

**Allegheny County  
HHW & E-Waste Feasibility Study**

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**Allegheny County Solid Waste Management Plan  
Update**

**Allegheny County, Pennsylvania**

**HHW and E-Waste  
Permanent Drop-Off Facility  
Feasibility Study**

**June 2018**

Allegheny County Solid Waste Management Plan Update  
Allegheny County, Pennsylvania

HHW and E-Waste Permanent Drop-Off Facility  
Feasibility Study

June 2018

Prepared For:

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## **Background**

Barton & Loguidice, D.P.C. (B&L) was retained by Allegheny County to develop a feasibility study for the development of a permanent household hazardous waste (HHW) and electronic waste (e-waste) drop-off facility for residential customers. A conceptual study had previously been conducted by the Pennsylvania Resource Council (PRC) that looked at the development of a Resource Recovery Park. This feasibility study was reviewed and used as a basis for the HHW and e-waste feasibility study.

The resource recovery park was conceptualized to be a permanent center to support the collection of a broad variety of consumer and household goods for recycling, reuse, or environmentally sound disposition, as well as an educational center for visitors to highlight the value of waste when managed as a resource.

The material streams to be collected were:

- Conventional recycling including paper, cardboard, and containers (glass, plastic, and metal)
- Hard to recycle items such as electronic scrap, tires, aseptic packaging, EPS, etc.
- Reuse including building materials, clothing, housewares, bicycles, etc.
- Household chemicals including cleaners, lawn and garden products, auto fluids, fluorescent light bulbs, paints and other potentially hazardous products
- MSW that included regular household and bulky trash to encourage proper handling and avoid illegal dumping.

Additionally, the facility was envisioned to have an educational component which would include classrooms that were able to host workshops, school and civic groups for educational sessions, as well as permanent demonstrations including backyard composting, reuse of building materials, storm water management systems, passive and active solar power, and compost as a soil/brownfield remediation tool.

There were also potential associated activities that were envisioned to take place at the same facility, but be operated by a third party, which included boutique recycling markets and manufacturing, such as glass tile, stemware, paint blending for reuse, and pallets to planters.

Based on the vision for this facility, it was determined that the site would be 5-10 acres, approximately 50% paved/built area to support collections and operations. The classroom and office space would be approximately 5,000 square feet. It would contain in-ground truck scales. The HHW packaging and transfer facility would be approximately 5,000 square feet with a sheltered drop-off area and at least 1-2 loading docks for conventional semi-trucks. The site would also require sheltered “bays” to stage collected material for the hard to recycle component, as well as the reuse drop-off component. Lastly, there would have to be dedicated roll-off bays for the commonly recycled materials.

### **Determining the Scope of the B&L Feasibility Study**

Economic funding is a significant factor for Allegheny County when determining what types of recycling programs the County can financially support. It was evident upon reviewing the initial feasibility study for the Resource Recovery Park that economics were going to limit the amount of activities that were to be evaluated as part of B&L’s feasibility study.

The collection and/or processing of waste or recyclables requires appropriate permitting through the Pennsylvania Department of Environmental Protection (PADEP), as well as local agencies. There is a significant cost associated with applying for these permits. It is estimated that the development of a new proposed site to accept the municipal waste mentioned above from the previous feasibility study, as well as for the processing/reuse of waste and recycling materials will cost upwards of \$200,000 for local and state permitting, as well as design.

Based on this estimate, it was determined that a reduced scope for the feasibility study was most beneficial for the County, at this time. Based on the first SWAC meeting and the results of the initiative study, household hazardous waste and e-waste collection were determined to be the most targeted materials for evaluation in a feasibility study. B&L agrees with this assessment since outlets for the other materials are readily available for residents of Allegheny County, i.e. Goodwill, waste disposal facilities, transfer stations, private recycling centers, existing recycling drop-off locations, etc.

### **Permanent Household Hazardous Waste (HHW) and e-waste Collection Location**

Two (2) options were initially evaluated for the permanent HHW and e-waste facility, development of a new property, or purchase of an existing property. From previous

experience, developing a new site for the facility requires a substantial amount of capital investment and time. It can take anywhere from six (6) months to well over a year to find a site that meets the setback requirements outlined by PADEP for this type of operation, that is also within a set budget and accessible for trucks and other vehicles. Although not estimated, it was assumed the capital costs associated with the development of a new site were going to be greater than the capital costs associated with the development of an existing site, therefore, B&L focused on the cost associated with developing an existing site in the City of Pittsburgh that will meet the needs of the HHW and e-waste permanent drop-off location.

