Borough of Wilkinsburg

Sustainability Assessment

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Prepared for Wilkinsburg Borough by:

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Executive Summary

Sustainable Pittsburgh is pleased to present this Sustainability Assessment report to the Borough of Wilkinsburg. This document provides over 125 specific recommendations to help Wilkinsburg pursue a sustainability-oriented strategy for its operations. The report identifies grant programs to help mitigate transition costs for several of the recommendations.

Sustainability involves finding the proper balance of economic, environmental, and social opportunities in the operation of an organization. Wilkinsburg has taken a key step to finding this balance through its engagement with a sustainability assessment process, the results of which are summarized in this document.

The value of conducting a sustainability assessment can be traced to metrics such as the dollars saved, energy saved, waste reduced, and to other important operational concerns. These measures are contained in this report.

More importantly, the value of this sustainability assessment stems from opportunities for Wilkinsburg to engage with its employees, residents, and other stakeholders along new pathways motivated by leadership from a sustainability perspective. Wilkinsburg is in the process of positioning itself to be a pioneering municipality by demonstrating how sustainability can serve as a transformative strategy for older, inner-ring, suburban communities. The opportunities described in the sections that follow illustrate these connections.

This sustainability assessment is the result of a collaborative process. Wilkinsburg opened its doors and records to a thorough review by Sustainable Pittsburgh's interdisciplinary Sustainable Solutions team. The multi-disciplinary team interacted with a wide range of facilities, personnel, and data. The team observed and documented what sustainable solutions Wilkinsburg is already implementing. The team also conducted an analysis of sustainability-related opportunities for Wilkinsburg to pursue.

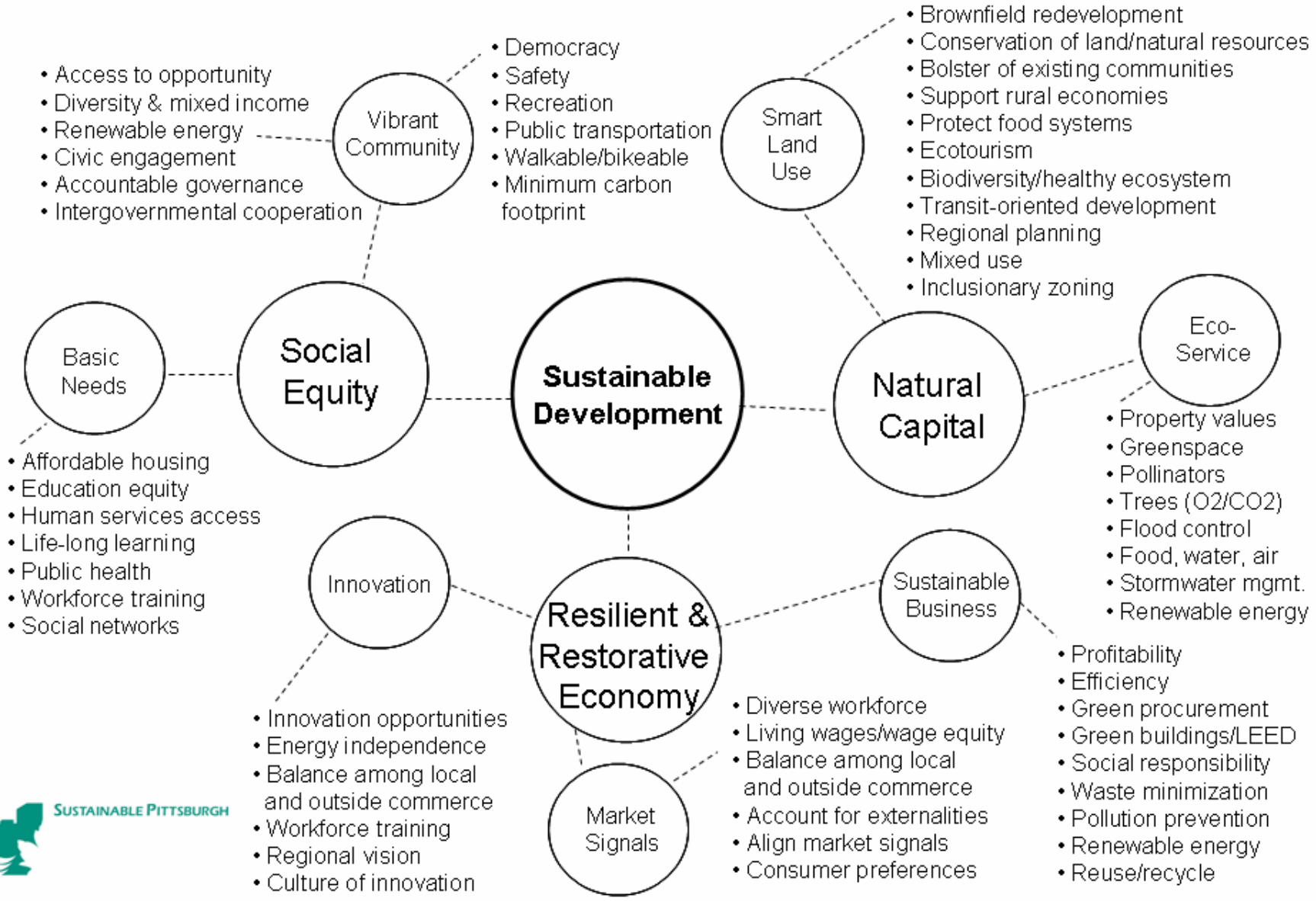
The results of the project produced over 55 recommendations that can be *implemented immediately* (called Tier-1 recommendations) and that will produce over $97,000 in estimated savings within the first year and then yield an estimated savings of over $102,000 annually.

