Opportunities for Permanent Glass Recycling Services

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1 PROJECT DESCRIPTION

The Lawrence-Mercer County Solid Waste/Recycling Department (Department) is a partnership between Lawrence and Mercer counties to provide solid waste and recycling planning services and support to about 198,000 residents. Key activities of the Department include:

- Facilitating convenient recycling opportunities
- Providing collection and recovery services for hard/non-traditional materials such as tires, electronics, and household hazardous waste
- Offering recycling technical assistance to businesses, municipalities, and institutions
- Issuing public education resources
- Helping municipalities, businesses, and other entities comply with local, state, and federal recycling/waste management requirements.

Many municipalities in Lawrence and Mercer counties provide curbside recycling services to residents through contracted private collection. Recently, glass has been phased out of many curbside recycling programs in the two counties. The removal of glass from curbside recycling has left limited options for residents to recycle their glass. The Department is exploring opportunities to establish a glass collection system that once again provides services that prioritizes glass recycling into new glass containers.

In July 2023, the Department arranged for the Pennsylvania Resources Council traveling glass bin to be parked in two locations in the Department's service area. Glass collected in the traveling glass bin was transported to and processed by MBH, O-I, and CAP Glass. Over three tons of glass were collected from the two glass collection events. The Department received positive feedback from the community with the pilot glass collection program.

The Department is requesting recycling technical assistance to explore opportunities for a more permanent glass collection program that can provide glass recycling services to residents on a consistent basis.

2 SUMMARY OF WORK

The following summarizes the tasks and outcomes of this project.

Task 1 – Site Visit and Project Kick-Off

The site visit and project kick-off meeting occur over a one-day period in the fall 2023. SCS staff met with Department representatives to review the scope of work and discuss work activities. As part of the site visit, SCS staff toured and observed existing recycling operations in the counties, including blue bin sites. The site visit also included a visit to a potential site for consolidating glass materials prior to transport to a processor. Finally, as part of this task, SCS staff obtained the total quantity of glass recovered for recycling during the July 2023 pilot program and quantified the environmental benefits of diverting the material using U.S. EPA's Waste Reduction Model (WARM).

Task 2 – Recommend Locations for Glass Recycling Collection

This task builds off Task 1 to recommend up to four (4) blue bin locations across Lawrence and

Mercer counties for the Department to prioritize incorporation of a glass recycling collection program. Key considerations that evaluated for each blue bin site visited (Task 1) include existing usage, Department staff recommendations, space constraints, accessibility, and location. We prepared a summary that highlights the characteristics of each blue bin site visited and our evaluation of the benefits and challenges of each.

Task 3 – Identify and Describe Permanent Glass Collection Program Options

For this task SCS identified and described glass collection program options the Department may consider implementing to reestablish glass recycling in their service area. SCS interviewed representatives from companies/organizations that provide glass recycling to understand what types of programs and services they provide. The options identified are based on these conversations, Department staff ideas, and SCS's experience with material recovery programs. Descriptions of each identified program option will include the pros/cons of each along with a recommendation of which program(s) is likely to be most effective in diverting glass for recycling. For the recommended option(s), we will provide planning level cost estimates for program operation based on available data.

Task 4 – Final Report

This document serves as the final report for this study. The initial report was prepared as draft for the Department and PADEP staff comments and edits. This final version incorporates the comments and edits of both the Department and PADEP.

3 CURRENT PROGRAM

Both Lawrence and Mercer counties have a long history of supporting and encouraging recycling in their communities. The counties provide a number of programs and services to help municipalities and residents divert materials for recycling. Many communities in the counties partner with private companies to provide for the collection and transportation of trash and recyclable materials. A renewed interest among haulers to deliver clean recyclable materials to processors over the last few years has caused many companies to eliminate glass collection as part of the curbside recycling programs they operate.

The removal of glass from community curbside recycling programs led many residents of Lawrence and Mercer counties to request glass recycling collection services. These requests resulted in some communities and Lawrence and Mercer counties to explore options for glass recycling services.

In 2020, the City of Hermitage located in Mercer County began sponsoring a semi-annual glass collection program that included drop-off containers that were available to residents for a limited time once in the spring and once in the fall. In 2023, Lawrence and Mercer counties supplemented the City's collection drives by offering two additional collection events for glass during the summer months. These initial collection events included, one event located in Greenville (Mercer County) and one event located in New Castle (Lawrence County).

The success of these programs has led the Department to expand glass collection events in 2024. In 2024, a total of six (6) glass collection drives will be offered between Lawrence and Mercer counties. Two events each sponsored by the City of Hermitage, Lawrence County Commissioners and Mercer County Commissioners.

