2014

SOLID WASTE REDUCTION AT STATE AGENCIES

Solid Waste Reduction at State Agencies is a toolkit for state agencies to establish an effective solid waste management program and to identify projects and practices that can reduce and prevent waste.

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I. Introduction

Municipal solid waste (MSW) — more commonly known as trash or garbage — consists of everyday items we use and then throw away, such as office supplies, furniture, bottles, cans, food scraps, paper, electronics, and batteries[1]. According to the Environmental Protection Agency (EPA), in 2012 Americans produced about 251 million tons of MSW per day[2]. This waste comes not only from homes, schools, and businesses, but also from federal, state, and local governmental agencies.

Here in Minnesota, to encourage state agencies to implement practices that reduce the amount of waste requiring disposal, Minnesota State Statute mandates that each state agency recycle at least 60% by weight of the solid waste generated by its offices in the metropolitan area and other operations located outside of the metropolitan area[3]. In addition to the State Statute, a Governor's Executive Order issued in 2011 also gives state agencies incentives to reduce, reuse, and recycle. According to the Executive Order, by June 30, 2014, each state agency must achieve a 60% reduction in the amount of waste disposed of each fiscal year, compared to fiscal year 2005, through reducing waste, recycling, and diverting organics for composting[4].

Municipal Solid Waste, or trash, is comprised of various items commonly throw away after being used. MSW does not include industrial, hazardous, or construction waste.

Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products.

Composting is a natural process by which food scraps, yard trimmings, and other organic materials are collected and allowed to decompose under controlled conditions into a rich, soil-like substance called compost. For an agency building, organics could be recycled through commercial composting.

Interpretation of MN State Statute, Section 115A.15, Subd. 9. *"Recycling goal"*

This State Statute is comprised of three major components:

A) State agencies shall recycle **at least 60 percent** by weight of the solid waste generated by state offices in the metropolitan area, and other operations location **outside of the metropolitan area.**

B) If the county in which an agency building is located has a higher recycling goal than 60 percent, then the agency shall achieve the higher recycling goal set by the county. State agency facilities in metropolitan counties have to achieve a 75 percent recycling rate by 2030, as set by the State Statute section 115A.551, subdivision 2a.

C) By March 1 of each year, each agency shall report to the Pollution Control Agency (MPCA) its recycling data through *State Agency Recycling Data Input Form*.

How is recycling rate calculated?

$$\text{Recycling rate} = \frac{\textit{Weight of material recycled}}{(\textit{Weight of material recycled} + \textit{weight of waste discarded})}$$

[1] http://www.epa.gov/waste/nonhaz/municipal/
[2] http://www.epa.gov/waste/nonhaz/municipal/msw99.htm
[3] https://www.revisor.mn.gov/laws/?id=225&doctype=Chapter&year=2014&type=0#laws.0.2.0
[4] http://mn.gov/governor/multimedia/pdf/EO-11-13.pdf

Reduce, reuse, recycle is the three Rs that help minimize the amount of waste we generate. Reduce (waste reduction) and Reuse are usually more preferable options in comparison to Recycle (waste diversion) as the most effective way to reduce waste is to not create it in the first place.

Aside from legal obligations, by implementing good solid waste management practices, state agencies can also:

- Create a safer and more comfortable working environment for staff
- Establish a positive public image of state agencies as leaders in sustainability efforts
- Achieve cost savings by decreasing purchasing and diverting waste from landfill/incineration, which can be more expensive, to recycling and composting, which can be less expensive, as recycling and composting are not taxed by the state or counties.

The solid waste management tax is a statewide fee billed by licensed haulers to their customers. The fee is based on the hauling service cost for customers and applies to trash, but not to recyclables (including compostables). The tax for commercial entities is 17% and is paid by all solid waste customers including governmental agencies. Note that some counties have an additional tax on solid waste disposal. For instance, this tax is 53% in Ramsey County and 37.5% in Washington County.

Solid Waste Reduction at State Agencies is a toolkit designed to help state agencies establish an effective solid waste management program and to identify projects and practices that can reduce and prevent waste. While the type and source of solid waste generated might vary widely among agencies, there are general opportunities and guidelines that agencies can follow to reduce and prevent waste in an office setting. State agencies can use this toolkit to help:

- Assess and collect solid waste management baseline information
- Identify potential solid waste reduction opportunities
- Establish a solid waste management plan
- Effectively engage, educate, and communicate with staff on waste management projects
- Achieve recycling goals set by the State Statute and the Executive Order
- Correctly report annual recycling data, as required in statute, to the MPCA

The remainder of this toolkit is arranged as follows.I In Section Two (II) ("Solid Waste Management Planning"), one can find an overview of seven basic steps that an agency can take to establish and sustain its waste reduction efforts. The next section (III), "Data Tracking & Reporting; Information Gathering," provides tips and worksheets that help agencies understand their material flow and document baseline information and recycling data in preparation for their annual required reports of recycling data to the MPCA. At the end of Section Three (III), one will find a checklist that lists opportunities and potential projects an agency could look at to reduce its solid waste. Section four (IV) offers detailed descriptions of the options outlined in the checklist. The following section, (V) "Education & Communications," provides communication and education strategies that an agency can use to engage and communicate with its employees on sustainability goals and current progress. The final section, (VI) "Resources," is a compilation of external resources that an agency might find helpful.

II. Solid Waste Management Planning

Solid waste management planning is foundational for any successful waste reduction effort. It is the first step an agency should take to achieve and sustain long-term waste reduction and its targeted recycling rate. The framework for solid waste management planning, which might be similar to what an agency uses for water and energy management, consists of eight basic steps:

- Step 1. Building a Sustainability Team
- Step 2. Self-assessing and gathering baseline information
- Step 3. Setting solid waste reduction goals
- Step 4. Communicating (with staff, lessor, hauling services, cafeteria etc.)
- Step 5. Creating an action plan
- Step 6. Implementing the action plan
- Step 7. Evaluating progress
- Step 8. Recognizing achievement

STEP 1. Building a Sustainability Team

A successful sustainability management (not just waste reduction) program hinges on an agency's long term commitment to improving and maintaining its sustainability efforts. The State Statute and the Executive Orders motivate agencies to make such a long term commitment in the area of waste reduction, energy efficiency, and water conservation. The success of sustainability commitments hinges on the formation of a group of champions (or green team) to ensure the establishment of appropriate goals, provide necessary guidance, maintain momentum, and infuse energy into project implementation. If your agency has already formed a sustainability team, then congratulations - you've taken an important first step! For agencies that haven't yet formed a sustainability team, the ground rules below may help.

Rule #1: Support from commissioner and managerial level staff – Sustainability efforts, including solid waste reduction, rely heavily on employees' behavioral change; thus top level support is necessary to successfully and smoothly carry out the implementation of waste reduction projects. It is also important to have managerial level staff on board with the sustainability team so that discussions can be guided toward actionable plans more effectively and decisions can be made more quickly.

Rule #2: Commitment – Member commitment is critical to sustaining the team and carrying out the agency's sustainability plan. Thus, members of the sustainability team should ensure that their time commitment is incorporated into their work plans and is approved and supported by their supervisors.

Rule #3: Diversity – A sustainability team should include people from all parts of the agency, including representatives from different floors and different divisions and a facility or building manager with knowledge of the building's infrastructure. The team also needs a leader who is responsible for overseeing projects and keeping the team on track.

Rule #4: Engage employees – It is critical to recognize that accomplishing sustainability goals, including solid waste reduction goals, requires an agency-wide collaborative effort. Most solid waste reduction projects need *everyone's* participation, and sometimes employee behavioral change, to be successful. Section Five provides guidance on what a good employee engagement program entails.

STEP 2. Self-Assessing and Gathering Baseline Information

After forming a team that is committed to improving solid waste management practices in the agency, it is now time to get to know the waste streams in the agency building. Self-assessment and gathering baseline information are important foundational steps to take because:

- Information gathered from waste assessment activities usually sheds light on potential waste reduction opportunities. Starting from the baseline information gathered, the sustainability team can set appropriate reduction goals, lay out a detailed action plan, and estimate potential cost savings.
- The data collected helps in quantifying and evaluating the effectiveness of waste reduction programs over time.
- Each agency must, by law, report its recycling data to the MPCA each year.

Section three details why and how to track recycling data and conduct waste assessment activities.

