Section 1 – Introduction: Why Maximize Recycling?

The City of Madison began separating recyclables from going into the landfill long before the Recycling Act of 1991. The City started with recycling bundled newspaper back in 1968. Over time, recycling efforts expanded greatly, offering opportunities to recycle plastic, metal, glass, and mixed paper in home collection carts and various items at the drop-off sites, like electronics, household batteries, and Styrofoam. In 2016, city efforts have led the recycling and diverting of over 110,000 tons of material from the landfill.

Our success does not mean the work is done. In 2016, over 185,000 tons of waste material was generated from the City of Madison – meaning at least 75,000 tons of stuff from City of Madison residents was sent to the landfill. We can do better.

A landfill, including the Dane County Landfill, which is the one Madison currently uses for our unwanted junk, have a finite amount of space. More landfill space will only be achieved by transforming some of the best farmland in the world into a place to bury unwanted things. A new landfill is also a lengthy, very expensive and politically sensitive process. Any future site is also likely to be located farther away from the City, which increases all the costs associated with hauling, dumping, and transporting material – and this does not include the environmental impact such a development would undoubtedly cause.

Those truths regarding landfills and Madison's long commitment to recycling led the Madison's Sustainability Plan and the Madison Results team to set down a lofty challenge for the City: zero waste by 2050.

The term "zero waste" has many potential definitions. Madison's definition of zero waste will be to send zero recyclable waste sent to the landfill. This means the City will commit to taking advantage of each practical opportunity that is available to stop material from being sent to the landfill.

This plan recognizes that some waste materials, such as disposable diapers and pet waste, are currently not recyclable or preventable at the municipal level today.

The plan also acknowledges that the term recyclable will be ever-shifting, as recycling technology changes along with changes to the waste stream and to the products we consume.

We must also recognize that recyclable materials are a global commodity. For something to be recycled, there must be marketplace that will accept and process it. Since recycling is dependent upon the whims of the marketplace, there will be times when political actors or sea changes in consumer behavior will undermine previously established recyclable items. For example, in 2017 the rigid plastic recycling program at

the drop-off sites was suspended in response to an import ban instituted by China on bales of low grade plastic that are generated by the mixed rigid plastic program. The same market forces that drove this negative change could also be a force for positive change, as well. For example, container manufacturers lead the charge to be sure gable-top cartons that hold broth and other liquid food products can be captured at recovery facilities and recycled. This plan recognizes that there are global forces beyond our municipal control that can steer the recyclability of items.

We also must recognize that technological advancements will undoubtedly cause significant changes to the services provided by the Streets Division, which will impact. For example, autonomous cars likely will change how drop-off services can be delivered, and in the future may impact how curbside collection services are provided. We must also consider that more and more battery powered items will be entering the marketplace, so ensuring access to battery recycling options will grow with each passing year – assuming, of course, market forces do not shift consumer demand elsewhere.

This plan cannot account for every potential change, but it can reiterate a commitment to responding to the challenge of a shifting world. Considering that there may be a time when presently non-recyclable items, like a disposable diaper, can be diverted from the landfill, as a city we must maintain our aspirations of all waste material being recyclable or preventable.

Overall, our recycling system must be resilient, responsive, and resolute in order to adapt to the changes to the waste stream caused by technology, the global market, and consumers.

Ultimately, this plan is meant to offer near-term steps that honor the City's commitment to achieving our definition of zero waste by maximizing recycling at any given moment, and honor the values residents place on a solid waste collection system, and the values and history the City as a whole must strive to represent.

Section 2 – Values

The Solid Waste Advisory Committee developed a list of values that reflect what residents and visitors of the city of Madison expect from a high quality solid waste service.

These seven values are defined below and this plan seeks to reflect these values.

- **Safety**
  Solid waste services must be performed in a safe manner for both workers and residents.
- **Environment**
  Solid waste services are expected to be responsible stewards of the environment, and must strive to minimize the impact waste has upon it by promoting recycling and waste diversion, while also ensuring the operations of the solid waste services are minimally impactful on the environment.
- **Convenience**
  In order for the solid waste services to be effective for the public, they must be easy to understand and easy to access.
- **Aesthetics**
  While solid waste services plays an important role in the health of a community, how these services impact and maintain the look of neighborhoods cannot be ignored or under-emphasized since it is these impressions that shape opinions of neighborhoods and delivered services.
- **Public health**
  Reliable, effective, and safe solid waste collection and disposal is a cornerstone of civilization, and any changes to collections of solid waste must first be evaluated along how it could impact public health.
- **Practicality**
  Solid waste services function best when the services and opportunities are reasonable and cost effective to enact and have low barriers for compliance.
- **Community values**
  Solid waste services must reflect what the residents want from said services by providing the opportunities and community engagement around these services so not only are the opportunities present, but there is community awareness that they exist.

Section 3 – Lenses

As part of the City's Comprehensive Plan initiative – also called Imagine Madison - four lenses were identified as areas that City efforts can work to improve for Madison residents.

The Solid Waste Plan, too, will attempt to address these lenses.

- **Equity**
  The Streets Division is primarily a service-providing entity for the public, and as an agency we commit to providing equitable levels of service to ensure neighborhoods receive the waste management services they need, and the Streets

Division shall provide equal opportunities for solid waste management to all residents and neighborhoods of Madison.