The Sustainable Solutions team thanks Marla Marcinko and the many others engaged in this project for providing our team accommodations so that we could identify sustainability-related innovations for the Borough of Wilkinsburg. It has been a pleasure gaining a greater understanding of the wide variety of critical community services provided to the Wilkinsburg community as part of this project.

Sustainable Solutions Team

- Project Administration and Oversight - *Sustainable Pittsburgh*
- Energy and Municipal Street Lights - *GA Wozniak & Assoc.*
- Waste/Recycling/Green Procurement/Curbside Recycling/Composting - *Pennsylvania Resources Council*
- Transportation Access - *Clearview Strategies*
- Review of Comprehensive Plan from a Sustainability Perspective - *Ray Reeves and Associates*
- Land Use Administration, Codes, Business District, & Green Design Guidelines – *Ray Reeves and Associates*
- Vacant Properties - *Irene McLaughlin*
- Systems Integration and Grant Information - *Sustainable Pittsburgh*

Sustainability: A Process for Continuous Improvement



SUSTAINABLE PITTSBURGH

Using This Assessment and Sustainability as a Tool for Revitalization

One of the main reasons organizations are increasingly embracing the practice of sustainability is that its practices address managing organizational complexity.

Organizations continually struggle to anticipate and respond to rapidly-changing market conditions, to align and focus the necessities of what makes that enterprise cost effective and functional, and to discover new ways of distinguishing themselves from others.

Sustainability is what happens as a *result* of the choices that an organization makes and how it operates.

Sustainability *follows* from the culture of practice within an organization that allows that organization to continue, adapt, and thrive, despite continuous challenges (See the diagram on the preceding page).

The ultimate goal for an organization that embraces the concept of sustainability is therefore creating this culture of practice—an integrated functioning of resources (such as material items), energy, people, ideas, and information, all aligned to ensure that the organization may continually adapt to complex changes.

For example, many older, inner-ring municipalities lack capacities to handle the growing challenges associated with aging infrastructures, vacant properties, and development projects that create barriers in communities. Because of the older infrastructure, these municipalities often become captive to high-cost operations because of energy inefficient buildings and older equipment. Too often this situation hampers the ability to even discover where resources are not being productive, to measure such items, to integrate them into a framework to compete with the many other complex decisions that need to be made, and to making needed changes.