### **Background Information on One-Day Collection Events**

The PRC, ECS&R, and Allegheny County currently sponsor several hard to recycle collection events and HHW collection events throughout the County each year.

Allegheny County reported 1,084 tons of HHW and e-waste material recycled by residents in 2016. This total was made up of the following materials:

- White Goods = 36.35 tons
- Antifreeze = 0.76 tons
- Lead Acid Batteries = 18.96 tons
- Household Batteries = 10.84 tons
- E-waste = 896.77 tons
- Fluorescent Tubes/CFL Bulbs = 1.53 tons
- Used Oil = 6.21 tons
- Other HHW = 49.59 tons
- Rubber Tires = 63.13 tons

Other HHW material was considered liquid materials such as pool chemicals, pesticides, paints, etc. for the purpose of the feasibility study.

### **Options Evaluated**

B&L evaluated two (2) operational scenarios. The first scenario assumed there will be capital costs associated with the purchase and retrofit of an existing facility, annual operation and maintenance costs associated with collection of this material, the same amount of HHW and e-waste material shall be accepted at the permanent facility as is

currently reported to Allegheny County, and the costs to residents to deliver this material to a permanent facility are equivalent to the rates received by the PRC in 2018.

Operational scenario two assumed there were no capital costs associated with the development of this facility, as all costs were to be paid by obtaining a grant or other form of interest free endowment, annual operation and maintenance costs were still included in the operational costs, the same amount of HHW and e-waste material shall be accepted at the permanent facility as is currently reported to Allegheny County, and the costs to residents to deliver this material to a permanent facility are equivalent to the rates received by the PRC in 2018.

### **Option One**

Option One assumed that the same amount of HHW and e-waste material will be accepted at a permanent facility, as was reported by Allegheny County in 2016 and that this participation level will continue steadily for the next 15 years. It was assumed as part of this Option that the private haulers who collect this material curbside will continue with those programs and residents will continue to utilize the curbside collection programs. This option was evaluated using the total tons of HHW and e-waste material collected and reported to Allegheny County in 2016, which includes the tonnage reported from the PRC and ECS&R events (it shall be noted that limited tonnages, if any, are received from the private haulers who collect this material curbside) and the estimated cost of processing and collection fees per material as received by the PRC and a third party entity operating in this Region.

#### *Capital Costs Associated with Option One*

B&L assumed for the purpose of this feasibility study that there were no existing County owned properties that may be retrofitted for use as a HHW and e-waste permanent collection facility. There were several available commercial properties, though, that met the needs of a permanent HHW and e-waste collection facility that may be purchased and retrofitted for this project. It was assumed the size of the facility shall be no less than 5,000 square feet. It appeared that commercial properties with the access needed for this type of facility were on the market for approximately \$50 per square foot. This cost per square foot was used to determine the capital cost investment for this type of facility, using a 5,000 square foot total building area. At this rate, the capital

investment associated with the purchase of an existing structure is approximately **\$250,000**, at minimum.

Additional capital costs to be considered include, but are not limited to, spill response kits, secondary containment pallets, permitting and engineering, required bonding, required insurance, legal assistance, 40 hour hazwoper training, a fork lift, portable stretch wrap dispenser, eye wash stations, emergency exit lights, floor paint, material segregation signs, adjustable shelving for storage, storage equipment signage, miscellaneous tools, and miscellaneous personal protective equipment (PPE). These items are estimated to cost an additional **\$300,000**, if not more.

The total estimated capital costs for the permanent facility are **\$550,000**.

#### *Annual Operation and Maintenance Costs for Option One*

In addition to the capital costs, there are annual operation and maintenance costs to consider when evaluating a permanent facility. The annual operation and maintenance costs include pallets, spare secondary containment pallets, drum storage, additional spill response kits, labeling for storage containers, ongoing engineering and permitting, employee expenses, 40 hour hazwoper training for new employees, 8 hour hazwoper refresher courses for existing employees, utility expenses for the facility, landscaping and snow removal for the facility, fuel for the fork lift, maintenance for the fork lift, additional stretch wrap, replacement PPE for employees, property taxes (if not exempt), and required insurances. The annual operation and maintenance costs for the proposed facility are estimated to be just over **\$200,000**. It shall be noted that this is just an estimate and annual operation and maintenance costs may fluctuate year to year, depending on the salaries of employees, number of employees, equipment maintenance and repair, etc. B&L estimated two (2) employees at a salary of \$40,000 each year. B&L believes this is an accurate budgetary number for the purposes of this feasibility study.