- **Health**
  The Streets Division's solid waste services play an integral role on maintaining the well-being of our residents, neighborhoods, and our lakes, and this plan recognizes our role in maintaining and improving them.
- **Sustainability**
  The Streets Division is the leading agency for Madison's goals of being more environmentally responsible, and this plan will reveal ways the Streets Division can continue to provide this leadership and direction for the city.
- **Adaptability**
  As Madison changes in both boundaries and demographics, the ability for the Streets Division to provide equitable services will be stressed, and the changing climate will impact solid waste services provided by the Streets Division, particularly yard waste and brush collection since those services are weather dependent. This plan will show how the Streets Division will remain flexible and able to respond to our shifting future.

Section 4 – Diversion Goals

The work of this plan should aim to produce the diversion goals outlined below:

Year	Percentage of Waste Diverted from Landfill
2016	58% diverted
2020	65%
2025	70%
2030	75%
2035	80%
2040	85%
2045	90%
2050	Zero recyclable waste

In the year 2016, the Streets Division achieved the following diversion statistics:

Material	Tons Collected	Tons Recycled/Composted	% Diverted
Refuse	44,866.15	0.00	0.00%
Large Items	7,664.71	3,636.09	47.44%
Recyclables	20,518.88	19,378.99	94.44%
Leaf Collection	15,774.36	15,774.36	100.00%
Yard Waste Drop Off	3,036.67	3,036.67	100.00%
Brush	17,208.49	17,208.49	100.00%
Home Composting	7,076.85	7,076.85	100.00%
In House Metal	108.31	108.31	100.00%
Waste Oil	72.31	72.31	100.00%

Oil Filters	3.22	3.22	100.00%
Rigid Plastic	132.70	132.70	100.00%
Tires	39.20	39.20	100.00%
Computers/Electronics	358.56	358.56	100.00%
Move Out ReUse	65.90	65.90	100.00%
Madison Stuff Exchange	12.74	12.74	100.00%
Styrofoam	20.96	20.96	100.00%
Vehicle Batteries	26.06	26.06	100.00%
Household Batteries	7.21	7.21	100.00%
Shoes/Textiles	4.84	4.84	100.00%
Construction & Demolition	69,872.79	42,027.42	60.15%
Organics Program	334.32	334.32	100.00%
Monona Terrace Composting	22.40	22.40	100.00%
Parks/Mall Recycling	45.39	45.39	100.00%
Mattresses and Box Springs	207.28	207.28	100.00%
Total	**187,273.02**	**109,392.98**	**58.41%**

For additional context, the Materials found above are defined as follows:

Refuse
This is material from inside the tan refuse carts that are collected from the Streets Division's automated collection trucks, and refuse collected at the Streets Division's drop-off sites. Refuse tonnage includes material collected by other agencies, such as the Parks Department and the Madison Metropolitan School District., and at large city festivals, such as FreakFest and the weekly Dane County Farmer's Market.

Large Items
This is material collected from the curb Streets Division's large item collection vehicles, which are truck-mounted crane vehicles and the rear-loading packers. Large items can be any item that is too large for the refuse collection cart and range from pieces lumber from a homeowner's project to pianos. Large items are also collected at the Streets Division's drop-off sites.

The recycled fraction listed in the charge stems from wood items, either collected at the curb or taken to our drop-off site. Discarded wood products are repurposed as road base at the landfill, which is considered recycling.

Recyclables
This is material from within the green household recycling carts that are collected from the curb by the Street Division's automated collection trucks, and also material that is placed into a recycling collection vehicle at the drop-off facilities.

Leaf Collection

This is yard waste material collected primarily by Streets Division crews at the curb. Other agencies, such as the Community Development Authority, contribute a comparatively insignificant tonnage of material.

The Streets Division collects yard waste in two periods during the years – once in the spring and again in the fall. Yard waste is collected by driving a vehicle, such as a toolcat, onto the terrace and pushing the yard waste from the terrace into the street by using a front-mounted customized broom. The material is then pushed onto a pan that has been attached to a rear-loading packer vehicle.

Yard waste material is not typically weighed by Streets Division crews as there is no scale available at the composter that receives the yard waste. Instead an estimate is necessary to get this weight. One rear-loading vehicle can hold, on average, 8 tons of yard waste material and the number of loads is tracked.

The weight reported reflects the estimate and the actual weights during instances where yard waste was weighed at the Streets Division's transfer station.

Yard Waste Drop Off
This is yard waste material delivered to a drop-off site by residents throughout the year. Again, a combination of estimates and actual weights was used to derive this number.

Brush
Brush is material trimmed from trees and bushes that have been collected curbside by Streets Division crews using tow-behind wood chippers and truck-mounted cranes. This number also includes brush delivered by homeowners to the drop-off sites. The number also includes the tonnage produced by Forestry. Brush is processed with an industrial wood chipper and resold or reused as mulch.

Home Composting
This is the estimated tonnage of material composted at home by residents of Madison based on the previous year and the number of homeowners who purchased a compost barrel from the yearly compost bin sale at the Alliant Energy Center.