The hard part is building a culture of practice so that sustainability concerns are part of how that organization makes decisions and operates. Organizations that accomplish this feat build the capacity to adapt. Organizations that do not place themselves at a disadvantage.

This sustainability assessment for Wilkinsburg is organized by topic areas, such as waste and recycling, energy, and others. However, each of these dimensions represents a starting point to building a culture of practice. The recommendations should not just be implemented piecemeal and sequentially with the expectation that the organization has achieved "sustainable" status. Instead, a more strategic use of this report involves working to find ways to make operational changes that begin with the recommendations and build to enhanced capacities for recognizing and acting, so that sustainability emerges from the changes in both the visible and hidden actions associated with Wilkinsburg's operations.

Finally, *Wilkinsburg should finish the process initiated in this Sustainability Assessment to create sustainability principles for the borough.* We continue to stand by and are committed to helping see this through at your pace. Sustainability principles help guide future decision making. Implementing the recommendations in this report can go a long way towards making Wilkinsburg more sustainable; however, over time, the leadership and residents of Wilkinsburg will need to reinterpret these past actions and investigate future actions and decisions. Sustainability principles serve as reminders of Wilkinsburg's core values and interests that include sustainability and serve as a compass for present and future decision making.

Options for Wilkinsburg's Commitment

As noted, this sustainability assessment is organized by topic areas. Within each topic area, recommendations are generally provided in 3 tiers.

- Tier 1: "Money Hanging on Trees" - changes that will save money or generate revenue with short payback period.
- Tier 2: "No Regrets" - changes that bring substantial benefit to the environment and community, enhancing Wilkinsburg's public profile, at no net economic cost to Wilkinsburg over a medium-length payback period.
- Tier 3: "Principles Leadership" - changes that are more visionary and costly in traditional economic terms, but may either (1) be more feasible in the relatively near future with changes in technologies and markets, or (2) be worth investing in now because of their environment and community benefits, and the enhanced leadership profile that they will bring.

These tiers relate to how immediate the financial payback would be from implementing a particular recommendation and how much risk and effort would be required on the part of Wilkinsburg. These tiers are de facto scenarios, or visions, for how Wilkinsburg might proceed. In other words, they outline a tacit overall goal or vision, against which all future actions can be integrated regarding Wilkinsburg's vision and identity with respect to sustainability.

Following are some ideas as to how these different tiers of recommendations can be integrated into three different scenarios. This discussion represents a point of departure for the process of creating a culture of practice with respect to those different scenarios.

Scenario 1: Cost and Resource Efficiency
The Tier 1 recommendations were compiled from the perspective of low-hanging fruit—in other words, financial payoffs in the short term without a lot of time and resource investment to bring about those payoffs. From the perspective of an overall goal, these recommendations, done together, will allow Wilkinsburg to craft an identity for which a substantial amount of resource reduction can occur, thereby reducing the cost of operations a modest amount through the reduction of energy usage and waste disposal costs. These actions mostly add-up to a story that achieves its credibility mostly in-house. In other words, management, employees, and Wilkinsburg residents will be interested in the fact that Wilkinsburg has embraced sound business practices by reducing costs, eliminating wastes, and promoting efficiency. These cost savings translate into a greater sense of satisfaction and inspire sustainability practices in the organization. The staff will be able to relate to the values of efficiency of operations. This scenario requires minimal changes to operational practices, so that the amount of new skills and learning within the organization is not too demanding on personnel.

Advantages of this scenario are that this outcome requires minimal risk, changes and demands on the time of people in the enterprise. It produces a nice story about the efficiency of Wilkinsburg. Some risks to this strategy are that it lacks the capacity for building a long-term culture of practice because the vision and goals are kept narrowly upon cost reduction. The risk of this outcome is that the savings are only a one-time event, and Wilkinsburg misses opportunities to leverage these changes for creating a greater capacity for sustainability that can play to a wider array of stakeholders.

