a sub-organization of the County Commissioners Association of Ohio (CCAO). OSWDO's website can be accessed [here](#).

Ohio EPA – Regulatory Programs and Technical Assistance

Solid waste regulations and most solid waste technical assistance falls within the purview of Ohio EPA's Division of Materials and Waste Management (DMWM). DMWM's Mission Statement is:

To protect public health and the environment by promoting alternative waste materials management options that reduce reliance on landfills and ensuring that waste management facilities are constructed and operated in compliance with applicable laws and regulations and hazardous waste generators are in compliance with applicable laws and regulations.

DMWM handles registrations, licenses, permits, inspections, financial assurance and other activity required under Ohio Revised Code. DMWM also administers and processes all reports including facility operations and financial reports. Inspections also apply to some closed facilities as well.

In addition to the basic regulatory functions mentioned above, DMWM operates a number of specialized programs such as scrap tire cleanups, a beneficial use program, health district partnerships and an orphaned landfill program. These are briefly described below:

- **Scrap Tire Cleanup Assistance:** Since 1993, Ohio EPA has provided funding to assist with the cleanup of small-scale open dumps (defined as 100 to 5,000 tires). The funds will cover the disposal cost for tire piles that meet the size and other requirements. Funds are available to both public and private sector applicants. More information can be found on DMWM's [Scrap Tire](#) webpage.
- **Beneficial Use:** The Beneficial Use program seeks to divert materials from landfills by allowing alternative uses for the material. When allowing a beneficial use, certain factors must be weighed to determine that use of a material in a particular way will not harm human health or the environment. Currently the program is working to establish formal rules and identify uses that can be pre-approved in order to speed up the process. Find more information on DMWM's [Beneficial Use](#) webpage.
- **Orphaned Landfills:** Using funds from civil penalties, the CLOSR program prioritizes necessary projects at orphaned landfills that protect human health and the environment. This may include gas mitigation systems, ground water protection systems or other improvements. The same fund is also used for other projects such as illegal dump cleanups. The program is only utilized after all other site-specific financial resources have been exhausted. More information can be found on DMWM's [Orphaned Landfills](#) webpage.

- **Health District Partners:** Ohio EPA contracts with local health districts to administer solid waste regulatory activities (licenses, registrations, inspections, etc.) for facilities in their jurisdiction. Being a partner is completely voluntary and requires an annual survey to ensure the program is running properly. As of March 9, 2016 71 health districts were approved partners (59 county districts and 12 city districts). Health District partners receive no direct funding from Ohio EPA, but do receive portions of the fees paid by facilities as compensation for their costs. More information can be found on DMWM's [Health District Partners](#) webpage.
- **Solid Waste Management District Planning:** This program works with solid waste management districts to prepare and approve their local plans. It also assists in the development of the State Plan, collects and distributes recycling data and promotes information sharing among solid waste districts and all other interested parties. You can find more information on the [SWMD Planning](#) webpage.

Technical and Compliance Assistance

DMWM (and the agency as a whole) places a strong emphasis on compliance and technical assistance. In DMWM this includes a unit dedicated specifically to compliance assistance. DMWM is fortunate to have a number of nationally recognized experts and programs.

The Division of Environmental and Financial Assistance (DEFA) is also tasked with providing technical and compliance assistance and contains the Sustainable Materials Unit. In addition to general technical assistance, this unit carries out statewide litter prevention and recycling initiatives. Currently two major projects are in the works:

- **Waste Characterization Study:** Back in 2003, the Division of Recycling and Litter Prevention at the Ohio Department of Natural Resources conducted a waste characterization study to determine what materials were being disposed in Ohio's landfills. This information was used for years to target the state's resources towards specific recycling streams such as organics. In 2015, Ohio EPA began the process of conducting a new study so our programs can be refocused as needed.
- **Ohio Materials Exchange (OMEx):** In the past Ohio has operated a materials exchange which aims to bring together generators with partners who can use their potential waste. For example, a company may produce plastic products, but have a byproduct that they have no use for. OMEx seeks to help that producer find someone to buy or accept that material for free. It diverts the material from the landfill and helps Ohio's businesses. This program has been absent at the State level for years, but efforts are underway to re-launch it in a more sustainable manner than ever before.