In House Metal
This is the reported tonnage of metal internal City of Madison operations recycled during operations by various departments, such as the Water Utility or Engineering.

Waste Oil
This is the reported tonnage of used motor oil collected from the public drop-off points. City Engineering oversees the collection points, and the oil is recycled by a private contractor.

Oil Filters
This number reflects the tonnage of oil filters also collected at the waste oil drop-off points that are managed by Engineering.

Rigid Plastic
This is the tonnage of mixed rigid plastic material, such a 5-gallon buckets or laundry baskets, that are composed of a variety of different plastic types that have been delivered by residents to one of the City of Madison drop-off sites. The rigid plastic container was collected by Pellitteri Waste Systems.

The rigid plastic program was suspended in 2017 due to an import ban by China on the mixed plastic bales produced by programs like this. The long-term future of this program is hazy because a future marketplace for the material. If another outlet for this material is discovered – either foreign or domestic - the program will be re-started.

Tires
This is the tonnage of tires collected curbside and taken to drop-off sites by city residents. Tires are aggregated at the Streets Division's transfer station facility and then loaded onto a semi-trailer to be delivered by a city employee to a tire recycler.

Computers/Electronics
This is the tonnage of electronics recycled by the city of Madison that have been delivered to one of the City of Madison drop-off sites. The reported tonnage includes televisions, computers, and all manner of electronic items – like box fans, Christmas tree lights, stereo equipment and so on - that have been delivered by residents to the drop-off site for the electronics recycling vendor to collect them.

Move Out ReUse
This is an estimated number based on a report from the UW-Madison staff at their Donate and Take collection site on campus during the student move process in early August each year.

The University elected not to host a donate-and-take site in 2017. As of this writing, the impact the lack of this site had on the overall diversion statistics is unclear. Also, what the University's plans are for a future donate-and-take, or other diversion services during student move, is unclear as of this writing.

Styrofoam
This is the tonnage of the Styrofoam residents of Madison delivered to the drop-off site for recycling. The Styrofoam is aggregated in a semi-trailer at the transfer station location and hauled to Uniek in Waunakee, WI to be processed into picture frames.

Vehicle Batteries
This is the number of vehicle batteries recycled by the City of Madison operations. This includes vehicle, and other lead acid batteries, delivered to the drop-off sites by residents. This number also includes vehicle batteries recycled by Fleet Services and Metro through their own vendors.

Household Batteries

This is the number of household batteries delivered by residents to the city of Madison drop-off sites. The batteries are collected from the drop-off site by the same vendor who collects the electronics.

Shoes/Textiles
This is the weight of material placed into the clothing recycling bins at the city of Madison drop-off sites. The weights are reported by St. Vincent de Paul and Goodwill.

Construction & Demolition
This is the weight of material collected and recycled by area demolition recyclers.

Organics Program
This is the weight of material collected by Madison's pilot food waste collection and diversion program.

Monona Terrace Composting
This is the weight of material reported by Monona Terrace regarding their composting efforts for food waste.

Parks/Mall Recycling
This is the weight of recycling collected by the Parks Department on the State Street mall area and their collection bins located throughout city parks.

Mattresses and Box Springs
This is the weight of the mattresses and box springs collected and recycled by the Streets Division. Collection occurred either at the curb during the large item collection day of the assigned area or delivered by a resident to the drop-off site.

Section 5 – Current Services

Please note that this section captures only the solid waste portion of the Streets Division duties. This does not cover snow plowing, street repair, graffiti removal, or other services provided by the agency.

Residential and Commercial Overview
The Streets Division provides automated curbside collection of refuse and recycling for single-family homes, multi-family buildings containing fewer than 8 units, and some commercial entities. Refuse is collected weekly. Recycling is collected every-other-week. As of this writing, the Streets Division services approximately 77,000 homes and between 500 to 600 small businesses.

Some neighborhoods use carriage lanes that cannot support our collection vehicles, and those neighborhoods instead must employ a private contractor, which is generally obtained through home owner associations. Apartment buildings larger than 8 units also must rely on private service for their collection of refuse and recycling. Certain businesses, like fast food restaurants, and other multi-family buildings may need to use

private services if the Streets Division's collection system does not meet their needs due to volume of material generated or available space. For example, a cluster of 6-unit apartment buildings on a cul-de-sac may not be able to use city collections because there is not enough space along the curb for collection carts, and they must instead use a private dumpster service.

Collection Carts

Residents of Madison are guaranteed one tan refuse container, and one green recycling container at no cost. Residents are automatically enrolled in the city program for refuse and recycling.

Containers provided by the Streets Division are available in 65-gallon or 95-gallon sizes. Residents can exchange their cart sizes for no fee.

Image: Example of 95-gallon recycling cart

Residents can also purchase additional carts if necessary. In 2017, the rates are $60 to purchase a 65-gallon cart, and $65 to purchase a 95-gallon cart.

If a resident, or business, requires more than 4 refuse collection carts, and additional fee is assessed to that home or business. In 2017, the fee is an annual $80 charge for every cart more than four. There is no cart limitation or excess fee for recycling.

Curbside Refuse Collection

Refuse collection occurs weekly by a single-operator automated refuse collection truck. The City of Madison has been performing collection in this manner since 2007.

