Downtown Oshkosh Waste and Recycling Receptacles

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Comprehensive information on implementing new and better-designated receptacles on downtown Main Street.

Table of Contents

Executive Summary

This proposal aims to improve downtown Oshkosh's public waste collection system by adding recycling receptacles and reorganizing current receptacles along Main Street within the DORA boundary. Two different approaches are proposed: a permanent approach and a temporary approach. An effective public waste collection system is important to be established, especially with the implementation of the DORA policy. DORA is the Downtown Oshkosh Refreshment Area that allows citizens to carry beverages throughout a designated portion of the downtown area. It will be explained in greater detail in the following section.

Various downsides are present within the current system. Receptacles are not required to follow a consistent design and are placed irregularly in the downtown area. Littering and contamination concerns are common with the current distribution and design of receptacles. Many receptacles look similar to one another and are not clearly labeled to indicate the type for which it is designed. The bins are often placed individually with trash and recycling bins being spaced apart. A portion of Main Street, from Irving Street to Parkway Avenue, lacks waste receptacles altogether. Popular businesses are located within this stretch, which forces them to deal with additional waste issues that downtown businesses with waste bins nearby are able to avoid. These downsides will be covered in greater detail later in this report.

Solutions to these drawbacks are addressed by the new proposal. Both the permanent and temporary approaches suggest 17 bins be added along Main Street. The bins currently downtown should be rearranged and redesigned. Strategic placement of bins will make proper waste disposal easier for citizens. Bins should be consistently placed along Main Street and every trash bin should be paired with a recycling bin. This partnering of bins has proven to increase proper sorting and lower contamination. Additionally, there will be a clear distinction between bin

types. Trash and recycling bins will both be clearly labeled to remove any chance of confusion among users. The proposal involves an educational aspect that will not only add to bin identification but will also inform citizens about what goes in each bin. Signage from the Outagamie County Recycling Facility website will be added to each bin with simple messages that promote proper waste sorting.

Many stakeholders will be impacted by the changes that this proposal suggests. These involve primary, secondary, and expert stakeholders. James Rabe, the Director of Public Works in Oshkosh, is one of the most important stakeholders for this project. Rabe is in favor of an improvement in how Oshkosh manages its public waste collection downtown but is worried that some barriers from the current system will carry over into the future system. These include drawbacks from worker shortages and concerns about continued misuse of bins. Some secondary stakeholders include Kathy Hutter and downtown businesses that are located on Main Street and within the DORA boundary. Hutter is the Operations Manager at the Winnebago County Solid Waste Facility. This facility receives the majority of Oshkosh's waste, so changes that happen to public waste collection will impact this facility. One goal of this proposal is to lessen contamination, which is a major issue that the facility deals with. Many local businesses that operate along Main Street have voiced concerns over the current public waste management and would support the implementation of a new system. Littering is a large concern for businesses, especially with the DORA policy being in place.

Other Wisconsin cities have changed their public waste receptacles and collection systems. Appleton has made improvements to its public waste collection through the implementation of new trash and recycling bins in the downtown area. This was done in 2013 with a total cost of approximately $12,000. However, with inflation that corresponds to about

$20,000 today. Cities, such as Sheboygan and Stevens Point, have also made considerable changes to their systems as well. Stevens Point conducted a canvas project where trash receptacles were used as murals for volunteers to decorate. Some bins were designed to spread eco-friendly messages. More information on these benchmarks is provided in this report.

The total costs for this proposal are addressed within this report. It differs for each approach. The permanent is expected to cost between $7,000 and $20,000, while the temporary approach is expected to cost between $2,000 and $5,000. Both price ranges depend on the type of bin chosen for the project, the cost of educational signage, and approximate worker pay. Grants are available to help cover some of these upfront costs. Many of which come from the Wisconsin Department of Natural Resources. A few specific grant opportunities are covered in this report.

There are a few barriers that this project could run into. Each of the two proposals has some downsides, such as the permanent approach being considerably more expensive and the temporary approach having the risk of its bins being stolen or easily damaged. Worker shortages and related consequences voiced by James Rabe need to be taken into consideration. Barriers to these proposals will be addressed with potential solutions.

Improving the functionality of Oshkosh's downtown public waste system comes with multiple sustainability benefits. Waste that citizens dispose of in the receptacles will be better sorted and will entail less contamination. This makes it easier to sort and recycle and boost processes at recycling facilities which benefit the planet. Keeping downtown Oshkosh clean of litter lessens the chance of waste ending up in the Fox River and other natural areas. This project will not only benefit the economic sector of Oshkosh, but also the environment.

Background/Context/Problem Identification

The city of Oshkosh has a public waste management system that covers a portion of the downtown area on Main Street. Waste receptacles dedicated to public use are placed in this area. The current system has visible drawbacks that have impacted its effectiveness. As of now, the city has seventeen total public waste bins spread out on Main Street. **Figure 1** shows bins lack a consistent design and organization. Receptacles include ornamental trash, ornamental recycling, ornamental unlabeled, and plastic unlabeled. Images of the bins can be found in **Figure 2**. The plastic receptacles are unlabeled and not locked in place. The metal receptacles are labeled either plastic or trash only but are inconsistent and the labeling is placed directly on top of the receptacle, making it difficult to identify from a distance. Inconsistencies among these receptacles can confuse individuals attempting to dispose of their waste. Improper labeling and ineffective placement of receptacles prompt additional issues regarding contamination and littering. These bins are located randomly throughout the downtown area. Waste receptacles do not extend northward on Main Street beyond Parkway Avenue. Some local businesses, such as Terry's Lounge and The Varsity

Figure 1

Figure 2

Club are located within this receptacle-free area. These two businesses have had issues with litter outside of their establishments. These businesses go outside and pick up litter to maintain a welcoming environment for guests. Other local businesses, like Gardinas, have faced challenges with the public using their waste bins located behind their building. Gardinas is located in an area with public waste receptacles; however, these bins are not being used effectively.