#### *Annual Processing Costs for Option One*

Based on information obtained from a large transporter of HHW material and hard-to-recycle material in the Region, as well as information obtained from the



PRC, the following costs were used to calculate the estimated annual processing costs associated with the collected HHW material:

- \$0/pound for white goods/appliances
- \$0.55/pound for HHW material, i.e. pesticides, herbicides, latex paint, etc.
- \$0/pound for lead acid batteries
- \$2.50/pound for alkaline batteries\*
- \$1.00/each for CFL bulbs\*
- \$1.50 per tire
- \$0.08/pound for used oil
- \$0.34/pound for e-waste

The following weight assumptions were used:

- CFL bulbs = 4 ounces each
- Tires = 20 lbs. each
- Appliances = 30 lbs. each
- Eight (8) pounds per gallon for HHW liquids

*\*Obtained from a third party collector of this type of material operating in the Region. Costs obtained in 2016.*

Based on these rates, it is estimated that the annual processing costs for the equivalent amount of HHW and e-waste material collected and reported to the County in 2016 are approximately **\$589,000**.

#### *Total Annual Expenses for Option One*

The total annual expenses are estimated to be **\$860,000** for a permanent HHW and e-waste collection facility, sized to be approximately 5,000 sqft and accepting an equivalent amount of HHW and e-waste material as was reported to Allegheny County in calendar year 2016. This includes the amortized cost of purchasing a facility and the necessary equipment/supplies, the annual O&M costs, and the annual processing costs for both e-waste and the HHW material.

#### *Total Annual Revenue for Option One*

Revenues were calculated based on rates obtained from the PRC in 2018 for the materials listed below:

- \$5.00/each for appliances and
- \$0.25/lb. for the sale of appliances
- \$0.50/pound for lead acid batteries (both from the fee charged to resident and the sale of lead acid batteries)
- \$1.00/pound for alkaline batteries
- \$0.75/lb. for HHW material such as oils, pesticides, chemicals, etc.
- \$3.50/each for tires (assumed tire tonnage did not include rims)
- \$0.10/gallon for used oil
- \$0.55/pound for e-waste
- \$0.08/lb. for CPUs (assumed to be 10% of the e-waste stream)
- \$0 for CFL bulbs as this material is accepted at no charge

The estimated revenue from the fees charged to residents and the sale of material is equivalent to **\$937,000**.

It shall be noted that no additional funding was assumed under Option One from the PADEP grant-funding program for HHW and e-waste collection events or from County financial support. While both of these “revenue” sources may be available, it is important to evaluate a program that is self-sustainable over the span of the program.

#### *Option One Summary*

Based on the analysis of Option One, the revenues exceed the expenditures by approximately **\$77,000** each year for the first ten years while the capital costs are paid off. After the capital costs are paid off, the revenue is estimated to be approximately \$145,000 annually. Based on unknown variables and potential fluctuations in the market and legislation, B&L does not believe this is enough pre-tax cash flow “revenue” prior to the capital expenditures being paid off to recommend the development of a permanent facility by the County.

#### **Option Two**

Option Two assumed that the same amount of HHW and e-waste material will be accepted at a permanent facility, as was reported by Allegheny County in 2016 and that this participation level will continue steadily for the next 15 years. It was assumed as part of this Option that the private haulers who collect this material curbside will

continue with those programs and residents will continue to utilize the curbside collection programs. This option was evaluated using the total tons of HHW and e-waste material collected and reported to Allegheny County in 2016, which includes the tonnage reported from the PRC and ECS&R events (it shall be noted that limited tonnages, if any, are received from the private haulers who collect this material curbside) and the estimated cost of processing and collection fees per material.

#### *Capital Costs Associated with Option Two*

B&L assumed there were no capital costs associated with this option. The facility funding may come from the donation of an existing County owned property that may be retrofitted for use as a HHW and e-waste permanent collection facility, funding from grants and/or trusts, etc. It was not assumed that the County will fund the capital costs as part of this option. This option will require significant outreach and coordination to find partnerships to fund the capital costs associated with the development of a permanent facility.