“Automated” collection does not mean “autonomous.” A vehicle operator drives the collection truck on a pre-determined route designed by field supervisors without the help of GPS technology. When at a refuse collection stop, the operator manipulates a joystick to position a mechanical arm to grab a collection cart from the curb and then triggers the arm to dump the cart into the vehicle.

Image: Automated collection of refuse container in action

This method of collection keeps the operator in the vehicle, and does not require the operator to lift, tip, or dump heavy collection carts. This has been a boon to productivity and injury prevention.

On occasion, an operator will need to exit the vehicle if there is refuse material bagged and placed outside of the collection truck. In order to minimize the amount of time outside of the collection trucks, and limiting operator exposure to injury potential, it is Streets Division policy to only collect bagged material outside of the cart if there are 6 or more bags present to help facilitate instances of high volume refuse generation, like a household cleanup or move out. If a residence is noted to have bags outside the cart for multiple collection weeks in row, the residents will be directed by field supervisors to obtain additional carts to meet their refuse collection needs.

The same style of collection truck is deployed for curbside recycling services as well.

Curbside Recycling Collection

Recycling collection occurs every-other-week with a single-operator automated collection truck. The collection is "single stream" meaning the residents do not need to separate the recyclables into different containers, and instead can commingle all the material acceptable in the program into a single collection cart. The City of Madison has been performing collection in this manner since 2005.

Recycling began in Madison in 1968 by collecting bundled newspaper at the curb, making Madison one of the first communities to offer that service to residents. Newspaper recycling expanded citywide in 1970, and by 1986 became mandatory. In 1987, the City began a drop-off recycling program for households. Curbside collection of aluminum, corrugated cardboard, glass, steel cans, and #1 (PETE) and #2 (HDPE) plastics began. By 1994, magazines and catalogs were added to the program, and around this time, residents were asked to bag all the containers intended for recycling and separately bind all the cardboard and paper products. This material was then collected manually and placed into two separate compartments of the manual collection trucks.

Image: Example of the circa 1994 collection style performed by Streets Division employee John Zumstein

The collection system remained unchanged until adoption of the single-stream automated collection in 2005. This allowed an expansion of recyclable material as well to include mixed paper, office paper, paper cartons, and plastic bottles of #3 through #7 plastic. In 2012, the program expanded yet again to include dairy tubs, and other plastics number #1 through #7, empty paint cans, metal pots and pans, small metal appliances, miscellaneous scrap metal pieces and properly packaged shredded paper and plastic bags.

Today, the material accepted into the program is quite extensive. See the inset chart that shows all the paper, plastic, metal, and glass items presently acceptable in the cart at this time.

Large Item Collection
Large items are generically considered to be items too large for a collection cart, such as a mattress or piece of furniture. Curbside collection occurs every-other-week.

Large items are collected by a single-operator truck-mounted crane vehicle, colloquially referred to as a "clam truck" (see photo). The crane can load material into the truck bed part of the vehicle, or into an open-top five-ton truck. A separate five-ton truck is also used to collect metal items from the curb that the city takes to a contracted metal salvager for recycling.

Image: Clam struck occupied by Streets Division employee Felix Caraballo

Image: Clam truck collecting couch during 2017 student move

The large metal items are presently processed by Kruser Recycling. Kruser safely handles the hazardous material that can exist within appliances collected at the curb, such as CFCs, PCBs, and mercury switches.

Due to these hazards, and associated disposal costs, some large items require an appliance fee sticker be purchased and affixed to the item prior to collection, or delivery to a drop-off location. The fee changes based on the item. Tires off the rim, for example, require a $5 sticker, while dishwashers require a $35 sticker. The amount of the sticker is determined by the cost related to safely dispose of the item, or due to the stress the item places on the collection system. For example, hot tubs require a $35 sticker not because they container hazardous material, but because one hot tub will fill a collection vehicle, and require an additional trip to the transfer station

Since 2005, the Streets Division has been grinding wood, primarily wood furniture and lumber, collected as large items. The shredded wood is then used at the Dane County Landfill campus to be re-purposed as road base so vehicles can safely climb and dump on the actual landfill itself.

Drop-off Sites

At present, the city operates two year-round drop-off locations and one seasonal yard waste only drop-off location. The year round sites are located at 1501 W. Badger Rd, which is also the location of the west side Streets Division operations office and department-wide administrative offices, and 4602 Sycamore Ave, which also houses the east side Streets Division operations. The seasonal yard waste only site is located at 402 South Point Rd and is open from the last weekend in March to the first weekend in December. The seasonal site is also the location of a warm storage building for Streets Division equipment.

The hours to the drop-off site fluctuate depending on the season. During the expanded "summer hours," which lasts from the last weekend in March to the first weekend in December, the drop-off sites are open 8:30am to 4:30pm on Mondays, Wednesdays, Fridays, Saturdays, and Sundays. On Tuesdays and Thursdays during expanded hours, the sites are open 8:30am until 8:00pm.

During the limited "winter hours," which lasts from the first Monday in December to the last Friday in March, only the Sycamore and Badger drop-off sites are available, and they are open from 7:30am until 3:00pm Monday to Friday.

At the Badger and Sycamore drop-off sites, City of Madison residents can bring refuse, recycling, large items, brush, and yard waste for recycling or disposal.