MMAC will be talking about these two major projects at future meetings.

Ohio EPA – Financial Assistance (Grants)

Ohio funded a recycling and litter prevention grant program for decades at the Ohio Department of Natural Resources (ODNR). In 2012, that program came over to Ohio EPA. Each year, the program provides millions in grants to local communities, nonprofits, SWMDs and the private sector for various projects that promote a stronger, more successful recycling industry in Ohio.

Grant applications are due in early February each year. Awards are announced in late spring with funds becoming available on July 1 (beginning of Ohio's fiscal year). While the exact makeup of the grant program may change slightly from year to year, in general there are four programs:

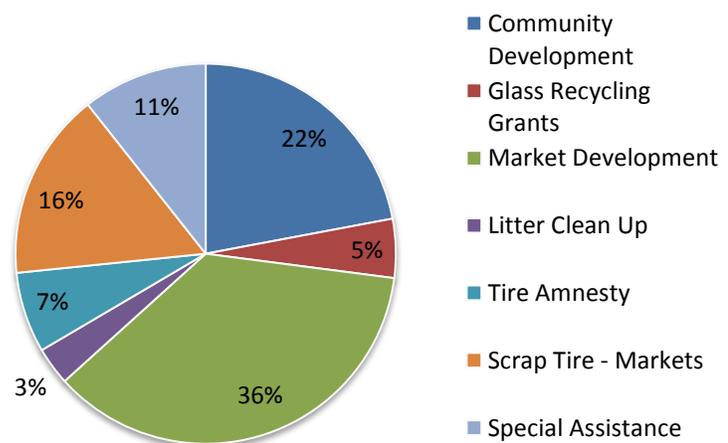
- **Community Development:** Supports the development of local recycling infrastructure and litter prevention activities
- **Litter Management:** Supports litter prevention activities and scrap tire collection efforts.
- **Market Development:** Supports businesses and nonprofits in securing infrastructure to process or use recyclable materials.
- **Scrap Tires:** Supports the acceptance of scrap tires in the manufacturing/engineering process or the processing of scrap tires for market.

In 2015 the program awarded a total of \$4,655,859.36. Since the adoption of the current State Plan (2009), a total of \$31,962,680.92 has been awarded, primarily for community and market development projects.

Examples of projects that received funding include:

- Recycling transfer stations in southeast Ohio (\$150,000);
- A truck for recycling and litter prevention activities from Keep Cincinnati Beautiful (\$20,000);
- Special event recycling containers for Ohio University, Cleveland State University, and the University of Toledo (\$52,110);
- Electronics recycling unit for Accurate IT in Franklin County (\$131,667);

Grant Awards by Category (2009-2015)



- Shredding & grinding system at Fremont Plastics in Sandusky County to reuse off-spec plastics (\$225,000); and
- Tire grinding mills for Coshocton industries in Coshocton County (\$350,000).