The partnership developed will also be required to fund these types of capital costs that go beyond the funding/supply of a facility. They include, but are not limited to, spill response kits, secondary containment pallets, permitting and engineering, required bonding, required insurance, legal assistance, 40 hour hazwoper training, a fork lift, portable stretch wrap dispenser, eye wash stations, emergency exit lights, floor paint, material segregation signs, adjustable shelving for storage, storage equipment signage, miscellaneous tools, and miscellaneous personal protective equipment (PPE). The total estimated capital costs for the permanent facility are **\$550,000**. Again, as part of Option Two, it was assumed the capital costs will be paid by an outside funding source and/or grant assistance.

#### *Annual Operation and Maintenance Costs for Option Two*

It was assumed with this option that the annual operation and maintenance costs will require funding, to be supported from the fees charged to residents. Again, the annual operation and maintenance costs for the proposed facility are estimated to be just over **\$200,000**.

*Total Annual Expenses for Option Two*

The processing costs and weight assumptions for Option Two are equivalent to those noted for Option One.

Based on these rates, it is estimated that the annual expenses for the equivalent amount of HHW and e-waste material collected and reported to the County in 2016 is approximately **\$790,000**.

*Total Annual Revenue for Option Two*

The estimated revenue from the fees charged to residents is equivalent to **\$937,000**.

*Option Two Summary*

Based on the analysis of Option Two, the revenues exceed the expenditures by approximately \$145,000 each year. In B&L's opinion, this is a financially viable option for the County.

**Financial Evaluation**

Option One was determined to be the best option for evaluation to determine the economic sustainability of a permanent collection facility. As mentioned previously, the success of a permanent collection facility lies in the financial evaluation. If the costs to residents is too high, residents will find other outlets for e-waste material, while HHW material can be discarded with typical municipal solid waste. It was determined that residents are currently charged approximately \$0.55 per pound for e-waste. In other areas of Pennsylvania, residents are charged \$0.50 per pound at permanent collection facilities. B&L believes an annual revenue of at least \$100,000 is necessary to sustain the permanent facility. In order to achieve this, residents must be charged a minimum of \$0.60 per pound for e-waste. At \$0.60 per pound, the estimated pre-tax cash flow is approximately \$144,000 annually.

It is believed residents looking to dispose of newer flat screen televisions are willing to pay this rate to recycle their televisions, as this is approximately equivalent to \$25 per television. Larger televisions may cost residents upwards of \$60 or more to recycle. At this rate, B&L believes residents will seek alternative disposal options. A critical element of this study is the estimated processing costs for e-waste. If the processing costs for e-waste increase to \$0.38/lb., the pre-tax cash flow falls below \$100,000,

assuming residents are charged \$0.60/lb. for e-waste. If a permanent facility is to be considered during the ten year planning period, it is recommended to investigate the processing fees charged to County residents further to determine if a lower processing fee may be negotiated. Alternatively, the release of a request for proposals (RFP) for a third party processor to own and operate a permanent facility within the County may allow the residential fees to be lowered as the processor will be collecting the material directly. This is discussed in more detail in the Alternatives Section.

### **Operation and Maintenance of a Permanent Facility**

If a permanent facility is to be developed over the ten-year planning period, multiple operational scenarios may be considered. In B&L's opinion, four (4) operational scenarios are feasible for the permanent HHW and e-waste facility.

- Operational Scenario One requires the County to own, operate and maintain the permanent facility. Although this is a feasible option, it is not considered economically viable at this time, as the County is not interested in operating the permanent facility on a day-to-day basis.
- Operational Scenario Two allows the County to own the facility, while a third party entity maintains and operates the facility. Again, although a feasible option, the County is not financially able to purchase a facility and/or property at this time.
- Operational Scenario Three requires a third party entity to bid on the development, operation and maintenance of the permanent facility. All costs will be borne by the third party entity. Considered the most feasible option by the County.
- Operational Scenario 4 requires the County to own the land, while a third party entity owns, operates and maintains the facility. The third party entity will lease the land from the County. While feasible, the County does not currently own land that they can utilize for the facility and is not interested in purchasing land at this time.

Based on conversations with the Allegheny County Health Department, Operational Scenario Three was determined to be the most feasible option if a permanent facility were to become economically feasible during the ten-year planning period.