The drop-off sites also offer recycling services for electronics, household batteries, cooking oil, and Styrofoam. These materials are only accepted for recycling at the drop-off site. The rigid plastic recycling program, when in effect, was also housed at the drop-off sites.

Image: Badger Rd. drop-off site during winter hours of 2016

Only residents and taxpayers of the city of Madison can use the drop-off sites. Residents must also restrict the size of the load of material they bring in to what will fit into the back of a standard pick-up or small trailer. Non-residents, over-sized loads, and contractors are denied use of the drop-off sites.

The drop-off sites are a critical component of the Streets Division's solid waste services, and they are highly used city facilities. According to a 2017 traffic volume study performed during the expanded hours period, all three drop-off sites combined receive approximately 1,100 visits a day on average.

Curbside Brush Collection

The Streets Division provides curbside brush collection on a rotating schedule. While there is no pre-determined date for brush collection to occur, residents on average receive brush collection once every four to six weeks.

Brush is woody material trimmed from trees and bushes measuring over 18 inches in length. Brush must be less than 8 feet long, and be less than 8 inches in diameter.

Brush is collected by a five-ton truck pulling a tow-behind wood chipper. Residents pile brush to the curb, and a two-man crew puts it into the wood chipper. There is no set maximum on the amount of brush residents can set to the curb.

Image: Curbside brush collection in progress

Piles that will take the two-man crew more than 10 to 15 minutes to collect are instead assigned to a clam truck. The clam truck is the same style of vehicle used to collect large items.

This service is only available to residents who have cut their own brush. Residents who employ private contractors must make arrangements with the contractor to haul the material off site for proper disposal.

The collection season begins in the spring after the winter thaw and continues throughout the year until stopping in the fall when additional personnel is needed for leaf collection. The season starts with crews collecting brush from areas of the city with a Monday refuse collection day. Crews pick brush from each street within that district one time, and once all sections of the Monday area have received a collection, the crews rotate into the area of the city with a Tuesday collection day. After the Tuesday area has been completed, collection crews move into the Wednesday, then Thursday, and then Friday collection districts. Upon completion of the Friday area, crews begin another cycle through the city and start over in the Monday collection district. Crews complete as many cycles through the city as possible during the collection period.

After the brush is collected by either the wood chipper or clam crews, it is hauled to the city's transfer station facility at 121 E. Olin Ave. for further processing.

The Streets Division takes the brush and wood chips and sends it through a large industrial wood shredder to create mulch. The shredding process creates pieces of wood too small for the emerald ash borer to survive, so there is no risk of spreading that invasive species.

The created mulch is available to the public for small fee depending on the amount of material needed. Semi-truck loads of mulch are popular with area farmers and landscapers to use for their businesses, whether to be used as mulch, animal bedding, or compost.

Curbside Yard Waste Collection

The Streets Division performs curbside yard waste collection during two separate periods: first in the early spring after the winter thaw and again in the autumn when the leaves fall. There is no summer curbside collection of yard waste material. Two separate collection periods has been the Streets Division practice since 1980.

Yard waste is considered plant material such as grass clippings, weeds, leaves, and other plant/garden debris. Also, twigs that are too small to be considered brush is collected as yard waste.

Yard waste collection is a multi-vehicle, multi-person operation.

Collection involves one small truck, jeep, or tractor equipped with a custom built U-shaped push broom fashioned from used street sweeper brushes and mounted to the front of the tractor or truck. The vehicle drives onto the terrace and pushes or drags the leaves into the street. Along with the tractor is a rear-loading refuse truck that is equipped with a large metal pan on its rear side. The tractor pushes the yard waste from the terrace onto the pan, and then the pan is lifted and dumped into the back of the rear-loading vehicle. Along with the rear-loader and tractor, there are one to two more employees that use commercial leaf blowers or rakes to help collect more leaves from the terrace and curb line.

Image: Leaf and yard waste curbside collection in progress

After leaves have been collected from a street, a street sweeper will service the street within 72 hours after leaf collection in order to remove the leaf litter left behind in the street from the pushing operation.

This has been the method of leaf collection for several years, and works well with the volume of yard waste material produced by the city, which can range from 15,000 to 18,000 tons with a bulk of that tonnage coming in the six weeks between when the leaves begin to fall and the winter snows.

As of this writing, the leaves are hauled to Purple Cow Organics where they are processed into compost. Dane County halted their program to accept leaves and yard waste at their compost facilities in 2014, which resulted in the city contracting with a private composter. Purple Cow has been the contractor for the city's leaves since 2017. Prior to Purple Cow, the city used Circle B INC in DeForest, WI as the composter.

Street Sweeping

The Streets Division operates nine sweeper vehicles to perform regular street sweeping operations in an effort to control roadside contaminants from entering the waterways. The Streets Division also has one small sweeper that can maintain the off-street shared-use paths that are predominantly used by area bicyclists. Funding for the sweeping program is provided by the storm water utility managed by City Engineering.

On average, most residential streets in Madison are swept on a monthly basis. Sweeper crews follow a similar rotation as the brush and yard waste collection crews.