Oshkosh has an ordinance in place called the Downtown Outdoor Refreshment Area (DORA). This allows people to carry their adult beverages outside within a set boundary, which can be seen in **Figure 3**. Most of the downtown area is included within the boundary. People are allowed to carry their adult beverages outside from 5PM - 10PM on Wednesdays through Fridays and from 1PM - 10PM on Saturdays. The beverages must be kept in a clear or semi-clear container or within the beverage's original container as long as it is not glass. DORA has led to an increase in waste being produced and carried around Main Street. An increase in waste, particularly recyclable waste, creates a need for an improved waste management system in downtown Oshkosh. Every business that was contacted over the course of this project mentioned DORA and the ordinance was commonly tied to an increase in litter.

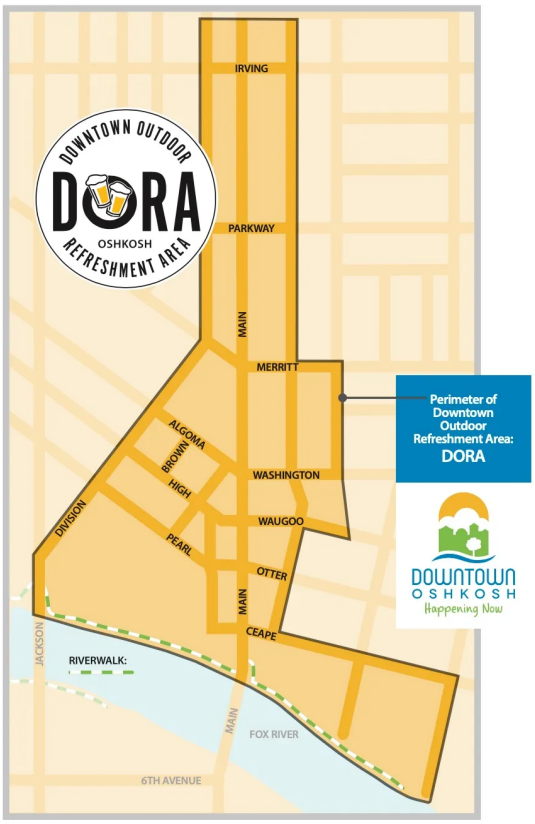

Figure 3

This project aims to improve the public waste collection of downtown Oshkosh by updating the placement, type, and signage of waste receptacles along Main Street within the DORA boundary. On top of that, the bins should have some educational signage attached to

them, so people know what type of waste goes in what bin. If the receptacles are not improved, the city of Oshkosh will continue to be negatively impacted by litter along Main Street and will not provide the public with the option to recycle in the downtown area. Businesses along Main Street will have to continue picking up waste that accumulates outside of their doors.

All of the waste collected along Main Street via public receptacles goes to the landfill. This is partly due to contamination issues, worker shortages, poor labeling of bins that leaves city workers unsure of what bins are recycling, and because of the absence of an effective waste collecting and sorting system. City workers employed by the Department of Public Works empty them twice per week. Nearby, the University of Wisconsin Oshkosh campus has a more pronounced waste management system that better incorporates recycling. The university pays for waste collection where it is charged $9.96 per tip for recycling and $12.44 per tip for landfill waste. A tip represents each time a waste dumpster is emptied. It has a stable rate, meaning it costs the same to empty half a dumpster as it does to empty a full one.

Improving waste management on Main Street will likely lead to less littering and would allow for more waste to be recycled and avoid the landfill. Additionally, the cleaner look would create a more welcoming environment for local businesses to operate within and would create a more ideal atmosphere for locals to venture downtown. This proposal would save money by utilizing a recycling program, which is cheaper than sending all waste to the landfill and would make the downtown area a more desirable place for people to visit. Increased pedestrian traffic downtown correlates with an increase in shopping and income for local businesses, which would strengthen the community.

Recommended Action

To improve the look and effectiveness of public waste management in downtown Oshkosh, the city needs to alter its current system. There needs to be more waste receptacles along Main Street. It would be ideal to add 17 bins, which matches the number of bins that are already downtown. This is because currently there is only one receptacle of either trash or recycling on every block. These bins are also the same color and design, which makes them hard to tell apart. Additionally, the DORA policy and lack of receptacles lead to more contamination. It would be very beneficial to place the bins next to each other on each side of the street, as this would encourage people to properly dispose of their waste. Adding more bins downtown would be beneficial, as there are only bins in parts of Main Street, not near some of the popular bars located within the DORA boundaries. Currently, bins only go from Parkway Avenue to Ceape Avenue and the areas where there are no waste bins are currently experiencing a major littering problem, so adding more bins would be a very smart solution.

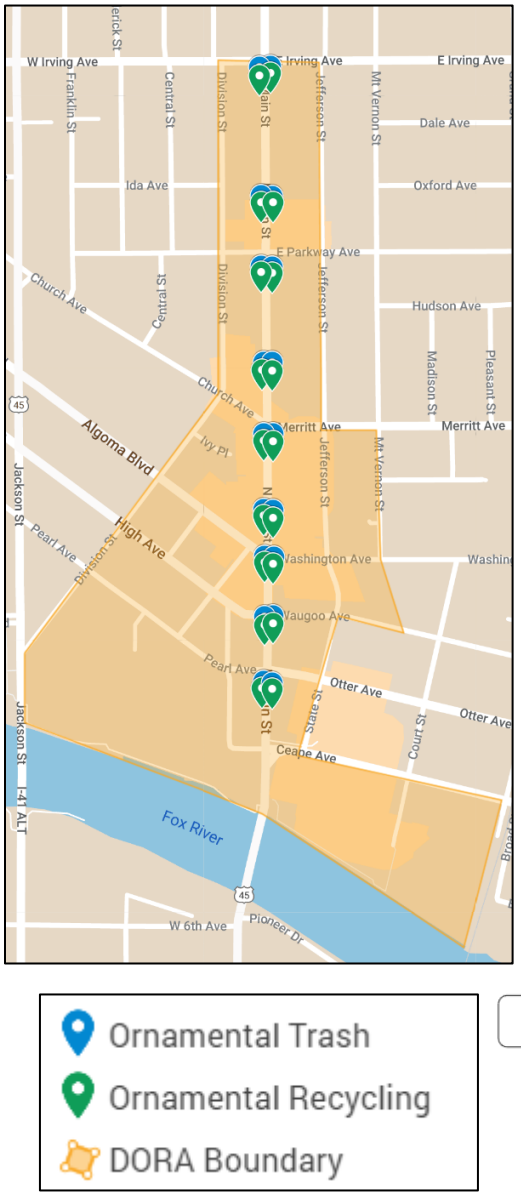

Figure 4

The first proposal, the permanent solution to the problem of the bins being hard to tell apart, would be to buy new permanent bins that would be properly labeled. While this would be an expensive cost, it would be well worth it to lower the contamination, as well as increase the

durability of these bins over the temporary ones. This would allow for people to be able to tell them apart, and adding signage to these bins would also assist in the education and elimination of contamination downtown.