STEPS 3 & 4. Setting and Communicating Solid Waste Reduction Goals

The next two steps go hand in hand. Once the team understands how solid waste is currently being generated and managed in the agency building, it can set solid waste reduction goals and communicate them to stakeholders. The team should discuss and draft a list of waste reduction goals, and then confer with the landlord (if the agency is in a leased building), facility or building management staff, senior management, and other key decision makers to revise and finalize the waste reduction goals. Once the goals are finalized, it is important to communicate them to ALL employees. The goals will be a driving force for the waste reduction program, help increase employee engagement, and create a sense of community.

When setting and communicating goals, consider the following[5]:

- Ensure that goals are measureable and achievable.
- Set up realistic implementation timeframes and dates.
- Call attention to the goals – conduct a kickoff event or host informational sessions to engage employees.

[5] Referenced from WaterSense at Work, Section.1-17, P.23

STEP 5. Creating an Action Plan[6]

Step 5 is to create a detailed action plan. This includes translating waste reduction and recycling opportunities into specific projects and prioritizing the project list. The action plan should include the projects and practices that can successfully be implemented and that will help achieve established waste reduction and recycling goals.

Creating an action plan consists of the following steps:

- Identify projects and calculate implementation costs, potential savings, and potential percent increase in waste reduction and recycling rate.
- Calculate simple payback.
- Prioritize projects based on factors such as potential increase in recycling rate, cost, potential savings, and ease of implementation.

STEP 6. Implementing Your Action Plan[7]

To maximize success in implementing the developed action plan, consider the following:

- Ensure that the necessary resources (i.e., time, money, personnel) are available to complete projects and practices included in the plan.
- Complete identified projects and practices in order of priority.
- Create incentives and sustain employees' level of engagement through continuous, interactive and fun employee engagement activities.
- Be creative and consider other resources that may be available to assist in implementation, such as collaborative efforts with other agencies in the area.

STEP 7. Evaluating Progress

The waste reduction team should periodically conduct a review and update the recycling and purchasing data (ideally annually, since the recycling data are submitted once a year to MPCA) to see progress, evaluate the effectiveness of waste reduction and recycling projects, and update the established goals if needed. Note that it can be difficult to assess the individual impact of each project, since many projects go hand in hand (for instance, color coded bins work with adequate signage). The team can use the following formulas to calculate percentage increase in waste reduction and recycling rate.

[6] Referenced from WaterSense at Work, Section.1-17, P.23
[7] Referenced from WaterSense at Work, Section.1-24, P.30

Increase in recycling rate from Year 1 (Y1) to Year 2 (Y2) = Recycling Rate Y2 - Recycling Rate Y1

$$= \frac{\boldsymbol{Y2\ Weight\ of\ material\ recycled}}{(\boldsymbol{Y2\ Weight\ of\ material\ recycled + weight\ of\ waste\ discarded})} - \frac{\boldsymbol{Y1\ Weight\ of\ material\ recycled}}{(\boldsymbol{Y1\ Weight\ of\ material\ recycled + weight\ of\ waste\ discarded})}$$

Percent waste reduction from Y1 to YX =

$$\frac{\boldsymbol{YX\ Weight\ of\ all\ material\ discarded - Y1\ Weight\ of\ all\ material\ discarded}\ )}{\boldsymbol{Y1\ Weight\ of\ all\ material\ discarded}}$$

Using data, the team can verify that the expected waste reduction or recycling rate is achieved and make sure that implementation of the action plan is on track. If not, the team should identify and tackle existing problems with implementation. If the goals have been achieved, the team should consider revising its current goals to sustain a continuous effort on waste reduction and recycling.

STEP 8. Recognizing Achievements

The team should provide recognition for waste reduction achievements. This includes recognizing the contributions of those who have helped achieve the waste management goals, as well as promoting the success of the program internally and externally to other state agencies and the general public. The following are a few ways to recognize waste management efforts:

- Establish an internal recognition program like a "Green Star" award to recognize significant contributions personnel or teams make toward achieving the waste reduction and recycling goals.
- Update staff on waste reduction progress through emails, flyers, and informational sessions during Earth Week.
- Host informational sessions to respond to staff suggestions and concerns.
- Seek external recognition opportunities, such as drafting the agency's achievement as a case study and submitting it to the Better MN newsletter (an internal newsletter for state agencies).

III. Data Tracking & Reporting; Information Gathering

A. Recycling Data Tracking & Reporting

Pursuant to State Statute, each year by March 1, state agencies shall report recycling data to the MPCA through the State Agency Recycling Data Input form. The MPCA assesses each agency's solid waste reduction and recycling effort and, based on the data provided, determines if an agency has achieved the recycling goal set in statute. Though annual reporting of recycling data has been mandated for metro-county state agencies for over a decade, with the elimination of Resource Recovery[8] in 2009 and agencies' staff changes over time, it is possible that recycling data have been not tracked for years at some agencies, or that the employee listed as the contact person in charge of reporting recycling data is no longer in that position. Thus, it is important for agencies to send new contact information to Emily Barker (Emily.Barker@state.mn.us) at the MPCA to sustain effective communication. In addition, reporting requirements for agencies in counties outside the metropolitan area were added by the legislature in 2014.

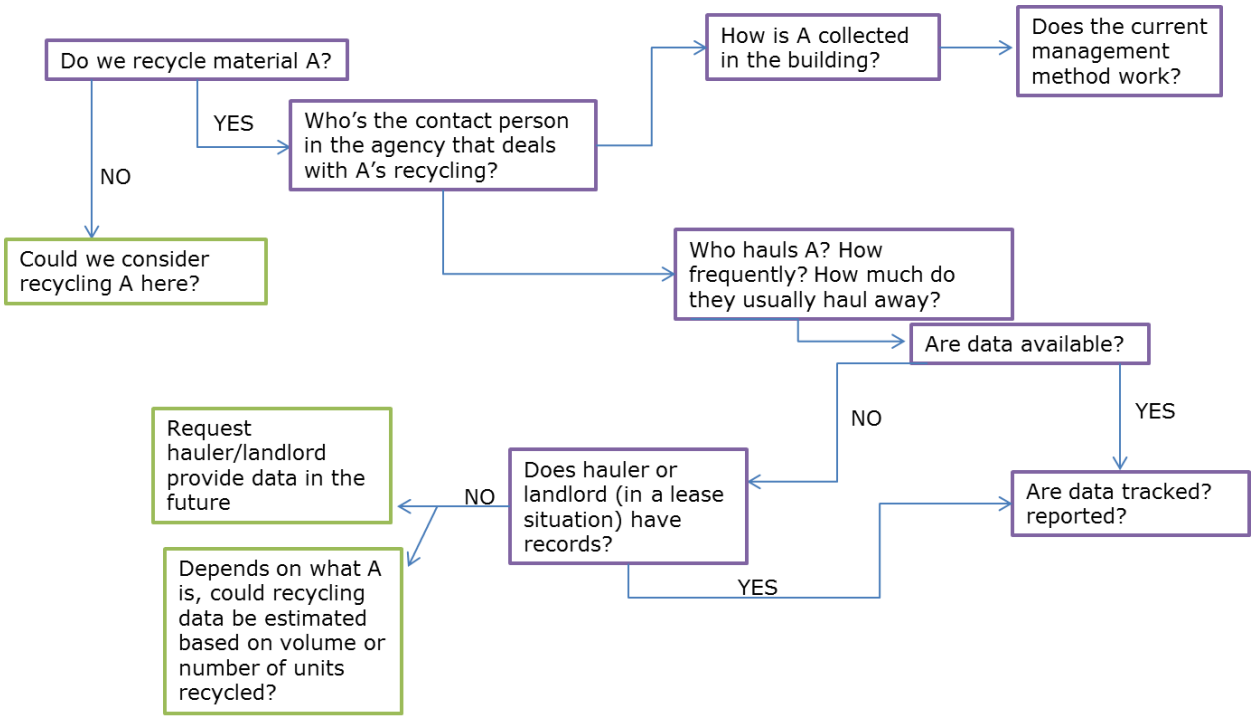
This might sound surprising, but curiosity is probably one's best friend when it comes to successfully tracking, reporting recycling data, and establishing a good data tracking system. Through asking questions, it is possible to identify problems and recognize potential opportunities for improvement. For someone who is not familiar with the current solid waste management situation in the agency, a good first question would be: What are some wastes generated in an office setting that could normally be recycled? Below is a list of some commonly recyclable materials.