Some areas of Madison are considered "special sweep" locations and require weekly street sweeping. These areas are in the downtown/isthmus area of Madison and contain storm drains that empty directly into the lakes.

Waste Motor Oil Recycling
Madison started a motor oil recycling program in 1978 to help prevent individuals from dumping oil into storm drains that empty into area lakes and streams. At present, the program is managed by the city's Engineering Department, and there are four current drop-off sites that are maintained by Engineering. A fifth site was closed permanently in 2015 when it became contaminated with PCBs when someone dumped that chemical into the collection container. As a result of the contamination, the sites are now tested weekly. Many private motor oil change facilities and garages also accept motor oil, many of which will charge a fee.

Related Dane County Programs
Besides operating the Dane County Landfill, the county is home to two key services available to City of Madison residents that are located on the landfill campus.
First is the operation of Dane County Clean Sweep. This facility accepts hazardous household material, such as paint, stains, insecticide, and other dangerous and ignitable chemicals. This service is available for all Dane County residents at a small per household fee.

Second is the construction and demolition recycling facility installed on the landfill campus in 2016. In cooperation with a private company, the landfill can now divert and recycle construction material that is dumped at this facility. While it is predominantly used by large contractors, it is also available for residents doing their own construction work.

Waste Prevention
Waste prevention is an important practice that is a more reliable method to achieve zero waste goals, especially since recycling is reliant upon a global marketplace to process the commodities. The Streets Division has tried previous waste prevention efforts, namely the EnAct program. While EnAct did not produce results, the Waste Watchers section of the Streets Division's website has helped educate the public on some simple waste prevention techniques.

Section 6 - The Goals

A. Establish South Point as a full-service drop-off facility and Streets Division operations site

- Goal 1: Design a full-service site to include adequate equipment storage, well-considered drop-off services with easy customer access

    - Goal date: 2019

- Goal 2: Re-map services provided by the Streets Division so services can be split among three locations and make staffing plans
    - Goal date: 2019

- Goal 3: Build South Point facilities
    - Goal date: 2020, budget dependent

- Goal 4: Open fully staffed and operational South Point facility to the public
    - Goal date: 2021, budget dependent

Background and Additional Information
A full-service Streets Division facility at South Point Rd. has been an idea gestating for decades. As the city continues to sprawl westward, it's becoming increasingly clear that in order to ensure equitable access to services provided by the Streets Division that the South Point Rd. facility is a necessity.

As of the writing of this plan, the entire west side of Madison is serviced by the Streets Division office located at 1501 W. Badger Rd. This facility also acts as the sole public drop-off site for recycling services.

Streets Division drop-off sites provides access for residents to recycle items that cannot go into their recycling carts. As of this writing, these items include electronics, household batteries, Styrofoam, and cooking oil.

The drop-off sites present the most likely opportunity for recycling services expansion. For example, if carpet recycling were to be attempted, then having it as a drop-off service could be best way to provide this service as it presents the best opportunity to keep the carpet from getting wet and therefore rendering it non-recyclable.

With 1501 W. Badger Rd being the west side location for Streets Division services, it leaves residents within the newer western developments with a 20-mile roundtrip drive to recycle electronics, batteries, Styrofoam, cooking oil, and rigid plastics. The distance is considerable and is a disincentive for these residents to recycle these items, and the distance is a barrier to participation in future expansions of recycling services stationed at the drop-off sites.

With a full service drop-off site more conveniently located, it would be reasonable to expect increased diversion of recyclable material that residents in this outlying region felt necessary to place into the refuse.

Access to a convenient place to recycle electronics is very important, and a full service drop-off point as many common household electronics items, such as printers, VCRs, and cell phones are banned from the landfill, which means residents should not place them

into the tan refuse cart. These items also cannot be recycled in the green recycling cart. This leaves few, if any, convenient options for mandatory electronics recycling.

A third Streets Division location would also speed brush and leaf collection as crews would be able to focus on smaller sections of Madison, providing an increased level of service. This would be especially useful for leaf collection in the fall as leaves in the streets are a major contributor to phosphorus levels in our lakes. By providing more frequent collection and street sweeping during the fall and spring periods, leaves would not remain in the street for long, and therefore it should reduce the phosphorus load created by that material.

The third location also provides an opportunity to reassess and strategically locate Streets Division assets to better serve the communities within their service regions.

B. Expand organics collection to new neighborhoods

- Goal 1: Increase organics diversion to be 1% of total refuse hauled by Streets Division
    - Goal date: 2018

- Goal 2: Expand to new collection routes where each side of Madison has one route of organics collection each day of the week
    - Goal date: 2020, depending on budget availability

- Goal 4: Expand food scraps collection program/organics to collect material citywide and operate organics/food scraps drop-off services
    - Goal date: 2025, depending on budget and processing availability

Additional Information

Diverting food waste from the landfill will be a key component to increasing diversion from the landfill. According to a 2010 waste sort, nearly 40% of the city's refuse is organic material. Food waste by itself comprises 25% of the overall refuse delivered to the landfill according to the same study.

Using the recorded 2016 refuse weight tonnage collected by the City of Madison (44,866.15 tons), the City could prevent 17,946.46 tons of material from going into the landfill if all organics material, such as soiled paper products, diapers, and pet waste, were diverted. If only food waste is kept from the landfill, 11,216.54 tons would be diverted.