The second proposal, the temporary solution, is to use blue residential recycling bins. This would help with the major concern of the bins being unable to tell them apart. During the mapping of the bins, the major problem of the difficulty of telling the bins apart arose. This is a concern, as Main Street is composed of many bars and is very popular with nightlife, so having a difficult time telling the bins apart would result in contamination between recycling and trash. The temporary proposal suggests that instead of using the current black metal bins for recycling, a change is made to using the blue residential bins. This would remove the difficulty of telling them apart, as the bins would be completely different from one another. Additionally, people may try to move these bins since they are on wheels, but removing the wheels from the cart also removes this ability.

Overall, adding more bins downtown that are easily able to tell apart would be very beneficial to reducing littering and contamination. Next, putting signage on the trash and recycling bins would assist in lowering contamination. This would assist in telling the bins apart, lowering the risk of contamination and increasing the probability of proper use. For the trash bins, the proposal suggests putting a label on the bins to let people know that is the place where their trash should be thrown away. Additionally, the proposal suggests putting recycling flyers on the recycling bins, as this would help with the labeling of the bins. In addition to providing a label to the bin, the flier would also be used for educational purposes, and be used to educate the public on what can and cannot be recycled. This would be of great assistance to the Oshkosh community, as this would help reduce the amount of recycling that is thrown away, and the

amount of trash thrown into recycling bins. This flier would also include a QR code that would go to the recycling center, which would allow people to gain additional information and education about recycling. This would be a very beneficial practice, as educating people about recycling is key to the improvement of it.

Stakeholder Identification

Key Stakeholders

James Rabe (Oshkosh Department of Public Works)

The first stakeholder contacted was James Rabe. He is the head of the Department of Public Works in Oshkosh. He is both a primary and key stakeholder in this project. He is a primary stakeholder because he is a part of an organization that is directly affected by the recycling and trash bins being placed downtown. He is also a key stakeholder, as he is the head of the Department of Public Works, and they are the ones who are in charge of placing and emptying these bins. He is not currently in support of placing new bins, as the cost for these bins is 1,500 dollars each. In addition to the high cost, the Department of Public Works is also in charge of emptying all of these bins. Currently, they are doing them twice a week, but the Department of Public Works is very short-staffed so there would not be any more time in their schedules to pick up more trash bins. This makes the idea of adding more bins difficult, as there is not enough money or time in the budget to be able to do this currently, according to James Rabe. James Rabe is also concerned that even if the bins are there, people may not use them as he has personally seen people litter when allowed to use the bin.

Kathryn Snell (Oshkosh Special Events Coordinator)

Kathryn Snell is the Special Events Coordinator for the city of Oshkosh and is another key stakeholder in this proposal. There was discussion around information about events in the city of Oshkosh and the forms that go into hosting an event. When asked about required bins at events like the farmer's market, they stated that they are required but rarely enforced. Kathryn also elaborated that permanent receptacles would benefit the events. When asked to elaborate on how that could be beneficial, Kathryn stated that waste and recycling bins increase the number of staff/volunteers needed and suck resources away from the event to sort recycling. In addition, there are additional costs to have separate containers. Having separate and distinct permanent containers would help alleviate those problems. Kathryn went on to say that some events may be able to absorb the additional costs and resources of providing waste bins, while others may be more negatively impacted. With the implementation of better waste and recycling receptacles, it creates the best of both worlds. Kathryn did state that recycling is not offered at many events as many individuals do not actively recycle. Kathryn stressed that this might be a better area to address.

Secondary Stakeholders

Gardinas Kitchen and Bar

One key stakeholder in this proposal is Gardinas Kitchen and Bar. Gardinas is a restaurant located on Main Street within the DORA boundary. Beth Fabisiak, the Front of House Manager of the restaurant had some opinions on the current waste management scene. This business has an outdoor seating area, which is impacted by the litter that accumulates on the sidewalk. Businesses aim to keep the area outside their establishment clean and free of trash, as it

improves the overall aesthetic of the building. The current waste management system in downtown Oshkosh leads to increased litter, especially on the weekends. Inconsistent bin colors and designs, along with the poor placement and lack of recycling bins contribute to more littering. Gardinas also faces issues with its personal dumpster, which it shares with neighboring businesses and the apartments that live above. However, these dumpsters are impacted by the public, who often use them for their own benefit. An improved waste management system in the downtown area would likely take pressure off of these company dumpsters and allow the public to dispose of their own waste easily and properly.

Beth feels strongly about the current state of the waste management scene in downtown Oshkosh. Gardinas, the restaurant that she helps manage, is impacted negatively by Oshkosh's current public downtown waste management systems. Nearly every business located on Main Street, including Gardinas, deals with litter in front of their buildings. Many businesses pick up the trash themselves to make their business look better. Ideally, this litter issue would be improved with the implementation of more waste bins on Main Street. These bins should be placed with a recycling and waste bin next to each other, preferably twice per block. People would have a clear sense of what type of waste goes in which bin and would have improved access to bins, which lowers the chances of individuals choosing to litter. If these bins were to be established, Gardinas personal dumpster would likely not face the issues that it currently does.