[8] Resource Recovery was a state entity under the Department of Administration. It provided recycling and trash hauling services for state agencies in metro counties and tracked agencies' recycling data. Resource Recovery was eliminated in 2009 as part of an effort to cut costs.

Example of Recyclable materials

Aluminum (scrap other than cans)
Anti-freeze
Auto oil
Batteries: appliance (rechargeable)
Batteries: vehicle
Beverage containers (aluminum, glass, plastic, metal, cartons)
E-waste (computers, laptops, printers, etc.)
Fluorescents
Grease, bones, tallow
Metal (scrap)
Organics: food waste to livestock
Organics: food waste & non-recyclable paper for compost
Paint
Paper (all types)
Parts cleaner
Solvent
Textiles
Tires
Wood waste (waste, chips, or pallets)
Single stream recycling (mixed paper, plastics, metals and other containers)

The next step is to identify what materials are currently recycled in the building and how each type of material is managed. The flow chart below gives an example of how one could find recycling information and data about a material ("material A"). Use Worksheet 1 to compile and document the baseline information gathered.



For agencies that own their buildings, hauling service invoices are usually a good place to find the weight or volume of materials recycled. For agencies that are in leased buildings, one may need to contact the property manager or landlord to obtain recycling data, since the property manager/landlord is likely the one who signs the contracts with haulers. Either way, if the hauler/landlord doesn't provide or record recycling data at the moment, agencies should let the lessor know that state agencies are required to report the data and should advocate for adding reporting into their hauling contracts and/or building leases in the future. Agencies could contact Emily Barker (Emily.Barker@state.mn.us) at the MPCA if needing assistance in contacting and informing haulers about reporting recycling data.

Depending on what *material A* is, sometimes it is possible to estimate the recycled weight of *A* based on volume or number of units recycled. For the convenience of state agencies that do not have data in weights, the MPCA developed a weight conversion table in the *Recycling Data Input Form* to help agencies estimate the weight of items such as laser toner cartridges and wooden pallets based on the number of units or the volume recycled.

In the situation where multiple agencies are located in one building, it might be difficult to collect and report recycling data for each agency. In this case, the MPCA would accept a combined recycling data report from agencies that are located in the same building.

It might be challenging for agencies that are in leased buildings with multiple non-governmental entities to gather and report recycling data. In this case, agencies shall consult with the MPCA for solutions. Agencies could consider estimating the amount of material generated via conducting waste assessments. For instance, observe and weigh the amount of material generated on a typical week and multiply that amount by amount of working weeks in a year; or observe how much percentage of material is generated by the agency out of the total amount of material in the dumpster on average and multiply percentage with the total recycling data provided by haulers/ landlord.

Aside from complying with the State Statute to report annual recycling data to the MPCA, recording data on materials recycled is critical for an agency to:

- Establish its baseline
- Evaluate potential solid waste reduction and recycling options
- Examine current waste reduction programs and quantify their effectiveness

It is, however, important to note that recycling data can sometimes be misleading. An agency should also look into its purchasing data, as an increase in recycling, while positive, could also mean or that the agency is buying and using more (bad news when it comes to reduction and reuse). Also, data normalized by building population (expressed in per capita units) are usually more informative than total amount.

B. Waste Assessment

While recycling data shed light on an agency's current waste management situation, there are other waste assessment activities that can help an agency identify existing problems and additional waste reduction and recycling options. In the remainder of this section, two waste assessment activities will be introduced: waste sorts and building walk-throughs. At the end of this section, one will find a checklist that lists out waste reduction options in an office building setting. One could use the checklist to develop agency's waste reduction and recycling action plan.

Waste Sorts

What is a waste sort?

A waste sort involves the physical collection, sorting, and weighing of a representative sample of an agency's waste. The goal of the sort is to identify each waste component and calculate its percentage of the waste an agency generates. Depending on what information is needed, a waste sort can focus on the entire agency's waste or target certain work areas. The result of a waste sort can be valuable in evaluating the effectiveness of current waste reduction programs and in identifying room for improvement.

A waste sort that targets the trash dumpster(s) will give the sustainability team a good understanding on what types of reusables, recyclables, and compostables are thrown into the trash and how much room there is for improvement. For instance, if the team observes that a good portion of the trash is plastic trash can liners, a few potential projects could be considered:

- Communicate with cleaning crew on minimizing the use of plastic liners
- Start a "Get Rid Of My Trash Can" campaign to advocate for eliminating deskside trash cans and, at the same time,
- Create centralized waste stations

How to do a waste sort

Several organizations and hauling companies provide waste sort services. An agency can contact its hauler to see if this service is provided. Otherwise, Minnesota Waste Wise is a good resource for further information on waste sort services. Alternatively, an agency could conduct a waste sort itself. Worksheet D from EPA's *Business Guide for Reducing Solid Waste* provides step-by-step procedures on how to conduct and document the results of a waste sort. One can also find steps and tips on waste assessments through the MnTAP video *How to Conduct a Waste Assessment* (English /Spanish).

Another option is to conduct a visual estimation of the major components and their percentages of a waste sample. Similar to a waste sort, a visual estimation helps in understanding how many and what types of reusables, recyclables, and compostables are ending up in the trash, or how much contamination is in the recycling bins. Though a visual estimation is less time consuming than a waste sort, it is also less accurate.

Limitations of a waste sort

The results of a waste sort only represent the sample collected for the sort – a waste sort is a snapshot. Factors that might affect the results include day of the week, seasonal variation, events, and holidays. These factors should all be taken into consideration when conducting a waste sort or a visual estimation of waste. Multi-day waste sorts might result in more accurate data on waste composition.

Building Walk-Through

What is it?

A building walk-through involves touring each area of the building, observing waste generating activities and waste management practices throughout and talking with employees to gather more information. In comparison to waste sort and recycling data, which draw a broad picture of an agency's waste reduction and recycling performance and opportunities, building walk-throughs help break down this broad picture into pieces and can help with finding detailed solutions to each piece.

A building walk-through could be done while tracking and documenting different types of waste streams and how each is managed in the agency. In both cases, interviews with employees are usually informative. Talk to a wide variety of employees, including dock supervisors, mail room staff, facilities staff, cleaning crew members, building managers, division coordinators who place orders for office supplies, and so on. Moreover, interviews help keep employees informed and engaged in the evolving waste reduction program and offer an opportunity for them to ask questions. Employees can be a valuable source of ideas for reducing waste and a successful and sustainable waste reduction program should be **an agency-wide collaborative effort**.

Worksheet 2 is a Waste Reduction Opportunity Checklist that compiles good solid waste management practices categorized by locations typical of an agency building. Agencies can use Worksheet 2 as a self-assessment checklist when conducting a building walk-through and as a reference to generate ideas for waste reduction and recycling projects that can be adapted to each agency's unique situation.