Glass collection containers are placed in designated locations throughout Lawrence and Mercer counties for about a week. The containers are placed in public areas readily assessable to residents and are available 24-hours each day the event is hosted. Residents transport glass containers in

their own vehicles to the collection locations and place the material directly in the container. This allows residents throughout both counties to bring glass containers they wish to be recycled to a central point to be collected. The containers are monitored for fullness and swapped out as needed by the hauler. The glass is then transported to CAP Glass in Mt. Pleasant to be processed for market delivery. After the glass is rendered for market it is then delivered to Owens-Illinois Manufacturing (O-I) to be used in various product manufacturing. **Exhibit 1** includes a map of the glass collection locations in Lawrence and Mercer counties. **Table 1** includes the quantities of glass collected at each collection location over the last four (4) years.

Exhibit 1. Map of Glass Collection Locations

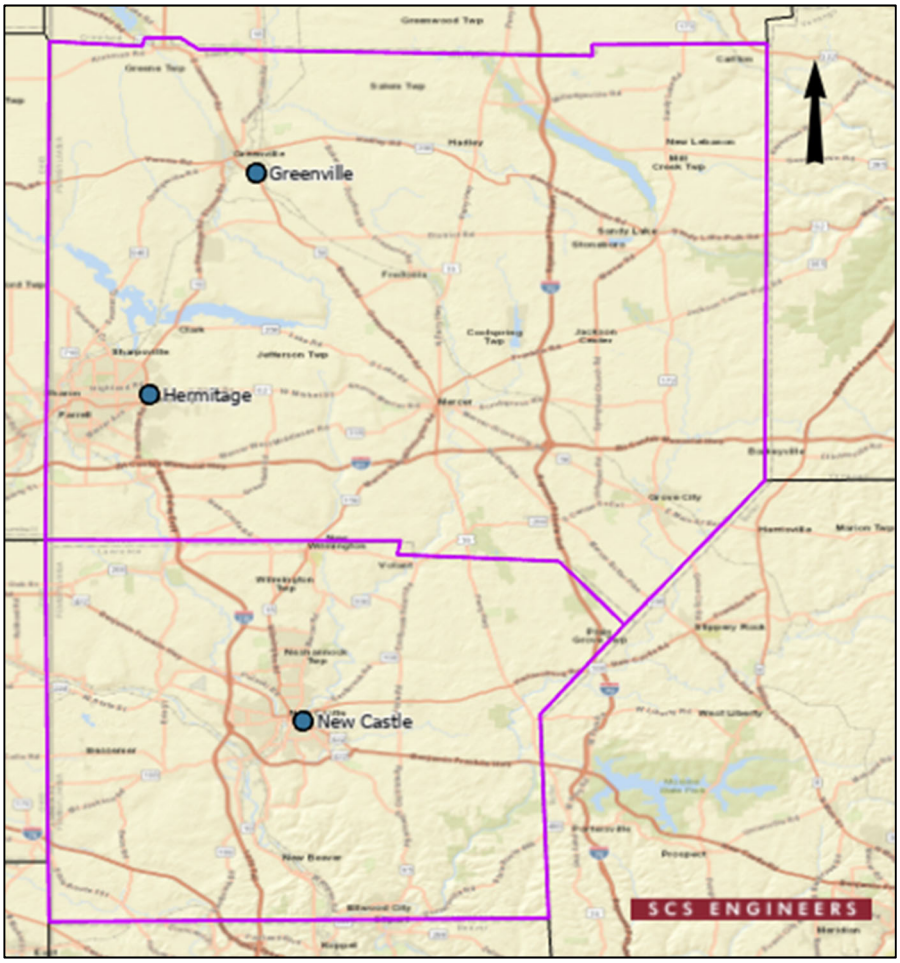


Table 1. Quantities of Glass Collected in Pilot Glass Collection Program

Collection Year	Collection Location	County	Season	Quantity (tons)
2020	Hermitage	Lawrence	Spring Fall	7.4
2021	Hermitage	Lawrence	Spring Fall	7.9
2022	Hermitage	Lawrence	Spring Fall	10.3
2023	Hermitage	Lawrence	Spring	5.3
	Greenville	Mercer	Spring	1.8
	New Castle	Lawrence	Spring	1.6
	Hermitage	Lawrence	Fall	3.5
TOTAL				**37.8**

4 POTENTIAL PARTNERS

The SCS team identified and researched providers of glass recycling services in the region. These potential partners include companies that provide collection, processing, and/or marketing services for glass recycling. Some entities provide multiple types of glass recycling services that Lawrence and Mercer counties may be able to procure.