Terry's Bar and Grill

The Manager at Terry's Bar and Grill supports the placement of municipal waste bins. Located on Irving and Main Street in downtown Oshkosh. This bar does not have any recyclables or waste bins in front of the building at all. The closest bins are in the building or at

least a block away further down Main Street. Terry's employees commonly deal with issues of litter both in their bar as well as outside. He also expressed his concern with the possibility of the DORA program bringing in more waste due to single-use waste that would need to be disposed of on the main street. Personally, the bartender tries to do his part by recycling what he can and picking up litter when he notices it. Furthermore, he expressed his support for adding more bins to the downtown area since most people are not going to go out of their way to throw something out. It comes down to convenience for a lot of people, where the nearest bins are and since the closest ones are a block away, people most likely are not going to hold on to their garbage. Overall, the bartender and Terry's Bar and Grill expressed his concern that everyone involved in downtown Oshkosh could and should be doing better to develop a safer and more aesthetically pleasing environment. This will create a stronger and more involved community that everyone can enjoy.

The Varsity Club

The manager of The Varsity Club has experienced many issues with waste management in the downtown area. The Varsity Club is a primary stakeholder due to the fact that it is directly affected by how Oshkosh handles its public waste. The Varsity Club is also a key stakeholder, as they are located right in the middle of downtown Oshkosh, meaning that their support of adding more trash and recycling bins is key to this project being a success. The Varsity Club is a popular restaurant and bar location on Main Street, and it is very busy most of the time. Due to the new DORA policy, which allows participating businesses to allow patrons during specific hours to openly carry alcohol on the sidewalk in disposable containers, there is much more litter on the ground due to the lack of public bins. This information demonstrates that there is a large problem with the current bins in town, and it is causing issues for local businesses. The support of the

Varsity club in this project is important and shows that the local community is very supportive of recycling and waste bins downtown.

Twisted Roots Tavern

There was a brief conversation with the manager at Twisted Roots Tavern, a local business that holds a location in downtown Oshkosh, regarding the proposal. Twisted Roots Tavern stated that they were supportive of the idea of the implementation of new waste management projects downtown. The manager cited that the proposed idea would help keep their storefront clean of litter and help with the increased litter from DORA. The manager agreed with the statement that increasing proper waste receptacles would decrease the amount of litter. In response to a question about the type of litter they see, the manager stated that they see an issue with people dropping any waste while walking around the downtown area. Overall, the management would be in favor of the implementation of new waste receptacles.

Winnebago County Solid Waste Facility

Kathy Hutter is the Operations Manager at the Winnebago County Solid Waste Facility. She overlooks the functioning of the facility and works to make decisions that benefit the efficiency and effectiveness of waste sorting. Hutter is both a secondary and key stakeholder in improving public waste management in downtown Oshkosh. If the downtown waste bins are to be altered in a way that beneficially impacts the waste sorting and collection in Oshkosh, Hutter would benefit greatly in an indirect manner. She is also a key member of the Winnebago County Solid Waste organization that would be impacted if waste sorting improves in the downtown area. As for the current public waste management of downtown Oshkosh, Hutter notes that contamination and wish cycling are two of the biggest issues that impact the ability of the

recycling facility to operate smoothly. Wish cycling is when people put items in recycling bins that do not get recycled. She suggests utilizing an educational aspect to help the public know what waste goes in what bin, as regulations change every so often, and due to some people using outdated recycling guides. Around 100,000 tons of material is handled each year by the Tri-County Recycling Facility, which operates in partnership with the Outagamie facility. This amount is manageable with their equipment and current staffing numbers; however, the facility could likely handle more material if there was less contamination. Contamination of material negatively impacts the efficiency of waste sorting and can even slow it down in extreme cases where excess material needs to be sent elsewhere to be sorted. The Winnebago facility takes in waste from surrounding areas, such as Oshkosh, but does not do any of the collecting themselves. It works as a transfer station, sending all of the waste brought to the warehouse to the Tri-County Recycling Facility in Appleton.

Kathy is impacted by the waste management system of Oshkosh. Her main goal is to make the Winnebago County Waste Facility operate as efficiently and effectively as possible. If waste brought to the facility is a huge trash and recycling mix, the facility struggles because of that contamination. Contamination is one of the biggest issues that the facility has to deal with, and Oshkosh's weak waste management system is partially to blame. There is a lack of an educational proponent to help citizens properly sort their waste, as well as poorly placed, labeled, and designed waste bins. Even in Oshkosh's busiest area, downtown Main Street, these systems are poorly set up. If these waste management systems are improved, it would make Kathy's job a lot easier, allow the Winnebago and Tri-County facilities to operate more smoothly, and would empower those facilities to sort through even more waste. Kathy suggested the city of Oshkosh should make decisions based on industry leaders and regulatory agencies, doing things like

pairing a recycling bin next to every trash bin. This would make it more likely for people in the downtown area to properly dispose of their waste, hence putting less pressure on the Winnebago County Waste Facility and making Kathy's job easier.

Experts

Dean Gazza (Appleton Parks Director)

Dean Gazza, who is the current acting parks director for Appleton is an expert in this project as they were a part of Appleton's project implementing recycling receptacles throughout the city. Dean Gazza was influential in the implementation of better waste management practices for Appleton. When asked regarding their thoughts about the use of proper waste and recycling receptacles, Dean stated that implementation of proper waste management receptacles is necessary and that bigger steps can be taken to achieve that in the Fox Valley. When asked to elaborate on how Appleton took those steps to help achieve that goal in the Fox Valley, Dean provided key information about Appleton's waste management revitalization. Dean discussed information such as pricing, challenges, benefits, and drawbacks. Some challenges Dean listed include bin damage, negative public feedback, and winter pickup and storage issues. Dean also referenced the Appleton annual budget to pull upfront costs. When asked about the use of the waste receptacles, Dean elaborated that Appleton has seen solid consistent use of the new receptacles and expects with proper time and education, that it will become better utilized. Overall, Dean stressed that having the option for citizens is the best course of action.