Worksheet 2. Waste Reduction Opportunity Checklist

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Office kitchen or Breakroom				
Promote the use of compostable (BPI certified, or paper uncoated) serviceware				
Promote the use of reusable serviceware				
Promote the use of reusable rags & towels				
Collect organics for composting				
Collect organics for food to livestock				
Collect recyclables * *Materials recycled*				
Pair right-sized recycling (including organics) containers with trash containers **Right-sized means sizes that match the volumes of material generated*				
Provide adequate signage and labels with containers * *Adequate signage means signs that are instructional, simple and clear, and that deliver correct & updated information. Adequate signage is usually with pictures.*				
Office area/cubicles				
Eliminate deskside waste baskets				
Reduce deskside waste basket empty frequency				
Collect recyclables				
* *Materials recycled*				
Create centralized waste stations				
Pair right sized recycling (including organics) containers with trash containers				
Provide adequate signage and labels with containers				
Place paper recycling bins by printers				
Recycle electronics				
Recycle toner/ink cartridges				
Reduce & reposition printers that are not accessiable for common use				
Install Followme printers * *Followme printers offers secure printing service that require logging in to release print jobs*				
Have a designated area for reusable office supplies (e.g. pens, binders)				
Set printers/copiers to duplex				
Minimize use of glossy/ultra bright paper				
Word processing set to single space and narrower margins				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Office area/cubicles (cont.)				
Email without printing a copy				
Use Print Preview to print only what's needed				
Reuse old paper (e.g. used on one side, outdated letterhead) * *Reuse for notes/notepads* * *Print on back for drafts/internal docs*				
Interoffice envelopes				
Purchase remanufactured toner cartridges				
Purchase recycled content paper				
Purchase refillable pens/pencils				
Cafeteria (Kitchen Preparation Area)				
Collect food scraps for composting				
Collect food scraps for food to livestock				
Collect recyclables * *Materials recycled*				
Recycle cooking grease				
Cafeteria (Dining Area)				
Provide compostable serviceware				
Provide reusable serviceware				
Provide bulk condiments				
Provide bulk beverage dispensing				
Collect organics for composting				
Collect organics for food to livestock				
Collect recyclables * *Materials recycled*				
Pair right sized & color coded recycling (including organics) containers with trash containers				
Provide adequate signage and labels with containers				
Locker room / Restroom				
Provide cloth towel rolls				
Provide air dryers				
Collect organics for composting				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Locker room / Restroom (cont.)				
Pair right sized organics recycling containers with trash containers				
Provide adequate signage and labels with containers				
Supplies / Storage area				
Inventory and document amount of supplies purchased and stocked				
Update inventory list on a regular basis (e.g. once half year, once a quarter)				
Purchase in bulk				
Return unused samples to vendors				
Purchase refillable, reusable, rechargeable items				
Purchase supplies with less packaging				
Purchase supplies with recycled content				
Fix the repairables				
Check for reuse/recycle options for worn out/outdated supplies before disposal * Check with other departments/divisions for reuse * Check with state surplus services (agencies in the same area could coordinate for a pickup together) * Check with manufacturers for return back or vendors for recycling options				
Reuse / recycle cardboard boxes				
Dock area				
Reuse/repair/recycle pallets				
Recycle plastic wraps & film bags				
Reuse/recycle cardboard boxes				
Deliver & receive deliveries with less packaging				
Look for backhaul opportunities with vendors				
Collect recyclables (in the offices at dock)				
Waste collection/disposal				
Match up pickup frequency with the amount of waste generated and collected at dumpsters (assess the size and percent full of the dumpsters)				
Mail room				
Reduce junk mail				
Reuse/recycle cardboard boxes				
Place paper recycling bins				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Zero Waste Event				
Let attendees of the event know it's a zero waste event & provide recycling instruction to attendees				
Provide recycling & organics recycling containers				
Provide compostable serviceware				
Provide adequate signage and labels with containers				
Education & Communications				
Provide waste reduction education materials on intranet				
Communicate & update with employees on waste reduction goals and progress				
Provide waste reduction workshops on a regular basis				
Provide waste reduction training at new employee orientation				
Develop employee engagement programs				
Get updates on newest recycling information from haulers on a regular basis				

IV. Solid Waste Reduction at Agency buildings

Worksheet 2 lists potential waste reduction and recycling opportunities for different locations within an agency building. In this section, several of these opportunities will be explained in more detail. Guidance on how to calculate potential savings and simple payback can be found at the end of this section.

A. Right-sized dumpsters and pickup frequency

When the sustainability team conducts a waste assessment, it is highly recommended that the team examines the trash and recycling dumpsters before the materials are picked up at the end of the day. This helps the team determine whether the dumpsters are right-sized, meaning the volume of materials accumulated matches the size of the dumpsters. For example, if the team observes the 4-cubic yard trash dumpster is usually half full when it gets picked up, the team should consider either replacing the current dumpster with a 2 or 3-cubic yard one or reducing the pickup frequency to two or three times per week. Matching pickup frequency or dumpster size with the amount of materials generated may create substantial cost savings (especially for agencies that own their own buildings) as customers are usually charged based on pickup frequency.

B. Containers and signage

Serving as the point of disposal, the position and design of waste and recycling containers, as well as the signage accompanying the containers, are essential in motivating people to sort materials properly. To capture as much recyclable and compostable as possible, agency should keep in mind THE three main characteristics of effective containers and signage: *memorable*, *accessible*, and *clear*.

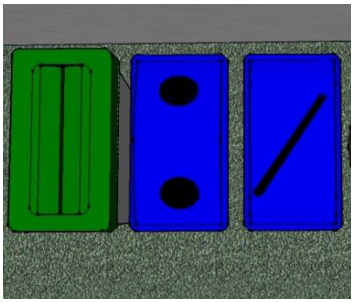
Memorable Containers Signage

Color-coding containers

Green means go, red means stop, yellow means wait. We don't need to pull over at traffic lights to read a sign, as the colors themselves give instructions. Similarly, people are more likely to sort materials correctly if the containers are color-coded. A common color scheme is blue for recyclables, green for organics, and black for trash.

Shapes

Another effective way to remind users of proper sorting is to have an appropriate shape on each type of container. The mockup below is an example of a set of color-coded container lids with different shapes on top. The left swing lid is for organics, the middle one is for all recyclables except paper, and the right one is for paper. Agencies can purchase these color-coded container lids through State Contract W-148(5) with Rubbermaid. A discounted price is offered on the items listed in the vendor's price list.



Keep it consistent

It is important to keep the design of the containers consistent throughout the agency building and, if possible, the agency building's area (for example, capitol complex buildings). People usually behave based on their past experiences[9]; thus, if the message is shown consistently across agencies, people will more likely dispose materials correctly from building to building.

Accessible Containers

Deskside trash cans often contain a considerable amount of recyclable and organic materials, as these containers are much more accessible to employees than the centralized recycling and organics bins. This can be improved by providing deskside recycling containers, such those shown below.

10

Eliminate deskside containers in favor of a central waste station

Agencies may also consider eliminating deskside containers (or at least the servicing of deskside containers) and relying solely on their centralized waste stations. A University of Minnesota study in 1993 showed that centralized waste stations increased the capture rate of recyclables to 91%[11] by making recycling and trash bins equally convenient. This option is also more cost-effective than providing deskside recycling containers.

Agencies should consider placing centralized waste stations in locations accessible to employees, such as break rooms and printer stations. Because agencies may face initial pushback from staff, obtaining the support of the commissioner's office and other managerial levels before launching the program would be very helpful in making the initiative successful.

[9] Adult learning strategies: https://umconnect.umn.edu/adultlearning/

[10] http://www.homedepot.com/p/Rubbermaid-Commercial-Products-4-3-4-qt-Blue-In-Outside-Bin-Attach-Recycling-Container-RCP-2950-73-BLU/204656496

[11]http://www.facm.umn.edu/prod/groups/uservices/@pub/@uservices/@fm/@recycling/documents/content/uservices_content_277448.pdf

An ideal centralized waste station has color-coded bins, adequate signage, and right-sized bins (sized appropriately for the volume of material generated, i.e. larger containers for organics and recyclables and smaller containers for trash).

Aside from centralized waste stations, agencies should also increase the accessibility of bins for special recyclables, such as batteries and toner cartridges.

The Mini-bin program at Hennepin County Government Center[12]

In 2012, Hennepin County eliminated the servicing of deskside waste baskets at the Government Center. Employees were provided Mini-bins and were directed to empty their own waste at centralized waste stations. After one year, this program, combined with the switch to single-stream recycling, allowed the agency to divert an additional 14% of their trash to recycling. Hennepin County has also seen an annual savings of $35,000 by reducing hauling services, plastic liners, and labor costs.

http://www.hennepin.us/~/media/hennepinus/your-government/projects-initiatives/documents/RecyclingProgressReport.pdf

[12] For more information, contact Sharon Fadden (Sharon.Fadden@hennepin.us), the in-house recycling coordinator at Hennepin County.

Clear Signage

Sometimes employees fail to dispose materials into correct bins because they are simply confused. This confusion could be due to new concepts: *What is organics recycling for commercial composting? Why can I throw out diary & meat products here but not into my backyard compost pile*[14]*?* It could also be due to conflicting messages employees get from elsewhere: *Why can I recycle plastic yogurt tubs here but not at home?*[15]

Thus, clear instructions as to what goes into each container and where to recycle special items (e.g. batteries, ink cartridges) must be provided and updated through education & communications, and adequate signage must accompany containers.

Adequate signage

Ideal signage is instructional, simple, clear, correct, and up-to-date. Ideal signs have both text and images. Below are some resources for free, downloadable signs and images:

- Recycling Association of Minnesota (RAM): http://recycleminnesota.org/resources-6/free-signs-a-images
- Solid Waste Management Coordinating Board (SWMCB): http://www.swmcb.org/tool-kits
- Hennepin County: http://www16.co.hennepin.mn.us/forms/commercial-recycling-order-form

C. Paper

Paper usually comprises a large portion of an office's waste stream. Reducing paper use while increasing recycling is therefore an important step in establishing an effective waste reduction and recycling program.