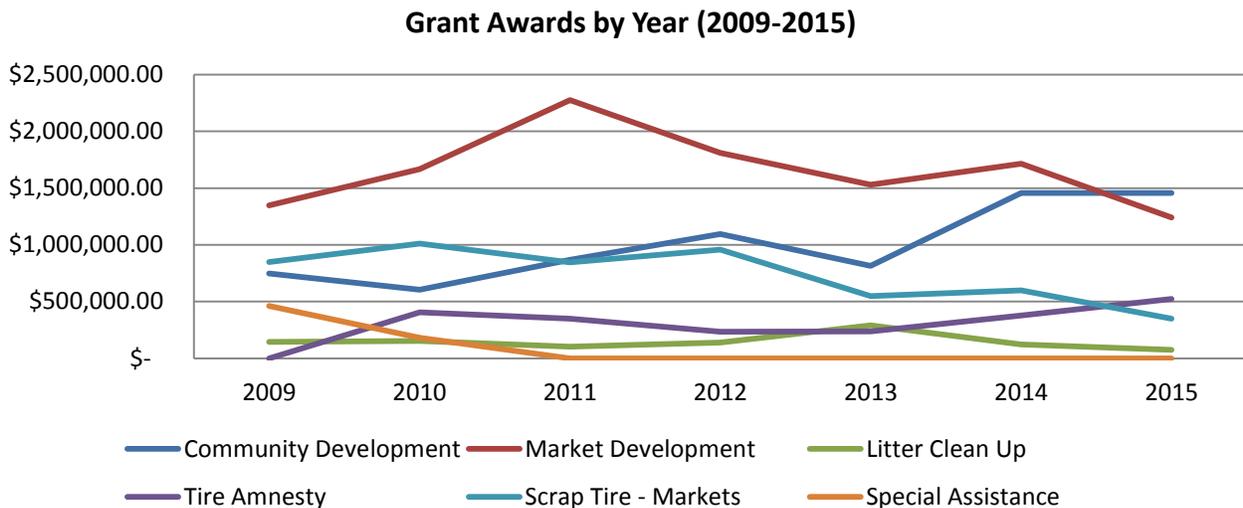
The 2016 grant application window closed on February 1, 2016. Nearly 120 applications were received this year. You can find more information on the grant program on Ohio EPA website [here](#).

Special Grants: Glass

In addition to the standing grant program mentioned above, Ohio EPA has been implementing a grant program specifically to promote the collection and processing of glass. Glass has faced significant challenges in recent years due to a low commodity value and heavy weight (which results in high hauling costs). It can also be difficult to process in some instances, bringing significant wear and tear to recycling equipment. Despite those challenges, there is a high demand from manufacturers for glass and residents expect that it will be collected.

In response, Ohio EPA was allocated \$1 million to improve collection and processing. Through these funds and resulting partnerships, a number of new programs have been established throughout Ohio in recent years. These include the “Recycle on High” recycling program in Columbus, glass-specific drop-off sites in Miami County, and a partnership between Putnam and Van Wert Counties to collect additional glass.

You can find out more about this initiative, including the 2011 Glass Study, on Ohio EPA’s [Glass Recycling](#) webpage.



Infrastructure

Since the passage of Ohio House Bill 592, Ohio's solid waste management system has developed into a sophisticated system based on a strong infrastructure of landfills, transfer systems, material recovery facilities (MRFs), compost and tire facilities, and end users.

Landfills – Solid Waste

The State Solid Waste Management Plan (State Plan) aims to reduce Ohio's reliance on landfills for waste disposal, but landfills remain an important component of our waste management today. Modern landfills are highly engineered, undergo regular inspections, and must keep detailed records of their activity.

As of March 11, 2016 there were 38 publicly available municipal solid waste landfills. Based on 2014 waste receipts, these landfills provide Ohio with approximately 37 years of capacity. Over the past two decades, the number of MSW landfills decreased by 27% (14 facilities) while capacity grew by 156% due to expansion approvals.

The top 5 landfills, by tonnage accepted in 2014, were Rumpke Sanitary Landfill (Hamilton County), Tunnel Hill Reclamation Landfill (Perry County), Lorain County Landfill (Lorain County), Kimble Sanitary Landfill (Tuscarawas County) and Carbon Limestone Landfill (Mahoning County).

Of the 38 facilities, 12 are owned by public entities and contain 12% of remaining capacity while the remaining 26 are private, accounting for 88% of remaining capacity. Some of the publicly owned facilities are privately operated.

Ohio also contains 13 captive industrial/residual landfills which are not publicly available and are used by individual businesses to manage their waste. These primarily handle coal ash from power generation.

You can learn more about Ohio's landfill infrastructure on DMWM's [Landfill](#) webpage including regulatory guidance, facility lists and more.

Transfer Stations – Solid Waste & Recycling

Solid waste transfer stations help reduce the cost of solid waste collection for local communities and businesses by reducing the distance a truck must travel to drop off waste. Waste is then consolidated and sent to one or more landfills for final disposal. Transfer facilities also require a permit, inspections and record keeping.