Ray Maurer (Oshkosh Parks Director)

Ray Maurer is the Parks Director of Oshkosh. Ray has been the Park Director since 2010 and is therefore well-informed of the park's functionality and changes. He mentioned how the

parks have followed a “take out what you bring in” system since 2000. However, they do still have some bins by athletic fields and playgrounds in the parks and they have added some along the riverwalk. Ray discussed how the parks used to have bins, however, they were taken out due to different reasons such as costs, worker injuries, and misuse problems. The bins that are in the parks are mostly picked up by city sanitation and some of the recycling is picked up by a waste management company called GFL Environmental. One of the major issues the parks are facing right now is litter specifically in and around the Leach Amphitheater by downtown Oshkosh. They do have both recycling and waste bins in the leach amphitheater; however, they are not being used since there is a lot of litter on the ground. Overall, Ray stressed that the parks have had the same waste management system for a long time and that difficulties may arise through the altering of the system, therefore, leading us to focus on adding more trash and recycling bins to downtown Oshkosh. Since Ray did not seem too concerned about litter or pollution in the parks.

Benchmarking

City of Appleton

The city of Appleton is one of the three big cities in the Fox Valley. With a population of 76,000, this makes Appleton the largest city in the Fox Valley and only slightly larger than Oshkosh. Appleton’s budget for 2022 was $174,000,000, marginally larger than Oshkosh's budget, which was reported to be $161,000,000 in 2022. Appleton sits on the Fox River and Lake Winnebago and shares the watershed with Oshkosh and Fond Du Lac. Appleton has a historic downtown and fisheries which pull in visitors across the state. This has driven them to take action to preserve not only the downtown but the watershed.

Pre-2005 Appleton had used the polity “carry in carry out” and implemented that throughout their public spaces. In 2005, they began to notice an issue with litter and waste and began to offer waste receptacles in public spaces. Appleton continued this practice up until 2013 when the city council decided to implement better waste and recycling bins. Over two years, the city implemented new waste receptacles and recycling receptacles throughout downtown and in public spaces. This project required $12,000 to outfit all city parks and downtown with these new receptacles. When adjusted for inflation, that works out to be roughly $20,000. The city purchased 10 new plastic receptacles for $400 each for their downtown. Adjusted for inflation that works out to be $5,200 for all 10 receptacles.

During the project’s implementation, the city of Appleton cited that they made selective purchases for the bins and placed them in high-usage areas. The city placed both waste and recycling next to each other downtown to promote recycling and limit littering. In addition, Appleton’s receptacles are marked and color-coded to distinguish waste from recycling. As of today, individual stakeholders from Appleton have stated that they have seen heavy use from both the waste receptacles and recycling receptacles. They remark that they expect Appleton to continue education programs to increase successful waste collection. Much like Oshkosh, Appleton's downtown waste collection is done via the Department of Public Works and recycling contractors. It is unknown how the implementation of new receptacles affected Department of Public Works crews in Appleton.

City of Sheboygan

The city of Sheboygan is widely known for its coastal community and outdoor recreational activities as the city runs along Lake Michigan in Eastern Wisconsin. With a population of 49,929, Sheboygan is slightly smaller than Oshkosh which has a population of

66,435. Similarly, to the Fox River which runs through the city of Oshkosh, Sheboygan also has a river running through it called the Sheboygan River. Both of these rivers lead to larger bodies of water, therefore, increasing the importance of managing the cleanliness of these communities. Sheboygan is also a major tourist spot in Wisconsin due to Lake Michigan, its numerous public parks, and hotels.

Before the pandemic in 2020, Sheboygan experienced a major issue with litter in their city due to the use of household bags for waste and recycling instead of bins. Due to stresses including dragging, sharp objects, and seagulls these bags were often tearing and therefore dropping waste into the environment. In 2020 the city of Sheboygan received a major grant from The Recycling Partnership called The Recycling Partnership Grant. This grant contributed $277,500 to Sheboygan with a specific goal of improving its recycling and waste management system. As discussed further later on in this section, this grant led to major developments in Sheboygan's waste management system, even in just the first year of implementation.

This grant included two main focuses including switching from households using bags for recycling and waste to bins/carts for disposal as well as increasing the Sheboygan education campaign regarding recycling and waste management. To implement these focuses, the city gave 18,181 households one 96-gallon bin for recycling and another for garbage. The city also acquired seven automated side-loading collection trucks, which are used to pick up the newly implemented bins. To improve the community's knowledge of recycling and waste management, the grant also focused on improving education campaigns by increasing the use of social media and videos. This was especially important during the pandemic since people were not leaving their houses where they would normally see billboards, signs, posters, etc. The city of Sheboygan

also implemented mailing educational pieces to households to increase citizen knowledge of what can and cannot be recycled as well as how the bins will be implemented in the city.

After just one year of implementation of the bins and an increase in educational campaigning, the city experienced major advancements in the efficiency and effectiveness of its recycling and waste management system. More specifically, Sheboygan had a 15% increase in recyclables per household and a decrease in the amount of garbage found in recyclables, meaning citizens began to better follow proper recycling practices. There was also a reduced number of worker injuries as well as a decrease in litter overall, which was one of the main reasons Sheboygan received The Recycling Partnership Grant. Sheboygan's improvements, largely due to the grant, have led other major cities in Wisconsin, like Kenosha and Milwaukee, to also adapt to more efficient recycling and waste management practices. Overall, the City of Sheboygan has been recognized for its quick recycling transformation in US conferences as well as awards.

City of Stevens Point

The city of Stevens Point has been recognized as a Green Tier Legacy Community since 2017. These communities are defined as "local government leaders preparing for the future and building sustainable and resilient communities" by the Wisconsin Department of Natural Resources. Cities receive consideration for state grants and are given opportunities for additional grants that cities unaffiliated with this recognition do not have access to. The city is known for its sustainable efforts and is home to the University of Wisconsin Stevens Point.

Worker shortages are a common issue that forms barriers preventing many cities, including Oshkosh, from implementing better waste management strategies. Stevens Point performed an increase in wages for seasonal workers three years ago. Additionally, they

completed a city-wide pay plan analysis that measures whether or not people are being paid enough. All 34 of Stevens Point's street maintenance workers are trained in garbage collection. This ensures that all workers can collect trash effectively during absences and turnover. These efforts have led to fewer worker shortages in the public works department, allowing the city to pursue additional tasks and projects.