Install a FollowMe printer[16]

Printing less often is a highly effective way to reduce paper waste. Establishing a centralized printing station with a FollowMe printer, which offers secure printing and requires logging in to release print jobs, is an example of a paper reduction practice as it:

- Reduces paper waste by eliminating individual printers in cubicles and offices.
- Captures more paper for recycling in comparison to individual printers because at individual cubicles, staff tend to throw paper printed out from individual printers into the desk-side trash can instead of the recycling bin at waste station.
- Reduces paper waste associated with employees forgetting about documents left at the printer.
- Increases printing security.

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[14] Commercial composting provides ideal composting conditions in terms of temperature, air flow, and moisture content, and is able to compost organic wastes like meat and dairy products that normally cannot be composted in small-scale backyard composting.

[15] The items acceptable for recycling differs among haulers and locations. It is important to maintain constant contact with the hauler(s) to obtain updated recycling information.

[16] "FollowMe" is a trademark from a company called Ringdale. "FollowMe" printing is a printing feature where a user's print job is held on a service and released by the user.

- Saves money on the amount of paper purchased and potentially on taxes paid for trash hauling services.

Other ways to save paper include placing one-side-used paper in a separate tray to reuse before recycling and encouraging employees to use Print Previous before printing,use narrower margins on documents, and print double-sided (duplex).

Purchase recycled content paper

Minnesota Statute 16B.122 requires that state agencies buy paper with a minimum postconsumer recycled content of 10%. State Contract P-682(5) offers recycled content paper containing at least 30% post-consumer recycled content. In fiscal year 2013, 93% of state agencies met the goal set by the statute. Agencies that have not yet met this standard should look into P-682(5) for more information.

Reduce junk mail

According to the MPCA, nearly 6 million tons of waste is generated each year through junk mail[17]. Unwanted mail at work can account for a substantial amount of waste, time, and money. Time and labor costs can be reduced by reducing junk mail, as mailroom staff sort and distribute the mail, recipients review and recycle mail, and cleaning/maintenance staff bring it to the dumpster. Check out the tips provided by the MPCA on how to reduce junk mail at agency buildings.

Fairview reduces junk mail[18]

Fairview Health Services found that in one hospital's mailroom, 49 percent of its mail was "junk." This meant wasted staff time and a slightly higher hauling bill.

Fairview partnered with Partnership Resources, Inc. (PRI), a Minneapolis company that employs adults with developmental disabilities. All junk mail is now delivered to PRI, where workers contact the senders to cancel future mailings. During a three-month period, PRI helped Fairview reduce incoming junk mail by almost 75 percent. Fairview estimates that only 13 percent of the mail now being received is junk.

Reduce and reuse paper before recycling

Reducing paper use and reusing old paper are preferable to recycling. Below are some tips agencies should encourage employees to follow in order to reduce and reuse paper:

- Set printers/copies to duplex (print on both sides)
- Set word processing to single space and narrower margins
- Email without printing a copy
- Use Print Preview to print only what is needed
- Reuse old paper (e.g., one-sided paper, outdated letterhead)
- Use interoffice envelopes

[17] http://www.pca.state.mn.us/index.php/living-green/living-green-citizen/reduce-reuse-prevent/too-much-junk-mail.html

[18] http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/featured-stories/fairview-cures-some-waste-woes.html

- Print on back for drafts and internal documents

D. Office supplies & packaging

Office supplies reuse
It is common to find office supplies that are still in good condition in the trash. These office supplies could have come from an office/storage cleanout, during which extra office supplies that have accumulated are often thrown out. This can happen because agencies usually order supplies at the division-level instead of having a centralized ordering system that tracks and documents the amount of office supplies an agency building actually needs.

If your agency is in a similar situation, you may find that an office supply reuse program (outlined below) can help you (and potentially other agencies). save resources and money. Remember, one person's trash could be another person's treasure:

- Set up a centralized ordering and purchasing system
    - Designate staff to be in charge of centralized ordering for the whole building rather than having a different purchasing coordinator for each division.
    - Set up a central office supply area on each floor.
    - For agencies with the capacity, consider setting up a centralized reuse center for the whole building.
    - Keep inventory of the office supplies on each floor and in storage areas, and circulate extra supplies from one floor to another if needed.
- Encourage employees to reuse and take extras back to supply areas
    - Communicate with employees through a commissioner's letter, intranet, or other outlets about reusing office supplies. Inform employees of the new ordering system.
- Employees should consult with ordering staff and go through the supply area for their floor or other floors before ordering new supplies. A new order request form should be filled out before ordering new items.
- Host an annual cubicle cleanout and set up places for the collection of extra office supplies.
- Inform new employees of the reuse and ordering policy during orientation.
- Circulate extra office supplies between regional offices or with other nearby agencies, or contact the state surplus office to pick up the supplies and recirculate them with other state agencies.
- Order supplies from the state surplus office before ordering new supplies.

Department of Labor and Industry (DLI) saves big through a centralized ordering system
In 2008, the Department of Labor and Industry building in Lafayette Park launched a centralized ordering system, with designated staff ordering supplies for the whole building instead of each division ordering its own. The agency earmarked its office supply budget to $50,000 per year and purchased the most commonly used office supplies, which were placed in each floor's office supply area. Divisions that wanted items not found in the supply areas needed to purchase these items out of their own budgets. Employees were also encouraged to use the supply rooms on other floors when their own floor's stock of a particular item had run out. This program reduced office supply expenditures by 46%, from $782,000 in 2008 to about $361,000 in 2014. This is a shift from $1,738 spent per employee in 2008 to $900 in 2014.

Packaging reuse
Most agencies forfeit the opportunity to reuse by recycling or disposing of cardboard boxes, packaging peanuts, and other packaging materials after the first use. Reusing packaging can reduce both solid waste and expenditures.

Massachusetts State Agencies reuse cardboard boxes
During a pilot program in 2009, New England Office Supplies (NEOS) collected empty boxes and packing materials from prior deliveries and reused them at least two additional times before recycling them. By implementing this reuse program, the 25 state agencies reduced their use of boxes and plastic packaging by about two-thirds. It is estimated this program could save $18,000 statewide per year.

If excess packaging cannot be reused internally, agencies can list the items on the Minnesota Materials Exchange (www.mnexchange.org), a free exchange for business materials. Aside from reusing cardboard boxes, agencies could also negotiate with vendors to use reusable totes instead of cardboard boxes for delivery.

Other waste reduction options for office supplies and packaging

- Purchase in bulk
- Return unused samples to vendors
- Purchase refillable, reusable, rechargeable items
- Purchase supplies with less packaging
- Purchase supplies with recycled content
- Fix repairable supplies instead of throwing them out

E. Cafeteria

Organics Recycling
Organic materials, which include food scraps and non-recyclable paper products such as napkins and paper towels, is a major component of the waste generated in cafeterias, break rooms, and restrooms. Instead of throwing the organics generated in the cafeteria into the trash, there are two main options for recycling organic waste:

- Food-to-animals: food scraps are processed into feed for livestock
  - *How to find a vendor:* check out the *Livestock producers accepting food by-products* list by the Minnesota Technical Assistance Program.
  - Note that food-to-livestock can only accept food products (no packaging or paper products).

- Organics for commercial composting: food waste, non-recyclable paper, and other compostables are recycled into compost, a valuable soil amendment
  - Check with your trash and recycling haulers to see if they offer organics recycling. If not, see the organics hauler list generated by Hennepin County: http://www.hennepin.us/business/recycling-hazardous-waste/organics-recycling

Agencies interested in recycling organics via commercial composting are highly encouraged to replace current tableware (e.g. plates, forks, cups) in their cafeterias with compostable tableware. State Contract F-535 offers discounted prices on BPI certified compostable tableware. Agencies should also consider purchasing compostable tableware for events. Agencies should also consider placing organics recycling containers in both the kitchen and in the dining area to capture food waste generated during preparation and consumption.

For agencies with the capacity and space (particularly those without access to commercial composting facilities), collecting organics for backyard composting could also be an option. Note that whereas commercial composting facilities can accept all types of food waste, meat and dairy products should not be placed in backyard compost piles. For more information on backyard composting, visit the MPCA backyard composting webpage.

Reuse opportunities

Agencies that have a commercial dishwasher installed or the potential to install one should consider replacing disposable foodware with reusables to reduce waste. Switching to reusable foodware can save an agency money over time, especially when there's a dishwasher pre-installed, because foodware does not need to be continually repurchased.