**PADEP Permitting Requirements**

If a permanent HHW and e-waste drop-off facility were to be established during the ten-year planning period, the following permitting will be required by PADEP. This is not an all-inclusive list. A pre-application meeting with PADEP is required to determine all permitting requirements. It is highly recommended to work with a consulting firm who has permitted these facilities previously to reduce time and costs associated with filing this application:

- Form 214 application
- Site Plans
- Preparedness, Prevention and Contingency Plan (PPC Plan)
- Insurance requirements
- Local notifications
- Public education
- Final disposal facility list. These entities must be approved TSDs or processors of the collected material.
- Bonding

When planning for the permanent facility, allow a minimum of six (6) months to submit a permit application and obtain approvals.

**Conclusion**

Based on the economic analysis, it was determined that the development of a County sponsored permanent HHW and e-waste drop-off facility is not financially viable at this time. The County has determined that they are not able to support the capital costs required for a permanent facility at this time. Based on the assumed processing fees and revenues, there is not enough pre-tax cash flow “revenue” generated to support the capital expenditures and annual operation and maintenance costs associated with a permanent facility.

It is B&L’s opinion that the following operational scenarios make the development of a permanent HHW and e-waste drop-off facility financially viable, by providing a minimum of \$100,000 in annual pre-tax cash flow:

### *Option One*

- Capital costs are funded by an outside entity with no obligation to pay back the funds, and
- Residential fees for e-waste do not exceed \$0.60 per pound, and
- Processing fees for e-waste do not exceed \$0.36 per pound, and
- Contracts are developed with surrounding municipalities that guarantee residential tonnage to the permanent facility (minimum 700 tons of e-waste and 400 tons of HHW) or

### *Option Two*

- Processing fees for e-waste do not exceed \$0.35 per pound, and
- Residential fees for e-waste are increased to \$0.65 per pound, and
- Capital expenditures do not exceed \$1,000,000, and
- Contracts are developed with surrounding municipalities that guarantee residential tonnage to the permanent facility (minimum 700 tons of e-waste and 400 tons of HHW), or

### *Option Three*

- Processing fees for e-waste do not exceed \$0.35 per pound, and
- Residential fees for e-waste are increased to \$0.65 per pound, and
- Capital expenditures do not exceed \$550,000, and
- Contracts are developed with surrounding municipalities that guarantee residential tonnage to the permanent facility (minimum 700 tons of e-waste and 400 tons of HHW)

## **Alternatives**

If one of the three options listed above are **not** attainable over the ten year planning period, but the County and/or municipalities still have a strong desire to increase the acceptance of HHW and e-waste material for their residents, B&L encourages them to consider the following alternatives.

### *Alternative One*

Curbside collection of HHW and e-waste by the private sector. Forty-three (43) municipalities currently have curbside collection of HHW and e-waste for their residents, offered by two private haulers. Other haulers operating in and around

Allegheny County may also be interested in offering this service to residents of Allegheny County. B&L suggests that the County consider one of two options to increase curbside recycling of these materials, 1) a Countywide or Divisional RFP for curbside collection of HHW and e-waste material only. Respondents to this RFP will be responding to collect HHW and e-waste curbside from residents of Allegheny County. Understanding the various COGs that currently operate within the County, this may be best released as a Divisional RFP where respondents are proposing to collect HHW and e-waste curbside from residents in a defined District, i.e. each COG or other municipal partnership. 2) Encourage municipalities that have contracted collection or that decide to explore contracted collection over the ten-year planning period to include these services in their collection contract. Require the hauler to provide education on at least a quarterly basis to residents with this service. It is recommended that education be both in the form of paper mailers and website content, at a minimum. This service will be part of the municipal waste collection RFP, which may or may not include curbside recycling collection.

#### *Alternative Two*

Drop-off collection of HHW and e-waste by the private sector. Many private entities operating in or near Allegheny County that accept HHW and e-waste material allow residents to drop off this material at their facility. Both the County and municipalities can continue to encourage the use of these facilities. Additionally, something to consider at the municipal level is adding a requirement into the local zoning ordinance that requires entities operating within certain classifications, i.e. processing facility, recycling facility, etc. to be required to provide education to residents on their operations at an established timeframe, i.e. quarterly, if operating a facility that allows residential drop-off of material.