Stevens Point collects public trash in the downtown area on Mondays and Thursdays. The schedule is designed to run strategically to benefit workers and the flow of the city. Mondays work well because there are no collection routes scheduled on those days, which allows city workers to focus on the downtown cleanup after the weekend. Thursdays also work well because pickup routes are shorter on those days, which gives city workers more time to pick up trash. Some of the bins downtown have been modified to allow for the disposal of large trash items, particularly pizza boxes. The city constructs its metal receptacles rather than purchasing them. New receptacles can cost up to $3,000, while Stevens Point spends around $500 to construct their bin.

The city also conducted a canvas project with its trash receptacles. Volunteers and sponsors were contacted to decorate bins throughout the city. This was a cost-effective way to make waste receptacles more noticeable and to potentially spread environmentally-friendly information. Some include QR codes that can be linked to recycling education websites or other sustainable information.

Cost

Research has found that there are multiple avenues that the City of Oshkosh could take to improve the waste management downtown. To completely outfit the rest of downtown with

adequate paired recycling and trash receptacles, the city would need to acquire at minimum 17 new receptacles. Below is the pricing broken down between Proposal One and proposal two.

Proposal One

Proposal one has an estimated upfront cost of $400-$1000 per bin; $5,000- $17,000 total. The varied difference is due to what receptacle material is decided is best. Plastic receptacles cost roughly $400- $600 dollars, while metal ornamental bins cost roughly $700 - $1000 dollars per bin. When Appleton outfitted their downtown with new receptacles in 2014, it cost the city $400 per plastic container as seen in **Figure 5.** The city spent $12,500 total to outfit public spaces with recycling receptacles. Using figures pulled from the 2014 Appleton budget when the city of Appleton completed a similar project, the receptacles would cost the City of Oshkosh $8,820 when adjusted for inflation (**Figure 5)**. Those numbers are reached using the $400 a receptacle times 17 and then adjusted for inflation. Sources have stated that a plastic receptacle can cost between $200-$500 per bin or up to $1,200 for a decorative metal receptacle. Multiple sources have stated that ornamental waste receptacles are available for $700-$1000. Although officials in Stevens Point have noted that there is a possibility that the metal bins can cost less, as Stevens Point can construct, and powder coat their own metal bins. This process costs Stevens Point $500 per receptacle (**Figure 6**). It is currently unknown the installation cost

Miscellaneous Equipment	
15- 300/gal containers @ $300 ea	$4,500
10- 450/gal containers @ $400 ea	$4,000
10 College Avenue recycling cans @ $400 ea	$4,000
Total	**$12,500**

Figure 5

per receptacle. It would depend on the type of receptacle and how the Department of Public Works decides to install the receptacles.

Research has also found that there is a minimal cost of maintenance once the upfront costs are made. There would only need to be reactive maintenance for when something might possibly need to be fixed or cleaned. If the receptacles are properly placed, they could potentially cost next to nothing to maintain. Officials in Appleton have noted that the receptacles purchased in 2014 are still in use today.

Permanent Receptacles	Avg Price x 17 (New Bins)	Avg. Total
Plastic Receptacle	$520 x 17	$8,840
Ornamental Receptacle	$850 x 17	$14,450

Figure 6

Proposal Two

Proposal two still would utilize 17 new receptacles. Proposal two has an estimated upfront cost of $100-$200 per bin; $1700-$3500 total. Proposal two utilizes incorporating household recycling receptacles on Mainstreet as a temporary solution. The upfront cost for the receptacle is listed at $110. To implement 17 new receptacles, it would cost the City of Oshkosh $1870 (**Figure 7**).

Unlike the permanent receptacles, there is a potentially high maintenance cost as the bins can be tipped over, broken easily, and are not as durable as the permanent receptacles. This would require the city to have extra receptacles available for replacement or crews available to fix the receptacles.

Temporary Receptacle	Avg Price x 17 (New Bins)	Avg Total
Home Recycling bins	$110 x 17	$1870

Figure 7

More Cost Information

Using The University of Wisconsin - Oshkosh figures, it would cost the city roughly $12.44 per trash can tip, and $9.96 per recycling tip. Implementing recycling could save money overall as compared to keeping the current receptacles. Another cost assessed would be the increased time for crews to pick up and change out the receptacles. With added receptacles downtown there would be increased time stopped congesting Main Street. The Department of Public Works already states that they are short of workers, so the increased workload from adding more receptacles would potentially create the need for more employment in the department. More potential costs that were assessed there would be a benefit with businesses having to pick up less litter, especially with the implementation of DORA. Downtown businesses' personal bins would also be used less, and owner's downtown would need to spend less time collecting waste out front of their business.

As for appropriately signing the receptacles, there are two main routes that the city could take. First, to create signs in the city sign shop. City sources have stated that the city of Oshkosh has the ability to produce signage, which they are currently undergoing a massive re-signage program in public spaces. The city sign shop could construct signage for the bins and install them when they install the new receptacles. The second would be to follow in Stevens Points footprints and have citizens paint murals, stickers, and signage on the receptacles. This could serve as volunteer opportunities for individuals, schools, or a city event. Oshkosh has a mural alley that has a bunch of drawings and paintings by volunteers. These individuals could

potentially be contacted to see if they could help design the receptacles signage. Although the city may need to provide the materials to complete this portion of the project. There are no figures associated with the signage of the receptacles.

There are potential financial benefits that might offset the costs. To reiterate, if the city implemented more recycling instead of waste the dump price per container would be significantly less. Using The University of Wisconsin - Oshkosh figures, it would cost the city roughly $12.44 per trash can tip, and $9.96 per recycling tip. That is a potential $2.49 savings per receptacle pair pickup. Tied with that, the city would not need to add any additional routes downtown as there are already scheduled waste pick-ups. In addition, the city would not need to spend as much time sending crews downtown to clean and pick up trash. The city already runs a street cleaner weekly and picks up trash two times a week and there is potential for that number to be cut down due to decreased litter and increased cleanliness. Finally, there are plenty of indirect costs and benefits associated with the project. To begin, the increased receptacle density and signage would limit the amount of litter downtown. Tied with that, there are ecosystem benefits for the Fox River watershed as the increased receptacles would potentially decrease litter and improper waste disposal, preventing it from ending up in the river or lakes. This will preserve ecosystems and habitats for species. Another indirect cost would be a cleaner, more aesthetically pleasing downtown area due to less litter and waste.