For agencies that do not have the capacity for a full reuse program, some small scale options could be considered.

Reusable takeout containers

Popular on some college campuses, a reusable takeout container program reduces waste from disposable containers and increases awareness of reusables. Reusable takeout containers, such as the Eco Takeout brand, would be a good fit for an agency cafeteria because:

- Employees sometimes take their food back to their work spaces to eat
- Reuse is usually environmentally preferable to recycling
- This type of program can result in cost savings

The program could be set up as a deposit system; staff would enroll and pay a $5 initial deposit. The reusable container could be checked out and returned at the cashier counter, and cafeteria staff would keep track of and wash the takeout containers.

Incentives for staff to reuse more

Agencies could encourage staff to reuse more through incentives. For example, staff could get a discount on their cafeteria purchase if they bring their own reusable containers or cups for meals.

Other waste reduction and recycling options

- Purchase condiments, coffee creamers, and sugar in bulk instead of in individual packs
- Recycle cooking grease/oil in the kitchen
- Provide bulk beverage dispensing

F. Events

A zero waste event is an event that generates no disposed waste (trash). It would be impossible to host a zero waste food event without an organics recycling program in place, but even without an organics recycling program, agencies should strive to capture as many recyclables as possible at events.

Agencies could consider have portable recycling containers for events so that the unit or personnel hosting the events could check out recycling containers when needed. The containers could be used for other purposes when no events are hosted.

Waste at events is generated not only by agency staff, but also by outside visitors, who are likely unfamiliar with the waste management system at the agency. It is thus important to give event attendees clear guidance on the recycling (including organics) options at the event.

Below is a zero-waste event blurb that agency staff could use at the beginning of the event to remind staff and outside visitors about recycling options.

Zero-waste event blurb

Greetings! Welcome to (event name) hosted by (agency name)! Before we start, I would like to remind you that this is a zero-waste event, which means we have committed to generating no trash. All of the food, drinks, foodware, and napkins we provide today are recyclable, compostable, or reusable.

You can place (recyclable items, e.g. juice bottles, pop cans) in the (color) recycling bin(s) at (location of the bin). You can dispose all your food waste, napkins, and foodware provided at this event, into the (color) organics recycling bin(s) at (location of the bin).

Thank you in advance for your help in supporting our sustainability goals.

This is a zero-waste event poster template that agencies could consider using:

G. Savings potential

How to calculate savings potential

Implementation cost is the initial investment that an agency makes to set up a waste reduction or recycling program. This one-time cost is usually associated with purchasing equipment such as waste containers and reusable foodware.

Annual cost is a what an agency pays on a yearly basis to maintain a program, such as hauling costs. Annual cost is generally not included in the implementation cost.

Annual net savings = Annual savings – Annual cost

Payback period = Implementation cost / Annual net savings

For example, if an agency decided to launch a centralized waste station program in the office area, the cost savings calculation would be as follows:

Implementation cost = Cost of extra containers purchased + cost of communications materials

Annual net savings = Annual savings – Annual cost = PSavings on plastic liners + savings on trash hauling cost –cost of updating communications materials –cost of recycling hauling

If the program's implementation cost to sett up centralized waste stations and eliminate deskside waste basket were $500, and if the annual savings were $1,000, then the payback period would be:

Payback period = Implementation cost / Annual net savings = $500/$1,000 = 0.5 year. In other words, the project would pay back in 6 months.

V. Education & Communications

Most waste reduction projects need every employee's participation, and sometimes employee behavioral change, to achieve maximum success. Thus, a good employment engagement program that educates employees about the agency's reduction and recycling goals, efforts, and progress is essential.

There are three main features of a good education and communications program: interactive, fun, and continuous.

A. Interactive

An interactive education and communications program makes employees feel like a part of the agency-wide collaborative waste reduction and recycling effort. It also provides guidance on how employees can make a difference. Consider the practices below to create an interactive program.

Communicate waste reduction and recycling goals with employees

- If an agency has not yet set waste reduction and recyclinggoals for the building, it is highly recommended that the agency do so. Remember that these goals must at least meet the goals set in statute. After setting the goals, agencies should communicate the goals with employees through emails, meetings, or posters at waste stations, such as the example below.

Make it tangible

- Once staff are aware of the agency's waste reduction and recycling goals, provide guidance on what staff can do to make a difference. For example:
  - Host informational sessions to provide employees with more information on new waste reduction and recycling programs and answer questions about how to reduce, reuse, and recycle in the building
  - Create point-of-use reminders (see figures below) and waste reduction tips to reinforce positive behaviors
  - Organize staff to go on sustainability tour(s) at other agencies or businesses
  - Place small bags of compost from the SET commercial composting site above the organics recycling bins with a sign that says, "This is what your organics turn into!"

Organics recycling user guide

Point-of-use reminder

Make it relevant

- While protecting the environment might be a big drive for some employees to take action, others may be not as environmentally aware. Knowing your audience and tailoring messaging is an important step to consider. For instance, the sustainability team could work with a health promotion team to promote centralized waste stations for getting people to get up from their desks and exercise more. Little prizes and awards could also be good incentives for participation.

Report progress and recognize achievements

- Based on recycling data from each year, an agency could identify its recycling performance over time. To recognize achievement and keep staff informed about waste reduction and recycling progress, the agency could:
  - Establish an internal recognition program like a "Green Star" award to recognize significant contributions personnel or teams make toward achieving the waste reduction and recycling goals.
  - Update staff on waste reduction progress through intranet, bulletin boards, emails, flyers, digital screens on the first floor, and informational sessions during Earth Week.
  - Host informational sessions to respond to staff suggestions and concerns.
  - Send out surveys to gather suggestions and feedback.
  - Seek external recognition opportunities, such as drafting the agency's achievement as a case study and submitting it to the Better MN newsletter and publishing success stories through agency social media outlets such as Twitter and Facebook.

B. Fun

Education is an important component of an employee engagement program, and it can be fun and engaging. Below is a list of activities that could be implemented to raise employees' awareness of waste reduction and recycling in a creative and fun way:

- Christmas decoration swap
- Clothes swap
- Host recycling rate competition between floors or office areas
  - Agency could conduct an annual waste sort for each floor and assess each floor's recycling performance. The winning floor could be awarded a pizza party.
- Create a reduce, reuse, recycle quiz
  - The quiz could include questions about the agency's waste reduction efforts (e.g. which of the following is agency's waste reduction goal, how many organics containers are there in this building, just like a scavenger hunt!) and other general reduce, reuse, recycle information
- Develop flash games like Interactive Cubicle for staff education
- Zero-Waste Lunch Day
  - This event promotes correctly placing materials into the right containers to reduce food waste. Agencies that don't have an organics recycling program in place could do Clean Plate Day instead. Employees who had a zero-waste lunch or a clean plate could get a "I had a zero-waste lunch today" sticker or button. Employees could also enter into a drawing for a zero-waste lunch or clean plate day t-shirt.

C. Continuous

The initial momentum of a waste reduction program might fade after time, so it is important to conduct education and communications efforts on a regular basis to keep employees informed, to update signage with new information if needed, and to give updates about waste reduction and recycling progress and new goals. It is also important to have waste management practices addressed during new employee orientation.

VI. Conclusion

Solid Waste Reduction at State Agencies is a toolkit that is designed to help state agencies carry a successful waste management program and achieve the recycling rate goals set by the State Statute and Executive Order. It intends to provide guidance on how to plan, track down baseline data, execute action plans, access and report waste reduction progress in an office building setting. In comparison to other kinds of sustainability projects, the success of waste reduction projects hinges more heavily on staff's behavioral change and thus would take longer to see the impact. Yet because waste reduction and recycling project lead to behavioral changes, agencies help raise staff's environmental awareness and make longer term social and environmental impacts. Now that you have this toolkit as a good resources and starting point, good luck on launching waste reduction program at your agency!

If you have any questions or feedback on the toolkit, contact Emily Barker at Emily.Barker@state.mn.us.