Another option under Alternative three is to require haulers responding to a curbside HHW and e-waste collection RFP (mentioned in Alternative One), to offer a permanent drop-off collection facility for this material instead, if the hauler cannot supply the appropriate equipment, licensure, and permitting for curbside collection. The hauler may still provide education to residents under this alternative. This option allows haulers who may not have the fleet capacity to collect this material to still competitively bid on the collection services requested by a municipality. A drop-off facility does not have to be an elaborate location, as



long as it provides a roofed structure with sufficient storage and easy residential access. Multiple locations may be used to service multiple municipalities, if needed, thus reducing the storage requirement and subsequent cost of a facility. Haulers that provide a drop-off location may contract with a processor of this material to collect and transport the materials from the drop-off facility to the processing facility. If the drop-off location will not be processing the material on site, it does not require a full treatment, storage and disposal (TSD) permit, instead a Form 214 application may be applied for through PADEP, which is a much simpler process.

### *Alternative Three*

Alternative three is an add on to either Alternative One or Two, which simply encourages the current collection practices for HHW and e-waste material to continue over the ten year planning period. At this time that is accomplished by haulers contracting with municipalities for curbside collection of this material, entities such as the PRC and ECS&R conducting one-day collection events for residents of Allegheny County, and private entities operating in and around Allegheny County offering drop-off locations for this material to residents of Allegheny County.

Regardless of the Option or Alternative chosen to manage this material in Allegheny County, education for residents is incredibly important. It is a recommendation of this feasibility study that municipalities explore options that require entities collecting this material (both curbside and drop-off) to educate residents of their community on their programs, collection methods, materials accepted, etc. Education cannot be accomplished solely by webpage content or solely by mailers, but a combination of many outlets to reach the maximum number of residents possible. Additionally, the frequency of which education is sent or broadcast to residents must be quarterly, at a minimum. These education requirements must become a part of the contracts, agreements, local zoning regulations, ordinances, etc. that bind the entities to provide this education to residents.

## **Key Card Program Information**

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## RECYCLABLES KEY CARD ACCESS DROP-OFF PROPOSAL

### BACKGROUND

Allegheny County, Pennsylvania is currently serviced by both curbside recycling (largely conducted by the private sector) and both private and public drop-off locations. Sixty-four (64) municipalities currently have curbside collection of recyclables, thirteen (13) municipalities have drop-off recyclables locations, and an additional twenty-two (22) municipalities have both curbside collection and drop-off collection of recyclables.

Many of the recyclables drop-offs located in Allegheny County are only available to residents of that municipality, although there is limited enforcement or oversight at the recyclables drop-off facilities. As part of the 2018 Municipal Solid Waste Management Plan, the County is investigating a more widespread recycling program that integrates all of the municipalities and the private sector to the greatest extent possible. One way to start this integrated system is to develop drop-off facilities for recyclables that are open to residents of multiple municipalities in Allegheny County.

### RECOMMENDATIONS

Barton & Loguidice, D.P.C. (B&L) determined, based on the review of a map of Allegheny County that shows the location of the current recycling drop-off facilities and the municipalities with curbside recycling collection, there is a deficient area in the Southeastern Region of Allegheny County (Liberty, Port Vue, Glassport, and Lincoln Boroughs).

It is the recommendation of B&L to make the new and/or modified permanent recyclables drop-off facilities key card accessed 24/7 facilities. The key card access will allow residents from any municipality in Allegheny County to access the recyclables drop-off facilities by use of a purchased key card. It is recommended that the first key card accessed facility be added to the Southeastern Region of Allegheny County to initially service residents of Liberty, Port Vue, Glassport, and Lincoln Boroughs. It was assumed this facility will need a new fence, a motorized gate, and connected to an electronic key card access. Electricity will need to be installed on site, if it's not currently there, to connect the key card access gate. The desired key card access technology will need purchased and uploaded to the municipal computers, depending on the long term management of the program.

The capital cost for the recyclables key card drop-off facility is estimated to cost between \$100,000 and \$200,000, depending on the number of key cards ordered. This includes an annual maintenance fee for the key cards of \$1,200. The maintenance fee is assumed to cover annual upgrades to the computer program and annual maintenance on the key card access.