Grants

There are grants available especially through the DNR. The Green Tier Legacy Communities, which Oshkosh is already a member, occasionally offers early access to sustainability grants which do include recycling and waste management grants. This could be a

good option to curb upfront costs. The first grant is the Basic Recycling Grant to Responsible Units (BRGRU). This grant focuses on recycling responsibly in cities, towns, villages, counties, tribes, or solid waste management systems that utilize DNR-approved effective recycling programs. Areas that utilize this can apply for funding to offset costs of residential and community recycling and yard waste programs. Applicants may also qualify for the Recycling Consolidation Grant. The second grant is the Recycling Consolidation Grant (RCG). The RCG grant follows the same requirements as the BRGRU grant. Successful applicants will receive funds at the same time as Basic Recycling grants and they can be used for implementation of recycling management receptacles and programs. Green Tier Legacy members can receive early offers at these grants. These grants are offered yearly with an October 1st due date.

Barriers

General Information

Throughout the research project there were many barriers that arose regarding the implementation of the proposed project. To begin, many stakeholders and sources have pointed out that there is a hefty cost upfront to implement the bins downtown. When looking at preliminary numbers, the cost outright is estimated between $5,000 and $20,000. These funds might not be readily available for the outright implementation of receptacles downtown. In conjunction with this, there is also the barrier of the cost of maintaining and emptying the proposed new receptacles. In talking with stakeholders, they mentioned that there would be an increased labor cost to empty and maintain the receptacles. This is a problem for Oshkosh as many of the city departments that handle collection have been reported to be understaffed. The

addition of new receptacles would potentially stretch crews even thinner. Another barrier tied to the collection of the new receptacles is crew safety. There were previous injuries to collection workers which led to the removal of receptacles in parks in Oshkosh. This concern still carries over to collection today in downtown Oshkosh. A separate barrier would be receptacle usage. Much of the literature surrounding urban recycling and waste disposal in cities cites improper usage and education. Part of the barrier to implementing this project is waste and recycling education. The literature cites that many individuals lack proper knowledge regarding waste and recycling and education and healthy exposure is needed to properly reduce litter and increase recycling rates. According to a study conducted by Shinya Suzuki, placing trash and recycling bins in close proximity to one another promotes proper waste sorting – even an extra 3 meters of distance between receptacles can lead to lower sorting efficiency (Suzuki). In addition, a study, organized by David Wu, looked at various differences that influence the effectiveness of signage. The study found that images are more effective than words and consistent placement of signage works best to convey messages. It also states that images work best to help educate individuals (WU). These studies point out the necessity to overcome some of these barriers. If these studies are implemented correctly, they could also help overcome the barriers. These barriers are not a comprehensive list, but they give insight into the potential issues that might arise when implementing the project. Below are more barriers specific to each individual project.

Proposal One Barriers

The first of which is that the upfront cost of this approach is more expensive, but some grants could potentially help with this cost. Next, the installation procedure is more intense than the non-permanent approach, as this requires each bin to be bolted to the ground. Worker

shortages are another concern, but due to the bins being next to each other, another route will not need to be added.

Proposal Two Barriers

The temporary bins also have some barriers. These bins are not meant to be permanent, and there are also durability concerns with them. Due to the bins not being bolted to the ground, people may move or damage the bins. A possible solution to this would be to add wheel locks to the bins to keep them from moving. Despite there being concerns about the durability of the bins, these bins are used residentially, meaning that they are already outside yearlong and hold up fairly well in these situations. Since these bins are cheaper, it is less money to replace them if they were to break. Another potential barrier is the lid, as some people may not want to open a bin with their hands, but potentially taking the lid off could be a solution to this. Lastly, these would not match the bins that are currently downtown, leading to some cosmetic concerns.

Significance for Sustainability

Introduction

Sustainability is one of the most if not most important concepts when addressing environmental issues. It is defined as “meeting the needs of the present without comprising the ability of future generations to meet their own needs” (United Nations) whilst balancing the environment, society, and economy. As Environmental problems continue to escalate worldwide, communities are increasingly forced to adapt to more sustainable practices of management. This can look very different depending on the city being observed. It is important to note that not every environmental change will be beneficial for each community. Sustainable development

needs to be tailored to the specific city, however, looking at what other communities have done can be useful as well. As for the City of Oshkosh, one environmental issue that is important to address is litter and contamination, specifically in the downtown Oshkosh area. The two proposals previously discussed of adding more waste and recycling bins to Main Street were proposed with the goal of reducing the litter and contamination that currently exists in downtown Oshkosh. This would advance the city's Sustainability Advisory Boards Sustainability Plan.

Littering, as defined by the Cambridge Dictionary, is “The act of dropping trash on the ground in public places.” Litter is a worldwide problem that is found everywhere and is increasingly getting worse as consumption and production of supplies continue to increase. This leads to air, water, and soil pollution which affects the environment, animals, and humans. A large majority of litter and trash is run off into lakes, streams, and rivers, and ultimately ends up in the ocean. Astonishingly, “seven billion tons of debris enters the world's oceans annually” (CENN). Therefore, litter should be a major issue that both local cities and countries nationally address. As discussed below, litter has several negative impacts on both a global and local level. The most significant impacts of litter pollution include environmental, animal, and social impacts.