As of March 11, 2016 there were 62 solid waste transfer stations operating in Ohio – 24 publicly owned and 38 privately owned. Some of the publicly owned facilities were privately operated.

These facilities handled 3,915,560 tons of waste in 2014 with three handling more than 200,000 tons each. Another twelve handled over 100,000 tons each.

In addition to solid waste transfer stations, Ohio has seen a growing number of recycling transfer stations. Since recycling facilities are not regulated, Ohio EPA is unsure of the exact number of these facilities, but is always working to have the most accurate list possible. Recyclables dropped at these facilities are taken to one of Ohio's major material recovery facilities. Some are paired with solid waste transfer facilities, but most appear to be standalone sites. They have been especially important in bridging the transportation cost gap in rural areas such as southeast Ohio or far northeast such as Ashtabula (one is currently under construction in the City of Ashtabula).

You can learn more about transfer facilities at DMWM's [Transfer Facility](#) webpage.

Material Recovery Facilities (MRFs) – Recycling

It is believed that Ohio is home to approximately 66 multi-material MRFs ranging from local centers such as the Logan County Recycling center to large scale automated facilities such as Rumpke's facility in St. Bernard or Waste Management's facility in Akron. About half of these facilities are single-stream meaning their generators (residents) place all recyclables in one bin and they are sorted at the facility. The remaining are dual stream meaning residents separate out cardboard/paper from plastics/metals/plastics.

In addition to the 66 facilities that can be considered traditional MRFs, Ohio EPA's list includes an additional 97 facilities that process single materials such as paper or metal. Since recycling facilities are outside of the solid waste regulatory system, Ohio EPA develops the list and associated data based on voluntary interaction with facility owners. It's likely additional specialized processors exist throughout the state which Ohio EPA has not yet come in contact with.

In recent years there has been significant private and public investment in MRFs all across the state. Ohio EPA's recycling grant programs have been a popular source of support for advancing local community recycling centers especially in areas which are a significant distance from large scale private sector facilities.

Compost Facilities

For years, Ohio has maintained a nationally renowned composting program which includes extensive infrastructure. Compost facilities have siting requirements, licensing and registration (varies by class) and annual reports. Facilities fall into one of four categories depending on the type of material they accept for composting:

Class I: Mixed solid waste

Class II: Source-separated yard waste, agricultural waste, animal waste and food scraps
Class III: Source-separated yard waste, agricultural waste and animal waste
Class IV: Source-separated yard waste

As of March 11, 2016 there was one Class I facility (Medina County – currently inactive), 38 Class II facilities, 64 Class III facilities and 315 Class IV. Several local communities own facilities to process yard waste. Some Ohio prisons have also started to operate Class II facilities for their food waste and even to partner on zero waste initiatives. The private sector also owns numerous facilities throughout the state.

You can learn more about Ohio's composting program on DMWM's [Composting](#) webpage.

Scrap Tires: Haulers and Facilities

Ohio's scrap tire infrastructure includes both registered haulers and processing facilities. As of March 11, 2016 there were 23 scrap tire facilities including one tire monofill in Stark County and a mobile processing unit based out of Franklin County. Some facilities process tires on site while others ship out whole tires to other processors. In 2014 just five facilities handled over 70% of the 15,194,375 tires (passenger equivalents) recycled by Ohio residents and businesses.

Anyone wishing to haul more than 10 tires at a time must be a registered hauler. There were 104 registered haulers as of March 11. Registration includes an annual report.

You can learn more about the Scrap Tire program on DMWM's [Scrap Tire](#) webpage.

Construction and Demolition Debris – Landfills, Transfer Stations & Recycling Facilities

Under Ohio law, construction and demolition debris (C&DD) is treated as a special category of waste outside of solid waste laws. Applicable code can be found in Ohio Revised Code 3736. To manage C&DD Ohio has 44 licensed C&DD landfills. These facilities handled 3.4 million tons of C&DD material in 2014; another 1.5 million tons went to MSW landfills instead of C&DD facilities.