Also using the 2016 refuse weights, if city operations were able to divert solely the food waste, it would raise the overall diversion percentage from 58.4% to 64.3%. Being able to include the diapers and pet waste would raise the overall diversion percent to 67.9%

Since pet waste and diapers present considerable logistic and regulatory hurdles at present, it would not be wise to assume this material could be diverted in the near future. However, soiled paper products, such as used paper towels and greasy pizza boxes would

be readily acceptable in food waste diversion systems, such as composting or an anaerobic digester. Therefore the expected tonnage for a citywide program would be somewhere between the high and low number quoted above. For a more accurate estimate, a waste sort would need to be performed.

The City of Madison collects food waste and soiled paper products collected from participating households and businesses that are within prescribed areas of the city. The collections areas were selected by Streets Division operations staff to maximize the number of participants and ease of collection routes for our automated collection.

To expand collection beyond its current capacity, there will need to be two major developments.

First, there will need to be an increase in collection capacity through additional operators and collection vehicles. The chief concern about this would be the budget. The second goal noted above of increasing collection by one operator and one collection vehicle by 2020 would be the first step toward ramping up the investment necessary to performing citywide collection by 2025 (as noted in goal 3).

Second, there will need to be reliable and cost-effective location to perform composting and/or anaerobic digestion of the organics collected by the city while also providing adequate contamination control. Despite previous plans, it is unlikely that the City would be able to make the investment in the timeline noted above to own and operate an anaerobic digestion facility. However, that may not cause any significant delay in the eventual expansion of this program.

As of this writing, many entities, both private and public, have discussed the possibilities of undertaking organics diversion – including potential anaerobic digestion facilities. The organics program may be able to expand and meet the needs of Madison without investing in the processing facility. However, considering the importance of this element of waste diversion and broader sustainability goals, the City should not completely abandon the possibility of needing to invest in either composting food waste or anaerobic digestion.

Part of this goal will be for the Streets Division to foster relationships with private food waste entities to ensure organics diversion continues and expands along the timeline stated above. Any agreement made with these entities must also meet the values of the Streets Division and the City of Madison, and not come with any environmental trade-offs and must prove to be a practical and convenient service for the residents of Madison.

It must also be acknowledged that any expansion of the organics program must come with the means to control for contamination problems. Non-compostable items finding their way into the food scraps stream has been a problem since organics diversion was first piloted in Madison. The non-compostable items, such as plastics, metals, and glass, hurt the likelihood that the food scraps can be turned into a usable compost product. Compost that contains metal, glass, or plastic would not be a desirable product, and

therefore difficult for a processor to sell or otherwise use – meaning thousands of tons of material that may wind up in the landfill because there is nowhere else the material can go.

Other communities that have pursued food waste diversion have invested in depackaging or other sorting technologies to try to control for contamination. Expansion of this program, especially on the citywide scale, will need to have sufficient contamination controls to be successful.

C. Improve communication from the Streets Division regarding recycling, and other services provided

- Goal 1: Establish a social media presence for the Streets Division to take advantage of free media opportunities
    - Goal date: 2018

- Goal 2: Better utilize current web-based resources to better share recycling information and diversion opportunities
    - Goal date: Continuous

- Goal 3: Create a formal strategic communications plan, or message calendar, and outreach targets for the Streets Division to be sure department objectives and services are understood and shared
    - Goal date: 2019 implementation

Additional Information
Clear, consistent, and engaging communication is an essential part of any successful program. The Streets Division would especially benefit from quality communication because our services are varied and impact every resident within the city of Madison.

Increasing diversion statistics as noted above will require residents of Madison changing their behavior, which will be a great challenge. The media landscape is fractured, making it increasingly difficult to reach and persuade our residents to change their habits to reach sustainability goals. Creating messages and sharing information in a variety of ways that embraces both digital and traditional media is important to continue meeting Streets Division goals.

Since communication is a key part for residents to gain compliance and knowledge of Streets Division and City of Madison goals, it is equally important to be sure a plan with clear objectives is in place.

Any communication plan would also need to include outreach considerations for the growing diversity of the city of Madison, and be certain that communications reach and impacts those audiences.

The cost of a widespread communications program must also be considered. Advertising on traditional and digital media can prove to be expensive. The Streets Division must leverage all no-cost and low cost resources, such as social media, and utilize the City's media team to help spread departmental and sustainability goals and programs.

D. Strengthen construction and demolition recycling practices

- Goal 1: Improve data collection within the City of Madison regarding construction and demolition debris
    - Goal date: 2018

- Goal 2: Strengthen city ordinances regarding construction and demolition recycling reporting, if necessary
    - Goal date: 2019

- Goal 3: Strengthen city ordinances regarding remodeling recycling reporting for projects costing over $20,000, if necessary
    - Goal date: 2020

Additional Information

Waste is measured by weight. And weight is how diversion statistics are generated. By far, the heaviest material entering Madison waste stream relates to construction and demolition projects. Better management of these materials, and better tracking of these materials, would result in improved diversion statistics.

As of this writing, the recovered weight of this material is acquired from processors/recyclers of construction material in the area. While these weights accurately depict what they are processing, it does not necessarily accurately depict what projects within the City of Madison are doing since these processors also work with projects outside of Madison.