Additionally, the annual cost to contract with a hauler to remove the recyclables was assumed to be approximately \$104,000 (\$500 x 4 pulls per week X 52 weeks). The national average for recyclables generation is 0.3 tons per person per year. It is assumed that Allegheny County generates slightly more than the national average at approximately 0.37 tons per person per year. Based on the U.S. Census Bureau, Allegheny County has an estimated 2.25 persons per household. Recyclables generation is therefore equivalent to 0.83 tons per household per year. B&L used estimated volume to weight conversions, provided by Keep America Beautiful, in pounds per cubic yard, for source separated recyclable material, to determine the estimated volume of material generated weekly by residents in Liberty, Port Vue, Glassport, and Lincoln Boroughs. This was equivalent to 0.11 cubic yards of recyclables per household per week. Based on the estimated households in Liberty, Port Vue, Glassport, and Lincoln Boroughs, this is equivalent to approximately 524 cubic yards per week for all of Liberty, Port Vue, Glassport, and Lincoln Boroughs. Therefore, it was assumed the site may contain up to four (4) 40 CY roll-off containers, all of these containers will be pulled four (4) times a week to support Liberty, Port Vue, Glassport, and Lincoln Borough's recyclables key card drop-off facility at 100% participation. It was assumed this estimated pulling frequency will remain true at 100% and 75% participation rates. At 50% or lower, it was assumed that this frequency may be two (2) times per week, therefore the expenses associated with pulling fees were lowered.

It is recommended that the County and/or municipality develop an RFP to solicit interest from recycling collection companies to manage the key card drop-off facility. The RFP may result in a lower pull fee, additionally, the lower participation rate scenarios, may require less frequent pulls, therefore reducing the estimated annual cost. It is recommended that this program becomes a municipal partnership to bring recyclables collection to residents in Allegheny County. After debt service, it is estimated that this program will become profitable, which will allow for the expansion/maintenance of other recycling collection programs in the County and/or additional program development in the participating municipalities.

The following is an example cost breakdown for the key card program in Southeastern Allegheny County, dependent on the number of participants in the program. These estimates were conducted to show a very basic understanding of the costs of the key card program and shall be verified through cost estimates from contractors, key card manufacturers, etc. A consultant, such as Barton & Loguidice, may assist Allegheny County in obtaining an engineer's opinion of probable cost for the construction of the recyclables key card drop-off facility, designing the proposed recyclables key card drop-off facility, developing bid documents for contractors to bid on the proposed project (getting the County the best rate for the project), assisting the County in evaluating the bid proposals, assisting the County in awarding a contractor, and providing contractor oversight during the construction phase.

Capital cost paybacks were estimated assuming capital costs will be paid for up front through a partnership between the municipalities, the County, the Closed Loop Fund, and/or grant funding through PADEP, therefore, interest rates were not assumed in the estimated payback period.

As the program becomes established, more residents may become involved, which will increase profits over time. Additionally, other surrounding municipalities may become interested in partnering with the established recyclables drop-off and offering access to their residents as well. B&L recommends that all municipalities be open to the idea of partnering for recyclables collection and management, in an effort to save our environment and capture recycling before it is taken to a landfill.

TABLE 1 – ESTIMATED KEY CARD PROGRAM COSTS – SOUTHEASTERN REGION

Participation Rate	10%	25%	50%	100%
Borough of Liberty (1,021 households total)	102	255	511	1,021
Borough of Port Vue (1,520 households total)	152	380	760	1,520
Borough of Glassport (1,794 households total)	179	449	897	1,794
Borough of Lincoln (429 households total)	43	107	215	429
Total Households	476	1,191	2,382	4,764
Annual Cost Per Household	\$130	\$75	\$75	\$50
Monthly Cost Per Household	\$2.50/Week	\$1.44/Week	\$1.44/Week	\$0.96/Week
Estimated Capital Costs, Annual Costs, Profits, and Payback Period				
New Gate, New Fence, and Key Card Technology	\$100,000	\$100,000	\$100,000	\$100,000
Electricity to the Facility	\$3,000	\$3,000	\$3,000	\$3,000
Key Cards (\$10/each)	\$4,760	\$11,910	\$23,820	\$47,640
Total Capital Costs	\$108,964	\$116,110	\$128,020	\$151,840
Annual Cost for Pulls (\$500/each)	\$104,000 (pulled weekly)	\$104,000 (pulled weekly)	\$104,000 (pulled bi-weekly)	\$104,000 (pulled bi-weekly)
Annual Maintenance	\$1,200	\$1,200	\$1,200	\$1,200
Annual Expenses	\$105,200	\$105,200	\$105,200	\$105,200
Gross Annual Income	\$61,932	\$89,325	\$178,650	\$238,200
Income - Expenses = Annual Net Profit	\$8,732	\$36,125	\$73,450	\$133,000
Capital Costs/Profit = Payback Period	~12.5 Years	~3 Years	~2 Years	~1 Year