To understand the feasibility and interest these entities have in partnering with Lawrence and Mercer counties to implement a permanent glass collection program, the SCS team contacted each company for a brief interview to confirm researched data and gage whether or not they are interested in working with the counties.

The results of the interviews with each company are summarized in Table 2. Additional cost data on select company programs are included in Table 3.

Table 2. Potential Glass Recycling Partners

Company Name	Location	Approximate Distance to Lawrence/Mercer Counties (miles)	Services Provided	End Markets	Interested in Partnering
Aiken	Ellwood City, PA	10	Collection	CAP Glass	Yes
Tri-County Industries	Grove City, PA	20	Collection	TC Recycle	Yes
TC Recycle	Mars, PA	35	Processing	Landfill ADC	Yes - Not directly
Waste Management - Green Star	Neville Island, PA	50	Collection and Processing	--	--
Michael Brothers Recycling	Pittsburgh, PA	60	Collection and Pre Processing	CAP Glass	Yes
Waste Management - Green Star	Akron, OH	80	Collection and Processing	--	--
CAP Glass	Mount Pleasant, PA	90	Processing	O-I Manufacturing	Yes - Not directly
Pro Waste Services Inc	Erie, PA	90	Collection	CAP Glass	No - Outside collection area
Prism Glass	Erie, PA	90	Collection	CAP Glass	No - Outside collection area (Bought out by Pro Waste)
Bayfront Glass	Erie, PA	90	Collection	CAP Glass	No - Outside collection area
O-I Manufacturing	Brockport, PA	100	Manufacturing	Glass bottles	Yes - Not directly
O-I Manufacturing	Zanesville, OH	170	Manufacturing	Glass bottles	Yes - Not directly
O-I Manufacturing	N/A	N/A	Glass4Good Community Program	Glass bottles	No - They only set up in areas where manufacturing occurs

Table 3. Glass Collection Program Fees

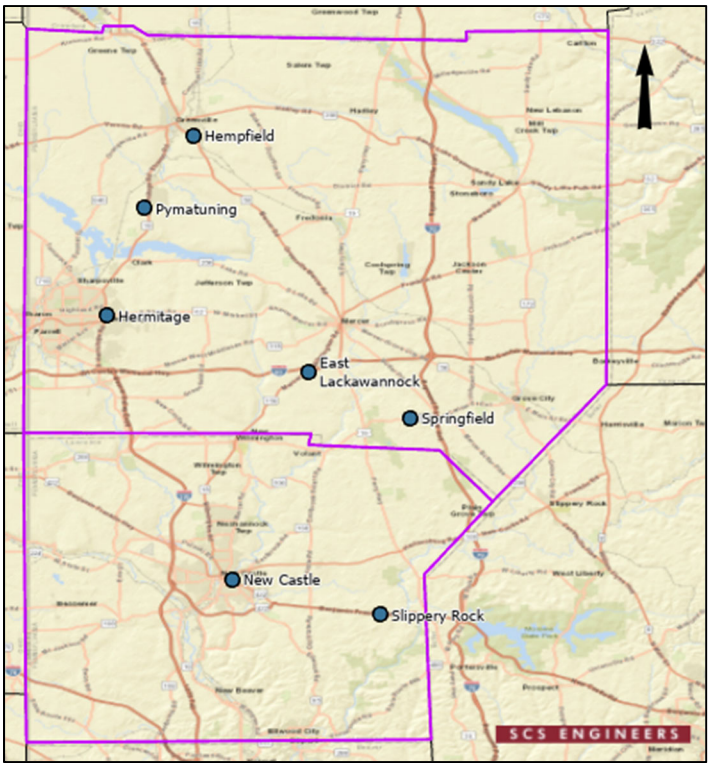
Company	Delivery Fee	Disposal Fee (per haul)	End Market
Aiken	$150 to Lawrence $250 to Mercer	$500	CAP Glass
Tri-County Industries	$175 per roll off not hauled within 30 days each month	$525	TC Recycle - Landfill ADC
Michael Brothers Recycling [1]	Waiting on Cost Estimate		CAP Glass

5 PROGRAM IMPLEMENTATION

OPTION 1

The county will purchase 2 12-yard trailer mounted glass recycle container that can be moved via county pickup truck. The county will rotate the trailers between the counties 7 selected sites, See **Exhibit 2**.