Currently, C&DD transfer stations and recycling facilities fall outside of the regulatory framework. As such, there is no official list of these facilities. Discussions were held in 2013 to discuss the possibility of regulating these types of facilities, but as of this briefing that authority has not been granted.

You can learn more about the C&DD program on DMWM's [C&DD](#) and [C&DD Recycling](#) webpages.

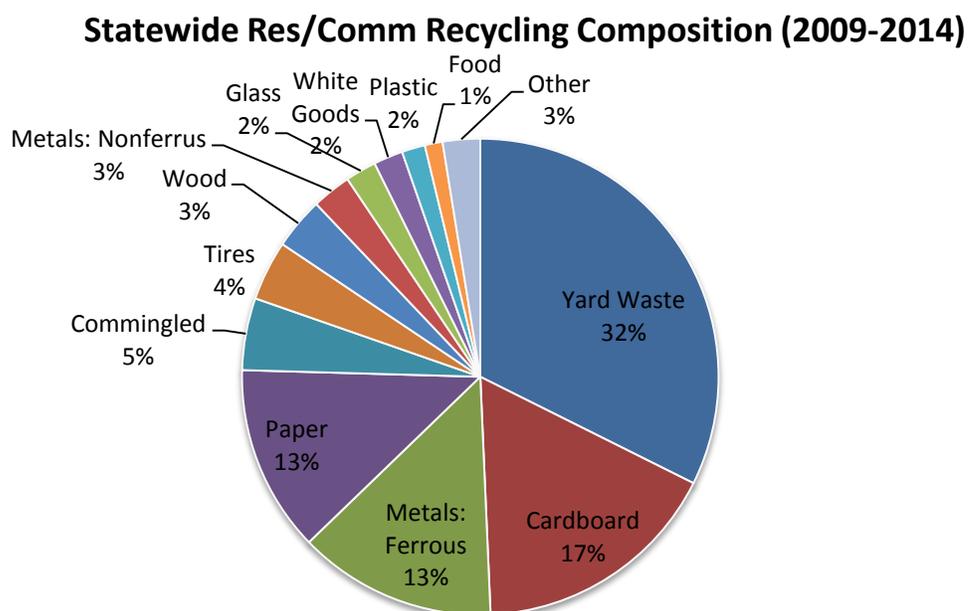
Data and Performance

Every spring, Ohio EPA and local solid waste management districts (SWMDs) collect information on recycling/composting, landfill disposal and transfer station activity. This is achieved through SWMD annual surveys (they survey their communities and businesses), facility annual reports submitted to Ohio EPA, and voluntary reporting directly to Ohio EPA by material recovery facilities and large businesses such as Walmart and Target. In 2014, Ohio EPA launched a partnership with the Ohio Manufacturers Association, the Ohio Chamber of Commerce and the Ohio Retail Merchants to increase participation in the local SWMD surveys.

The resulting data provides a wealth of information on the amount of recycling that occurs each year, what type of material is being collected, where waste is being disposed, and how much out of state waste is coming into Ohio (and leaving). This information results in a statewide diversion rate².

Recycling (2009 – 2014)

In 2014, Ohio residential, businesses and institutions recycled 10,821,046 tons of material. Since the State Plan (2009) 74,867,259 tons of material entered the recycling system; 28.6% was classified as residential/commercial and 71.4% as industrial. The residential/commercial recycling stream was primarily composed of yard waste (32%), cardboard (17%), ferrous metals (13%) and paper (12%), with all remaining categories making up less than 5% each.