## Notes:

1. Administrative fees for an employee of the municipality to manage the key card program were not included in the capital or annual costs.
2. Payback period was estimated assuming residents are billed the annual fee up front. Late payments were not accounted for in the payback period.

PROFIT SHARING

In an effort to establish a more uniform recyclables collection and management program across Allegheny County, B&L recommends a portion of the net profits from the recyclables key card drop-off be placed in a fund to support the establishment of future recyclables drop-offs in the County. The capital costs of future recyclables drop-off facilities in Allegheny County may be slightly higher as a new site may require other upgrades. The money in the fund may be used to finance all or part of the capital costs to establish new recyclables drop-off facilities. As the new facilities make profits from the key card accounts, the money borrowed from the fund will be paid back. It is B&L's recommendation that new sites be evaluated by the Health Department, Recycling Coordinator, and local authorities for their location in relation to existing recyclables drop-offs and recycling collection locations, as well as their overall benefit to the recyclables management program of the County. Additionally, B&L recommends that existing recyclables drop-off facilities are evaluated for conversion to a key card program.

B&L recommends that another portion of the profits from the key card access program be placed in a fund to support any unforeseen maintenance that may be needed on the site. This may include fencing upgrades, pavement restoration, unexpected maintenance to the key card access technology, etc. Lastly, B&L recommends that any remaining profits be placed in a fund to support special recycling collection efforts in Allegheny County. This money may be used to support e-waste collection events, HHW collection events, as well as spring clean-ups.

The amount of profit from the key card program is directly dependent on the participation rate. The lower the participation rate, the lower the profits from the program and, therefore, the money available to support other recycling programs in the municipality/County will be lower.

EDUCATION AND CONTAMINATION REDUCTION

In order to educate residents on the proper use of the recyclables drop-off facility, it is recommended that Allegheny County establishes volunteer program over the first few months of the program. Allegheny County may reach out to volunteers in the community, i.e. retired community members, 4H, boy/girl scouts, PRC employees, Health Department employees, municipal officials, etc. These volunteers will be responsible for sitting at the recyclables key card drop-off and educating members of the community that use the drop-off on materials that may be accepted, how the materials shall be prepared prior to arriving at the site, materials that

are not accepted, etc. It is believed that this initial education initiative will reduce the potential contamination at the facility. Additionally, B&L recommends that Allegheny County invest in signage for the recyclables key card drop-off facility. This signage will include both lettering and pictures that clearly describes materials that are accepted and not accepted at the facility. Fonts and colors shall be chosen so as to be clearly seen from a distance.

### FUNDING OPPORTUNITIES

Funding opportunities for paying for the capital costs for the key card program may come from PADEP grant funding, the Closed Loop Fund, and municipality's budgets. It is recommended to contact PADEP and determine the grant opportunities available to Allegheny County. As long as anti-burn ordinances are in place for Act 101 recyclable materials in the municipalities using the recyclables drop-off facilities, the County or municipality may obtain grant money for the recyclables material collected through Act 101, Section 904 grant funding. Act 101, Section 902 grant funding through PADEP may reimburse Counties and municipalities up to 90 percent of eligible recycling program development and implementation expenses. This may include equipment for the key card program. A consultant, such as Barton & Loguidice, may assist Counties and municipalities in applying for grants under Act 101.

### FUTURE FACILITIES

Once a location is determined, a fatal flaw analysis shall be conducted to ensure that the site is best suited as a recyclables drop-off facility location. Once the fatal flaw analysis is conducted and a suitable site is chosen, a cost estimate for the full development of the recyclables drop-off facility shall be completed. It is recommended that Allegheny County enlist the services of a consultant, such as B&L, to perform the fatal flaw analysis and develop a cost estimate for the development of the proposed locations. B&L recommends finding a site that can be upgraded at a cost that allows the municipality to maintain a uniform key card price of \$100/year/household (participant) or less.