Environmental Impacts of Litter

Firstly, litter affects the environment through the release of toxic/hazardous chemicals as the trash slowly begins to degrade. Litter is transported to different environments through the wind or run-off and can, therefore, be found almost anywhere on this planet. Initially, litter can contaminate and be absorbed by the soil, which could then end up affecting the success of crops and plants in natural habitats. The chemicals could even end up in our food supplies in the case

of crop contamination. Other outcomes of litter on the environment include negative effects on the air. Reduced air quality can occur “due to the smell and toxic/chemical vapor that can emanate from trash,” (CENN) affecting everyone worldwide. Litter will often also accidentally start on fire due to flammable materials in the trash. The burning of trash releases more chemicals as well as even new chemicals into the air. Last but not least, most debris ends up in some type of water body including everything from streams to the ocean, degrading aquatic habitats. This leads to easier transportation of litter and, as discussed later on, leads to many issues with wildlife as well as humans. Litter must be reduced as much as possible, especially since the Fox River runs right along downtown Oshkosh. This makes it easy for litter to enter the waterway and ultimately ends up in Lake Winnebago, which is downstream of downtown Oshkosh. The cleanliness of downtown Oshkosh is especially important since the Fox River is already an impaired waterway according to the Wisconsin DNR. These water bodies are a part of the Fox-Wolf Watershed, which supplies over 250,000 people with drinking water (Fox-Wolf Watershed Alliance). Litter is already a problem in this area since a total of 23,094 pounds of trash have already been removed from the watershed since 2021. Therefore, stopping litter before it enters waterways is crucial in protecting the watershed habitat that it currently supports.

Animal Impacts of Litter

Several of the impacts of litter on the environment lead to impacts on wildlife in the area as well. Firstly, litter that enters wildlife habitats releases chemicals that are harmful to animals and could even lead to death. As the garbage deteriorates it releases microplastics which are defined as “tiny plastic particles that result from both commercial product development and the breakdown of larger plastics,” (National Geographic). Although microplastics are already dangerous enough due to their chemical makeup, they absorb other chemicals in the area making

them even more hazardous. Many studies have shown that microplastics are in Lake Winnebago. This is detrimental since they are then consumed by the animals in the lake. Inside animal bodies microplastics can "cause physical harm by blocking the digestive tract or causing internal abrasions," (Fox-Wolf Watershed Alliance). Since humans consume animals from this environment this could ultimately lead to microplastics in the bodies of people in this area and affect their health as well. Further studies are currently being done on Lake Winnebago microplastics; however, they have already been found in human bodies in other areas around the world.

Additionally, litter that enters wildlife ecosystems often entangles animals or is mistaken for food. This could also cause major health concerns or even kill the animal as well. Notably, organic litter that enters waterbodies can create an excessive amount of nutrients in the water. This allows the number of algae in the water to increase very fast, creating a layer on the water surface that blocks sunlight. Therefore, delaying the diffusion of oxygen in the water and ultimately killing the aquatic wildlife. Lake Winnebago has already had major issues with blue-green algal blooms in the water due to an excessive amount of nutrients from fertilizers (Oshkosh Northwestern). Therefore, any sort of litter that could release these nutrients must be reduced, especially since there have already been numerous issues with the blue-green algal blooms along the Oshkosh coast of Lake Winnebago.

Social Impacts of Litter

Last but not least, litter also affects human society in several different ways. Firstly, in residential areas, such as downtown Oshkosh, litter has been shown to "decrease property values, and in commercial areas, it can decrease customers and reduce sales," (Global Conservation

Force). Since downtown Oshkosh includes both residential and commercial areas, we must keep litter to a minimum as it can lessen the value of the area and therefore community. Overall, it also decreases the aesthetics of a city. Additionally, if an area already has litter on the ground studies show that people are more likely to continue to litter since it is thought to be more acceptable. A common theme of communities that contain excessive amounts of litter is tension in societies. When community members complain about litter blame is then placed on someone else in the community. Those who are blamed often go into denial mode dismissing the claims, therefore creating tension between different groups when most communities aim to have the opposite, a society that can have a good relationship with each other.

Litter can also affect our health through the release of toxic chemicals as trash degrades over time. Garbage on the ground attracts different animals such as bacteria, rats, roaches, and mosquitoes which are all known for spreading different types of harmful diseases to humans. Something to also keep in mind is the additional cost that litter brings to cities. If proper waste management is not performed, cities often have to employ additional personnel to clean up the area, defeating the purpose of having trash and recycling bins in the first place. The United States spends about eleven billion dollars annually on cleaning up litter (Global Conservation Force). Overall, reducing the amount of litter in downtown Oshkosh by adding more bins would be beneficial in creating a safer, cleaner, and community-welcoming environment.

Summary

The improvement of the city of Oshkosh's public recycling and waste management in the downtown area would aid the city's efforts to create a more sustainable environment for the community. In 2009 Oshkosh created The Sustainability Advisory Board with the responsibility

of “advising the City Manager and Common Council on sustainability issues affecting municipal operations and the community at large.” The SAB focuses on a list of ten main priorities the city hopes to focus on. Out of these ten priorities, adding more distinct recycling and waste bins to the downtown area would improve at least half of the priorities including creating a safe and healthy atmosphere, responsibly managed waste facilities, developing a safer, engaged, and diverse community, and a local community which attracts new businesses with focuses on the people, profit, and the planet. Downtown Oshkosh is a fast-growing community with new events being introduced routinely. As discussed above, many of the downtown businesses are already concerned about the potential waste that will be brought in from the DORA program. There are also events such as the farmers market, musical performances, wine walks, etc. Although all of these events are crucial in creating a closer community, it is important to also address how the waste these events bring will be properly disposed of. Furthermore, all of the businesses discussed above expressed their concern about litter in the downtown area, and after walking around several times, it is clear that the bins are not being used and used correctly as there was mixed garbage and recycling as well as garbage in the flowerpots. By adding more bins, it would make it easier and more convenient for citizens utilizing the downtown area to recycle or throw away their waste, therefore creating a more sustainable community.

Summary/Conclusion

To conclude, recycling and public waste management play a crucial role in making any city clean as well as safe for all of its citizens. With Oshkosh’s focus on creating a more inclusive and engaging environment, the city must do its best to improve cleanliness as well as make it more aesthetically pleasing to increase the number of users in the downtown area. The addition of more recycling and waste bins to both sides of the downtown area and having

distinguishable receptacles prevents misuse, which can currently be observed. Additionally, by including educational signs on the bins, it has the potential to increase citizens' knowledge of what can and cannot be recycled, making workers' jobs easier. Due to stakeholders' concerns about litter in the downtown area, it is important to address their concerns not only for the business but also for the community. It is crucial for the city of Oshkosh to look into implementing new receptacles downtown to limit litter and sorting issues from DORA and other downtown events and to continue the process of bolstering the city and watershed health.

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