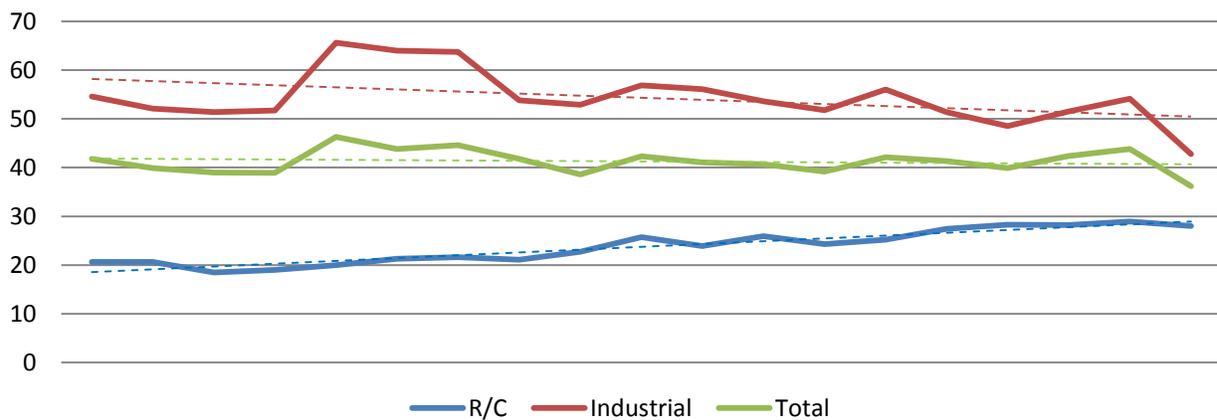
² Traditionally known as a recycling rate, this is calculating by taking the total amount of material recycled and composted and dividing it by the total generation (total recycled + total disposed).

The industrial recycling stream is comprised primarily of ferrous metals (42%), specialized material (26%), cardboard (8%), and wood (6%).

Residential/commercial tonnage has risen 13% from 2009 levels while industrial has been sporadic over the six year period, ending down 20% down from 2009 levels. Much of this uncertainty is based on the voluntary nature of the survey system combined with the state's changing economic base.

The recycling rate for the state of Ohio stood at 36.2% in 2014, a notable decrease from 2009 (42.1%). As can be seen in the graph below overall and industrial recycling rates for the state have been steady since 1996 (with the exception of 2014). During that same time residential/commercial rates climbed nearly 8 percentage points.

Recycling Rates (1996-2014)

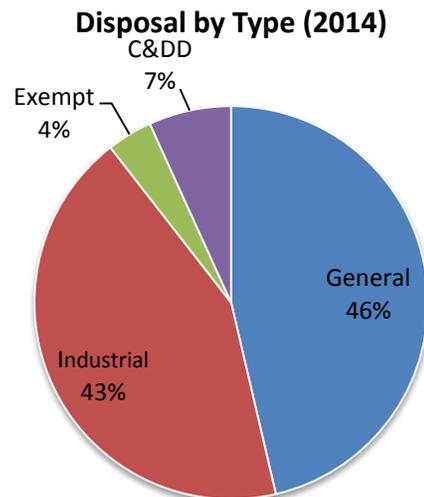


Disposal

In 2014, Ohio landfills handled 22,226,388 tons of waste. Just under half was categorized as general solid waste which includes household and commercial waste as well as asbestos. Industrial waste accounted for 43%. Construction and demolition debris as well as exempt waste comprised the remaining 11%.

Transfer stations handled 26.6% of this waste while the remainder was hauled directly to landfills.

Just over 3 million tons (13.8%) of waste disposed in Ohio came from other states



primarily New York, New Jersey, Pennsylvania, Connecticut, Massachusetts, West Virginia and Indiana. Waste also came from 13 other states as well as Canada.

Since the 2009 State Plan disposal increased from a low of 19,841,126 tons to a high of 25,353,913 in 2011 before leveling off around 22 million since 2012. The 2009 tonnage was likely low due to the global recession. Waste generation tends to have a close relationship with economic activity.