VII. Additional Resources[19]

General

State of Minnesota Sustainability Plan Summary: http://www.pca.state.mn.us/index.php/view-document.html?gid=15359

Executive Order (11-13): http://mn.gov/governor/multimedia/pdf/EO-11-13.pdf

State Statute 115A.15 Subdivision 9:
https://www.revisor.mn.gov/laws/?id=225&doctype=Chapter&year=2014&type=0#laws.0.2.0

Reduce

- Source Reduction Now! (MPCA): http://www.pca.state.mn.us/index.php/view-document.html?gid=4747
- Business Guide for Reducing Solid Waste (EPA): http://www.epa.gov/osw/nonhaz/municipal/pubs/bus-guid/
- Reduce your junk mail (MPCA): http://www.pca.state.mn.us/index.php/living-green/living-green-citizen/reduce-reuse-recycle/too-much-junk-mail.html
- Reduce waste at work (MPCA): http://www.pca.state.mn.us/index.php/living-green/living-green-government/state-agency-sustainability-action-plans/waste-reduction-mpca-sustainability-action-plan.html
- Environmentally Preferable Purchase (MPCA): http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/environmentally-preferable-purchasing/index.html
- Remanufactured toner cartridges: http://www.innovativeos.com/stateofmn/

    - State contracts for Environmentally Preferable Purchase[20]:
        - **Dish and Laundry Cleaning Compounds**: Contract Release C-983(5)
        - **Cleaning Supplies and Floor Care Products**: Contract Release C-252(5)
        - **Janitorial paper products** : Contract Release P-661
        - **Multi-function Devices (MFDs):** Contract Release C-1005
        - **Lamps**: Contract Release L-290(5); This contract established aggressive energy efficiency standards and mercury content limits and prohibited most standard incandescent lamps
        - **Carpet & Resilient Flooring**: Contract Release C-432(5):
        - **Drilling**: Contract Release D-203; Included idle reduction and environmentally preferable fueling and engine maintenance requirements

[19] MnTAP, *Solid Waste Resources*, Anna Arkin
[20] http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/environmentally-preferable-purchasing/state-contracts.html

Reuse

- Minnesota Materials Exchange: www.mnexchange.org
- ReUSE Minnesota: www.reusemn.org
- State surplus office: http://mn.gov/admin/government/surplus-property/state/
- Free online repair manuals: http://www.ifixit.com

Office supplies donation

- Companies to Classrooms located in Bloomington and online at http://companiestoclassrooms.com
- Minneapolis Federation of Teachers / the Minneapolis Public School Teachers Store: http://www.mft59.org/
- St. Paul Public Schools: http://www.spps.org/

Case studies

- Fairview Reuse store case study: http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/featured-stories/fairview-cures-some-waste-woes.html
- Massachusetts state offices packaging reuse: http://www.mass.gov/eea/docs/dep/recycle/reduce/06-thru-l/csneos.pdf

Recycle

- Free signs and images:
    - http://recycleminnesota.org/resources-6/free-signs-a-images
    - http://www.swmcb.org/tool-kits
    - http://www16.co.hennepin.mn.us/forms/commercial-recycling-order-form
- Recycle More Minnesota : http://www.recyclemoreminnesota.org/
- Recycling Association of Minnesota (RAM): http://recycleminnesota.org/
- Recycle at Work : http://recyclingatwork.org/
- Minnesota Recycling Markets Directory (MPCA): http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/recycling/minnesota-recycling-markets-directory/index.html
- Useful state contracts:
    - Waste container: Contract release W-148 (5)
    - Electronics: Contract release H-90 (5)
    - Confidential shredding: Contract release S-828 (5)

Organics

- MN Organics Disposal Options Map: https://maps.google.com/maps/ms?ie=UTF&msa=0&msid=215154064895506257864.0004d345fc49ba7ccf5b1

- Feeding Food Processing By-products to Livestock (MnTAP): http://www.mntap.umn.edu/food/resources/67-FeedingFood.htm

- Food-to-Livestock Options (MnTAP): http://www.mntap.umn.edu/food/resources/25-Livestock.htm

- Reducing Food Waste for Businesses (EPA): http://www.epa.gov/foodrecovery

- BPI (Biodegradable Product Institute) Certified compostable products: http://products.bpiworld.org/

- Useful state contract:
  - Compostable Bags: Contract Release B-351
  - Compostable Foodware: Contract Release F-535 (foodware)

Tools

- The Waste Reduction Model (WARM) calculator (EPA): http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

- Greenhouse Gas Equivalencies Calculator (EPA): http://www.epa.gov/cleanenergy/energy-resources/calculator.html

- Waste Stream Calculation Worksheet for Nonresidential Uses: http://www.fairfaxcounty.gov/dpwes/forms/waste-calc-nonres.htm

- EPA Volume to Weight Conversions: http://www.epa.gov/waste/conserve/tools/recmeas/docs/guide_b.pdf

- Resource Management Contract template: http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/waste-reduction/resource-management-programs.html

Miscellaneous

- Eight Evidenced-Based Principals for Organizational Change: https://sites.google.com/a/lbl.gov/institutional-sustainability--public-site/home

- The Sustainable Organization (accenture): http://www.accenture.com/SiteCollectionDocuments/microsites/sustainabilitytl/Sustainable%20Organisation%20E-book.pdf

- Tools of Change: http://www.toolsofchange.com/en/home/

- Environmental Education Resources (Hennepin County): http://www.hennepin.us/business/work-with-henn-co/environmental-education-resources

- Adult learning strategies: https://umconnect.umn.edu/adultlearning/

- Psychology of Sustainable Behavior: http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/sustainability/sustainable-communities/psychology-of-sustainable-behavior-report.html

- Guidelines for Energy Management: http://www.energystar.gov/buildings/sites/default/uploads/tools/Guidelines%20for%20Energy%20Management%206_2013.pdf?1189-b187

- WaterSense at Work: http://www.epa.gov/watersense/commercial/bmps.html

- Green Building: http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/green-building/index.html

Environmental Technical Assistance

- Minnesota Technical Assistance Program (MnTAP): www.mntap.umn.edu
    - Information about this project: http://www.mntap.umn.edu/projects/USDA/2012_USDA_Solid%20Waste.html
    - Intern program: http://www.mntap.umn.edu/intern/index.htm
    - *How to Conduct a Waste Assessment*- MnTAP video https://www.youtube.com/watch?v=jU8c6VCBo98 and *Cómo hacer una evaluación de desperdicios* (Spanish) https://www.youtube.com/watch?v=qClkBeMIoxE

- Minnesota Retiree Environmental Technical Assistance Program (RETAP): www.pca.state.mn.us/retap

- Energy Smart: http://www.mnenergysmart.com/

- Small Business Environmental Assistance Program (SBEAP): www.pca.state.mn.us/sbeap

- Minnesota Waste Wise: http://www.mnwastewise.org

Appendix

1-A

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

2013 State Agency Recycling Data Input Form

Doc Type: Data Analysis

Agency Address List on Page 3

Instructions:

The State Agency Recycling Data Input Program is being coordinated by the Minnesota Pollution Control Agency (MPCA). All forms must be submitted electronically by 5:00 p.m. on **January 31, 2014**. If you have any questions, please contact Emily Barker at 651-757-2030 or e-mail emily.barker@state.mn.us.

Complete one *State Agency Recycling Data Input Form* for each agency location in the seven-county metropolitan area. If multiple agencies are located at the same address and utilize the same hauling services, a single report may be submitted, as long as the name of each agency represented is included below. For this reporting round data is being collected for calendar year 2013.

Perform a file "Save as" to create a form for each location. Please use the file format of "Year_Agency_Address#.pdf". For example, the 2013 Minnesota Pollution Control Agency report (located at 520 Lafayette Avenue) would be saved as "2013_MPCA_520.pdf". Send the completed forms electronically by clicking on the submit button. Questions proceeded by an asterisk (*) indicates it is required to be completed before the form will submit. If the submit button does not work, send the file as an e-mail attachment.

Prior to 2010 some of the data used to fill out this form was provided by the Resource Recovery Program. When the Resource Recovery Program was discontinued, landlords were instructed by the MPCA to make arrangements with their haulers and service providers to ensure data continued to be collected. Contact your waste and recycling service provider(s) to get this information. If you need assistance with which questions to ask, contact Emily Barker at the MPCA at 651-757-2030 or emily.barker@state.mn.us.

Some service providers may only be able to indicate the **volume** of a recyclable item recovered or solid waste discarded. **If this is the case for your location, please use the volume-to-weight conversions provided on this form.**

Definitions:

The Minn. Stat. § 115A.03, subd. 36b – Waste reduction; source reduction definition can be reviewed on the Minnesota Office of the Revisor of Statutes website at https://www.revisor.mn.gov/statutes/?id=115A.03#stat.115A.03.36b.