Exhibit 2. Glass Collection Locations



The trailers will have a set schedule that include each site having a container for a minimum of one week. The trailers will be rotated throughout the seven sites. The public will be provided the schedule. The containers would be serviced via on call service by the County. This requires monitoring the capacity so that when a container reaches 75 percent fullness service would be scheduled. The containers will require upfront purchase costs of approximately $18,550 for each trailer container.

Sites that show most participation should be considered to have a permanent container placed at that location. However, instead of the 12-yard trailer mounted glass recycle container being placed a 6-yard front load container will be purchased and placed at the site. This will require counties to purchase several 6-yard front load containers, price quoted by Fleet Genius is $ 1,338 per container. Counties will then use their own front load recycle truck to service these containers on either a weekly, bi-weekly, or monthly schedule. The collection schedule will be established by the amount of time it takes for the containers to reach 75 percent capacity so facility monitoring is required. Lawrence and Mercer counties should still continue to use the trailers as either a constant rotating collection to less used sites or for townships who what to have a semi-annual collection drive.

Along with the trailers and front load containers being purchased a glass consolidation site will need to be built for the offload of collected material. The consolidation site would include a bunker that should be able to store at least 20 tons of glass, which is the quantity that CAP Glass needs to build and service the site at zero cost to the county. The glass bunker should be built on county owned property that includes equipment to offload glass materials into a container to be delivered to CAP Glass. Below are some glass bunker set ups that other recyclers have built in the past. The recommendation is a bunker 20’ wide x 24’ deep x 8’ tall using roughly 40 concrete blocks.

5 block deep x 3 block wide x 3 block high - 39 blocks needed (30’ x 18’ x 6’)

5 block deep x 10 block wide x 3 block high – 90 blocks needed (30’ x 60’ x 6’)

5 block deep x 5 block wide x 3 block high – 45 blocks needed (30’ x 30’ x 6’)

OPTION 2

Option 2 would require a longer timeline and evaluation period of the glass collection in the counties. Option 2 involves placing rented glass recycle roll off containers at 4 locations throughout Lawrence and Mercer Counties at township owned facilities. **Exhibit 2** provides a map for possible site locations. Phase 1 of Option 2 should last at a minimum of 6 months to a maximum of 12 months in order to get a baseline for community involvement for glass collection. The county will need to conduct asset recovery rates with the hauler to include in the baseline of collection involvement. The roll off containers would be between 15 and 20 yards that are able to be closed and opened by the public disposing of glass. The roll off containers would be serviced via on call so capacity would have to monitored and services scheduled whenever containers reach 75 percent capacity. The containers require separate monthly and disposal fees for service. Weight and disposal evaluation frequency are recommended every two months in order to track areas where collection has the highest success rates.

While Phase 1 of Option 2 is taking place, construction of a glass consolidation site on municipal owned property should commence, which includes equipment to offload glass materials into a container for transport to a processing facility. The bunker will have to be able to handle at least 20 tons of glass in order for CAP Glass to build and service said bunker at zero cost. Below are some glass bunker set ups that other recyclers have built in the past. The recommendation is a bunker 20' wide x 24' deep x 8' tall using roughly 40 concrete blocks.

Phase 2 of Option 2 will be the permanent solution for glass collections in the area. Evaluation of the most successful sites during Phase 1 must be conducted before implementation of Phase 2. The highest trafficked sites during Phase 1 should be chosen to be used during Phase 2. It is recommended sites have 15 yard roll off containers that are purchased by the County. The containers would be serviced as needed so capacity would be monitored and collection services scheduled whenever containers reach 75 percent capacity. The containers will require upfront purchase costs of approximately $8,200 for each container and disposal fee for service. Weight and disposal evaluation frequency are recommended every two months in order to track areas where collection has the highest success rates. Phase 2 will see more up-front cost than Phase 1 due to the need to purchase multiple roll off glass recycle containers similar to the image below.

Appendix A provides a summary, map, and pictures of each potential municipal site that may support Lawrence and Mercer counties permanent glass collection program.