In Madison General Ordinance 10.185, there is a requirement that demolition and construction projects divert 70% of their waste from landfills, and remodeling projects that cost more than $20,000 are also required to recycle. The same ordinance also requires reporting the recycling total within 60 days of the completion of the project.

Since a gap exists between the ordinance, and the data collection methods of this material, improvements should be made to be sure that projects within the city are meeting the values and expectations of Madison.

If efforts to improve data collection within current ordinances do not produce results in capturing this information, taking steps to strengthen the ordinances surrounding construction and demolition recycling would be the next logical step.

Any changes to the ordinance, however, must be carefully considered to be sure that they are both practical and not a hindrance to development within the City of Madison. Nor

would any changes in the ordinance be done to be punitive, but rather solely to increase recycling practices and reporting of the construction sector of Madison.

E. Continue supporting successful programs that increase diversion, equity, and recycling, such as the NRT neighborhoods, sharps collection underwriting, the roll-out assist program, and so on.

- Goal date: continuous.

Additional Information

The Streets Division provides excellent service to all City of Madison residents. This goal is intended to underline the commitment to keep providing services to everyone, and finding ways to lift up the traditionally underserved and vulnerable communities who need help keeping their homes and communities safe and environmentally responsible.

F. Continue to search for opportunities for other recycling and diversion opportunities where practical and affordable

- Goal date: continuous.

Background and Additional Information

Waste streams are always changing, especially as packaging material changes and global markets and consumer habits evolve. These natural fluctuations will create both challenges and opportunities for recycling, and it is important to be sure that the opportunities that are available can be leveraged and the challenges minimized or overcome.

Pursuing new opportunities for recycling material will be an important role for the recycling coordinator especially as diversion expectations tick upward over time. And the pursuit will not end so long as waste is a result of our consumption-based economy.

The recycling coordinator and the Streets Division must stay committed and attuned to what advancements and opportunities exist, and how best to bring them to Madison in a manner that is cost effective and practical to end users.

This also serves as a catchall goal to improve diversion practices when new opportunities are revealed.

G. Pursue increased public place recycling efforts

- Pilot recycling litter containers in select areas, and monitor these cans for contamination
    - Goal date: 2018

- Expand recycling opportunities in parks and other community spaces
    - Goal date 2019

- Pilot food waste diversion for neighborhood festivals and events
    - Goal date 2020

- Pilot food waste collection points at neighborhood farmer's markets located with the City of Madison
    - Goal date 2021

- Require food waste diversion and waste reduction plan be a part of any street use permit for events
    - Goal date 2022

Additional Information
Public place recycling is a significant challenge due to the likelihood of contamination. But yet it also is a public statement regarding a community's commitment to recycling. Therefore, it is worth the effort to make recycling visible while taking all appropriate measures to guard against contaminating otherwise valuable recyclables.

Currently, Madison's only recycling litter containers are located within the Business Improvement District (BID) along State Street. This particular area is unique in that it receives daily collection from the Parks Department as part of the maintenance of this highly utilized and visible corridor of Madison.

The level of attention afforded the State Street recycling containers cannot be met by the Streets Division, so careful consideration of container placement will be necessary for early success. Carts would be placed in high foot traffic areas that are likely to also generate recyclable waste based on the businesses in the area. Litter container location would also need to be placed for ease of collection by our trucks.

The carts would need to be carefully monitored and the waste diversion achieved by these recycling litter containers must also considered before it can be expanded.

Other expansions of public place recycling services include recycling options within city parks and other public places. Recycling within parks is a service provided by the Parks Department, so any expansion of these services would need to be done in conjunction with that agency and also done with the same strategic, watchful rollout as recycling litter containers.

H. Perform regular waste sorts of material in refuse and recycling carts

- Set a regular interval to assess material contained within refuse and recycling
    - Goal date: 2019, repeating as necessary at regular intervals

Additional information
As of this writing, the last waste sort analysis performed by the City of Madison occurred in 2010. Information gleaned from that report revealed the need for food waste diversion practices and provides the basis for the continued pursuit of the food waste goal.

As the waste stream changes, and as the diversion expectations climb, it makes sense to regularly re-evaluate what material residents are placing into the refuse or trying to recycle in their carts.

Using the 2016 diversion numbers, and assuming the implementation of a successful food scraps diversion program, that would leave 26,000 to 33,000 tons worth of material in just the refuse is still destined for the landfill. The percentage of that material that can be recovered cannot be known without performing waste sorts.

The sorts can reveal areas for potential expansion of recycling services, and also potential items that residents need additional information on how to recycle. Expanding recycling options will be critical as the goals for waste diversion increase over time. Sorts can also reveal material that cannot be recycled, but could be avoided if proper education efforts are in place.

The waste sorts could also be used as a regular checkup on the recycling programs to be sure they are functioning as necessary.

The sorts should also consider large item material as a way to gauge the recyclable options or prevention strategies for that waste as well.

Waste sorts and their subsequent analysis are expensive, however, so budget constraints may preclude regular inspection of the waste. However, at minimum, setting a goal of a waste sort once every five years in line with the diversion percentage increases may be the most reasonable option.