The Minn. Stat. § 115A.15 – State Government Resource Recovery definition can be reviewed on the Minnesota Office of the Revisor of Statutes website at https://www.revisor.mn.gov/statutes/?id=115A.15.

State Agency Information

*Street address:

*City: State: MN *Zip code: *County: Select from list

*Agency name:

*Staff population: ☐ Location collects waste/recycling from non-staff populations (e.g. correctional facilities, events, etc.)

Approximate non-staff population:

Additional agencies located at this address:

*Contact name:

*Phone: Fax: *E-mail:

Solid Waste Discarded

This should only include items which were discarded as trash or garbage, please do not include any items here which were diverted for recycling or composting. If the actual weight of solid waste discarded is not available, use the volume to weight conversion provided here.

	Pounds (lbs.)		
	Actual weight	Weight converted from volume	Material weight equivalents and volume conversions (1 ton = 2,000 lbs.)
Solid waste discarded (trash/garbage only)			350 lbs. per cubic yard (uncompacted)

Material Weight Recovered

Enter **weights only** on the Materials recovered list. If the actual weight of materials recovered is not available please use the Material weight equivalents and volume conversions. Please include converted weights under "Weight converted from Volume."

	Pounds (lbs.)		
Materials recovered list	**Actual weight**	**Weight converted from volume**	**Material weight equivalents and volume conversions (1 ton = 2,000 lbs.)**
Aluminum (scrap other than cans)			Weight supplied by vendor
Anti-freeze			7 lbs. per gallon
Auto oil			7 lbs. per gallon
Batteries: appliance (rechargeable)			Weight supplied by vendor
Batteries: vehicle			Automobile = 40 lbs.; truck = 53 lbs.
Beverage containers (aluminum, glass, plastic, metal)			0.75 lbs. per gallon; 151 lbs. per cubic yard
Construction material			Weight supplied by vendor
E-waste (computers, laptops, printers, etc.)			Weight supplied by vendor
Fluorescents			0.5 lbs. each
Grease, bones, tallow			Weight supplied by vendor
Laser toner cartridges			3.50 lbs. each
Metal (scrap)			Weight supplied by vendor
Organics: food waste to livestock			170 lbs per 32 gallons; 1,073 lbs per cubic yard
Organics: food waste and non-recyclable paper for compost			412 lbs. per 55 gallon drum; 1,513 lbs. per cubic yard
Paint			7 lbs. per gallon
Paper (all types, combined weight)			See **Paper (all types)** listed below
Parts cleaner			7 lbs. per gallon
Solvent			7 lbs. per gallon
Textiles			Weight supplied by vendor or 175 lbs. per cubic yard
Tires			Automobile = 21 lbs.; truck = 70 lbs.
Wood waste (mfg. waste, chips, or pallets)			Pallet = 50 lbs.; wood chips = 625 lbs. per cubic yard
Single stream recycling (including bottles, cans, paper)			139 lbs per cubic yard
Other material (total of all)			**Paper (all types):**
List types of recyclables included in 'other material':			Office paper/mixed paper = 2.25 lbs. per gallon Newspaper = 2.00 lbs. per gallon Phone book – Mpls white/yellow pages = 10 lbs. each Phone book – St. Paul white/yellow pages = 7 lbs. each Corrugated cardboard flattened/loose = 150 lbs. per cubic yard

Waste Reduction

Please select the description below that best describes your agency's waste reduction program status (check only one):

☐ No waste reduction program ☐ Waste reduction program planned ☐ Waste reduction program implemented

Agency Reduction Goals (Not Mandatory)

List your agency's waste reduction goals for the following year:

Submit Reset

3-A Worksheet 1: Material Recovered Tracking Sheet

Material Recovered	Management method	Collector	Collector contact	Pickup frequency	Agency contact	Agency contact number	Data available?
e.g. E-waste, paper	e.g. recycling bin at each floor, collect at dock	e.g. Allied, ASPEN	e.g. XXX-XXX-XXXX, XXX Ave., MN	e.g. once a week	e.g. Laura Smith	e.g. 612-XXX-XXXX	√

This form is last updated at:

3-B Worksheet 2: Waste Reduction Opportunity Checklist

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Office kitchen or Breakroom				
Promote the use of compostable (BPI certified, or paper uncoated) serviceware				
Promote the use of reusable serviceware				
Promote the use of reusable rags & towels				
Collect organics for composting				
Collect organics for food to livestock				
Collect recyclables * *Materials recycled*				
Pair right-sized recycling (including organics) containers with trash containers **Right-sized means sizes that match the volumes of material generated*				
Provide adequate signage and labels with containers * *Adequate signage means signs that are instructional, simple and clear, and that deliver correct & updated information. Adequate signage is usually with pictures.*				
Office area/cubicles				
Eliminate deskside waste baskets				
Reduce deskside waste basket empty frequency				
Collect recyclables * *Materials recycled*				
Create centralized waste stations				
Pair right sized recycling (including organics) containers with trash containers				
Provide adequate signage and labels with containers				
Place paper recycling bins by printers				
Recycle electronics				
Recycle toner/ink cartridges				
Reduce & reposition printers that are not accessiable for common use				
Install Followme printers * *Followme printers offers secure printing service that require logging in to release print jobs*				
Have a designated area for reusable office supplies (e.g. pens, binders)				
Set printers/copiers to duplex				
Minimize use of glossy/ultra bright paper				
Word processing set to single space and narrower margins				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Office area/cubicles (cont.)				
Email without printing a copy				
Use Print Preview to print only what's needed				
Reuse old paper (e.g. used on one side, outdated letterhead) * *Reuse for notes/notepads* * *Print on back for drafts/internal docs*				
Interoffice envelopes				
Purchase remanufactured toner cartridges				
Purchase recycled content paper				
Purchase refillable pens/pencils				
Cafeteria (Kitchen Preparation Area)				
Collect food scraps for composting				
Collect food scraps for food to livestock				
Collect recyclables * *Materials recycled*				
Recycle cooking grease				
Cafeteria (Dining Area)				
Provide compostable serviceware				
Provide reusable serviceware				
Provide bulk condiments				
Provide bulk beverage dispensing				
Collect organics for composting				
Collect organics for food to livestock				
Collect recyclables * *Materials recycled*				
Pair right sized & color coded recycling (including organics) containers with trash containers				
Provide adequate signage and labels with containers				
Locker room / Restroom				
Provide cloth towel rolls				
Provide air dryers				
Collect organics for composting				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Locker room / Restroom (cont.)				
Pair right sized organics recycling containers with trash containers				
Provide adequate signage and labels with containers				
Supplies / Storage area				
Inventory and document amount of supplies purchased and stocked				
Update inventory list on a regular basis (e.g. once half year, once a quarter)				
Purchase in bulk				
Return unused samples to vendors				
Purchase refillable, reusable, rechargeable items				
Purchase supplies with less packaging				
Purchase supplies with recycled content				
Fix the repairables				
Check for reuse/recycle options for worn out/outdated supplies before disposal * Check with other departments/divisions for reuse * Check with state surplus services (agencies in the same area could coordinate for a pickup together) * Check with manufacturers for return back or vendors for recycling options				
Reuse / recycle cardboard boxes				
Dock area				
Reuse/repair/recycle pallets				
Recycle plastic wraps & film bags				
Reuse/recycle cardboard boxes				
Deliver & receive deliveries with less packaging				
Look for backhaul opportunities with vendors				
Collect recyclables (in the offices at dock)				
Waste collection/disposal				
Match up pickup frequency with the amount of waste generated and collected at dumpsters (assess the size and percent full of the dumpsters)				
Mail room				
Reduce junk mail				
Reuse/recycle cardboard boxes				
Place paper recycling bins				

Waste Reduction Opportunity/Project	Already Implemented	Evaluate/ Consider	Not Applicable	Notes
	√	√	√	
Zero Waste Event				
Let attendees of the event know it's a zero waste event & provide recycling instruction to attendees				
Provide recycling & organics recycling containers				
Provide compostable serviceware				
Provide adequate signage and labels with containers				
Education & Communications				
Provide waste reduction education materials on intranet				
Communicate & update with employees on waste reduction goals and progress				
Provide waste reduction workshops on a regular basis				
Provide waste reduction training at new employee orientation				
Develop employee engagement programs				
Get updates on newest recycling information from haulers on a regular basis				