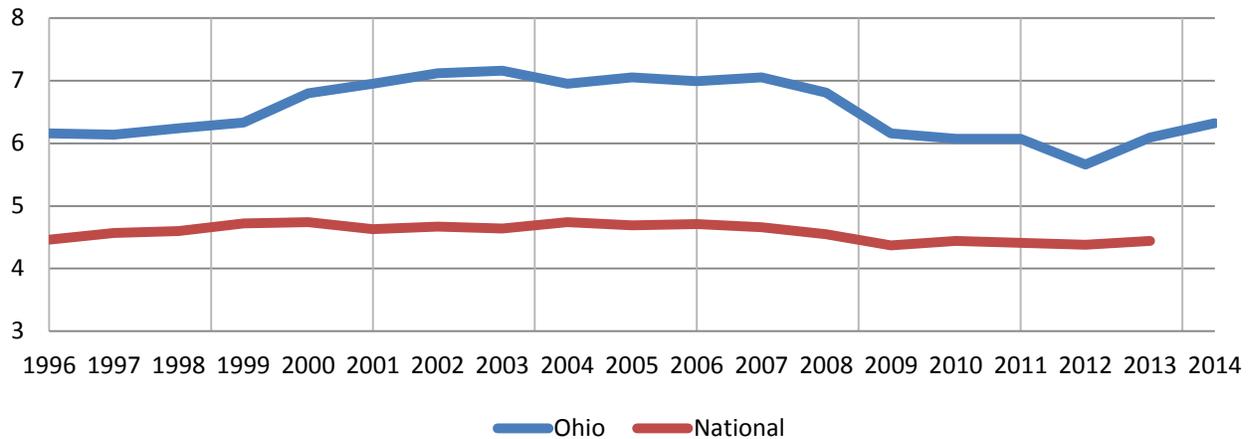
Total Generation

Combing the recycling and disposal data creates an overall generation value. Since population impacts generation, it is common place to normalize the data into a pounds-per-person-per-day (PPD) rate. The chart below shows Ohio’s overall generation rate since 2009:

Year	Recycling	Disposal ³	Generation	Total PPD	Ohio R/C PPD	U.S. R/C PPD
2009	12,140,607	17,901,036	30,041,642	13.67	6.16	4.37
2010	12,485,411	20,001,211	32,486,622	15.43	6.07	4.44
2011	11,980,401	21,614,612	33,595,013	15.94	6.07	4.41
2012	13,610,806	20,479,738	34,090,544	15.38	5.66	4.38
2013	13,828,988	19,298,075	33,127,063	15.66	6.09	4.44
2014	10,821,046	20,690,365	31,511,411	14.89	6.32	N/A

U.S. EPA tracks national recycling, disposal and generation values for municipal solid waste (MSW) which is synonymous with our residential/commercial categories. Comparing national data to U.S. EPA data, Ohio consistently generates about 30% more residential/commercial waste than the national average.

Residential/Commercial Generation Rates (1996 - 2014, PPD)



³ Note that disposal values here differ from landfill disposal on the previous page because the previous statistics include out-of-state waste generated by non-Ohio sources.

Materials Management Advisory Council Roster

As of March 18, 2016

	Start	End	Name	Organization
Health Districts	1/15/2016	7/1/2017	Wally Burden	Pike County Health District
Counties	1/29/2016	7/1/2016	Commissioner John Bayliss	Logan County Commissioners
Municipalities	1/8/2016	7/1/2017	Jennifer Fenderbosch	City of Avon Lake – City Council
Townships	2/26/2016	7/1/2018	Paul Wise	Genoa Township (Delaware County)
SWMDs	12/23/2015	7/1/2016	Jenna Hicks	Delaware-Knox-Marion-Marrow SWMD
Environmental Advocacy	1/14/2016	7/1/2018	Frank Szollosi	National Wildlife Federation
Public	OPEN	7/1/2018		
Private Sector	12/22/2015	7/1/2016	Kimberly McConville	Ohio Soft Drink Association
Private Sector	2/5/2016	7/1/2016	Brian Winter	Scotts Miracle-Gro Company
Private Sector	OPEN	7/1/2016		
Private Sector	12/22/2015	7/1/2017	Michael Dinneen	Agg Rok Materials
Private Sector	12/22/2015	7/1/2017	Kathy Trent	Waste Management, Inc
Private Sector	OPEN	7/1/2017		