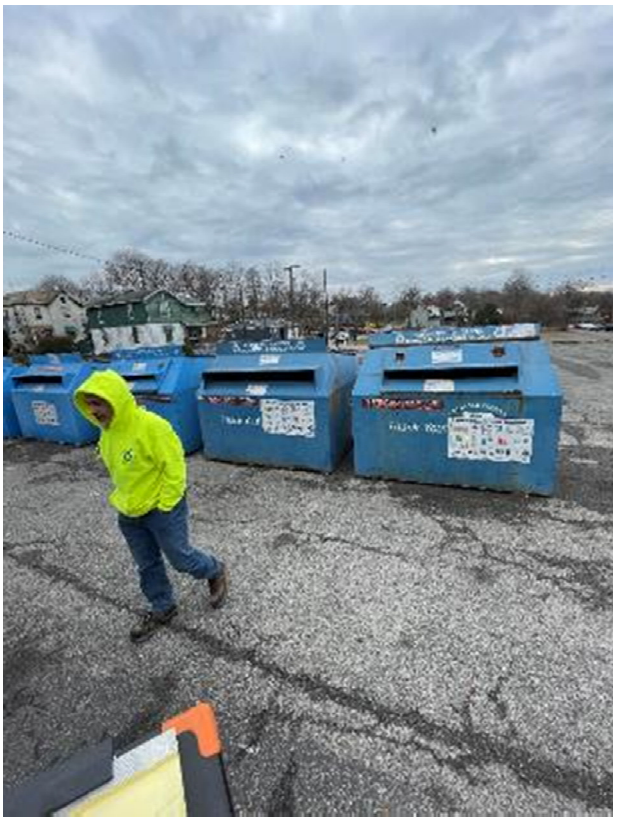
6 CONCLUSION

Implementation of a drop off glass recycling collection program in Lawrence and Mercer counties provides additional recycling services to residents and aligns with Lawrence and Mercer counties goal to divert waste from disposal. Option 1 will be similar to the current program by providing rotating glass collection trailers until assessment determines the placement of permanent 6-yd front load containers. Option 2 will be a longer process with assessment on collection weights and disposal frequency over the course of 6 to 12 months before county owned containers are put into place. Option 1 and Option 2 will require the building of a glass storage bunker somewhere within the two counties immediately to accommodate the new collections. In order to implement a permanent glass recycling program, the counties may consider either Option 1 or Option 2 for implementation. No matter what program type the counties decide to implement, the performance of the program should be tracked and evaluated. Both options will take some time to fully implement and is based on past efforts by Lawrence and Mercer counties to divert glass. Lawrence and Mercer counties have a community that want to recycle glass. The pilot program the counties have operated for the last four (4) years have shown community support and interest in the program. Using one of the approaches discussed this this report will provide Lawrence and Mercer counties the option of providing permanent, consistent glass recycling services throughout the year, setting the program up for diversion of more materials.

Appendix A
Potential Municipal Sites for Glass Collection

New Castle – Lawrence County

- Proposed Collection Site Location – 111 Milton Street, New Castle, PA 16101
    - 6-6 yard front load recycle containers present
    - Outside of courthouse campus
    - Easy ingress and egress off S Walnut St
    - Population density of 1,000 to 8,400 per sq mile 0-4 miles



Slippery Rock Township – Lawrence County

- Proposed Collection Site Location – 4334 US-422, New Castle, PA 16101
    - 3-6 yard front load recycle containers present
    - Must stay off gravel next door
    - Easy ingress and egress off Rt 422
    - Population density of 1,000 to 8,400 per sq mile 5+ miles away Southwest of location

Jeep

Hempfield Township – Mercer County

- Proposed Collection Site Location – 278 South Mercer Street, Greenville, PA 16125
    - 5-6 yard front load recycle containers present
    - Must work around salt bunker and township equipment
    - Easy ingress and egress off South Mercer st/Rt 58
    - Population density of 1,000 to 8,400 per sq mile 0-3 miles

F#9

F#9

NEWSPAPERS
RECYCLING

Thank You
RECYCLING

Pymatuning Township – Mercer County

- Proposed Collection Site Location – 256 Edgewood Dr Ext, Transfer, PA 16154
    - 2-6 yard front load recycle containers present
    - Some overhead lines
    - Easy ingress and egress off Rt 18
    - Population density of 1,000 to 8,400 per sq mile 5+ miles away Southwest of location

F #18
F #21

Springfield Township – Mercer County

- Proposed Collection Site Location – 406 Old Ash Road Mercer, PA 16137
    - Easy ingress and egress off Rt 208
    - Population density of 1,000 to 8,400 per sq mile 4 miles away
    - Population density of 8,400 to 15,800 per sq mile 5 miles away

Hermitage Township– Mercer County

- Proposed Collection Site Location – 500 Roemer Blvd, Farrell, PA 16121
    - Easy ingress and egress at municipal building
    - Population density of 8,400 to 15,800 per sq mile less than half mile

East Lackawannock Township– Mercer County

- Proposed Collection Site Location – 1019 Mercer-New Wilmington Rd, New Wilmington, PA 16142
    - Easy ingress and egress at municipal building
    - Population density of 1,000 to 8,400 per sq mile 5 miles away