Scenario 2: Leveraged Resources and Modest Identity Change.
In this situation, Wilkinsburg will use some of the savings generated from cost reductions from the Tier 1 recommendations to begin to leverage some changes that have longer payoff periods. This scenario also involves having Wilkinsburg make some modest investments in some aspects of their operations so that the signal of sustainability becomes stronger both internally and externally to the enterprise. For

example, energy savings can be redirected to purchasing a portion of electricity from wind power generation and for transitioning equipment to higher efficiency devices, such as automatic sensors, timers, meters, and natural lighting sources that create greater opportunities for energy impact reduction.

Advantages of this scenario involve creating a more credible story about sustainability for Wilkinsburg that others can witness and relate to, although at this level the vision is secondary to the main identity of Wilkinsburg. In this case there is evidence that sustainability matters mean something to Wilkinsburg; however, these ideas barely emerge from the background of other aspects of Wilkinsburg's perceived identity. Disadvantages are that outsiders may mistake these efforts as "greenwashing," in other words, doing the minimum to make others believe that environmental matters are important, when they really are not.

Scenario 3: Transformative Identity and Leadership
This scenario involves implementing all tiers of recommendations, in addition to discovering other creative ways to embody ideas about sustainability, such as creating sustainability principles. In other words, Wilkinsburg in this scenario develops the capacity to come up with bold ways to assemble new ideas around the ideas of sustainability and communicate them openly. Examples of activities that embody a bold spirit of sustainability recommend that Wilkinsburg:

- Divert organic wastes to regional composting facilities.
- Embrace a transit-oriented development strategy (TOD) to connect its residents with accessible transportation at convenient locations that help spur access to business and community goods and services.
- Implement an aggressive vacant properties campaign that other municipalities will regard as a model for addressing this strategic issue.
- Upgrade energy-related equipment to include demonstration projects for alternative energy sources to show how the borough is transforming itself through a strategy that pays off over the long haul in terms of low cost energy and green jobs.
- Initiate extensive recycling and compostable waste programs
- Update codes and ordinances to reflect an orientation towards neighborhood sustainable development practices.
- Creating sustainability principles to guide decision making.

Such ideas demonstrate how it is possible to generate ideas about actions that Wilkinsburg can take to send clear signals about its identity that embraces sustainability. In order to make any of these ideas happen, Wilkinsburg will have to generate the internal capacities to generate such ideas, test them out, evaluate them, and then implement them. This level of implementation involves coordination among stakeholder and shaping of perceptions about Wilkinsburg and the meaning of sustainability, and for changing of internal practices. The advantage of this scenario is that it truly involves the creation of a culture of practice that will clearly communicate to a very public story of sustainability. The risks involve a substantial commitment to changing practices and revisions to a public identity as new ideas are tried out, some achieving great success, whereas others have limited impacts. This process usually begins with the crafting of sustainability principles.

Summary of Tier 1 Recommendations

Listed below are Tier 1 recommendations from this report that can clearly be quantified as to their costs and savings. These items have been brought to the foreground, as they represent opportunities for short-term savings and paybacks, cost reductions, and actions that can be achieved in the short term. Note that there are other Tier-1 recommendations in the report that are not as easily quantified but represent potential substantial savings potential for the borough. Such is the case for transportation, vacant property, and land use Tier-1 recommendations.

Wilkinsburg should consider implementing all of these Tier-1 recommendations as soon as possible. The set of recommendations are grouped according to their main topic areas. Each can be explored further in those sections of this report. Each item is listed with its costs and/or savings potential. Note that some of these costs and savings are one-time costs or savings, and others are annual costs or savings. The total expected, projected costs and savings from each sustainability topic area are listed at the end of each of the Tier 1 topic summary. The total expected projected costs and savings for quantified Tier 1 items are included at the end of this summary section. The details on these cost projects are derived from remainder of the report and its appendices.

Energy and Water

- Control computers
  - Cost $1
  - Year 1 savings $388
  - Annual savings $389

- Eliminate dorm style refrigerators
  - Cost $1
  - Year 1 savings $139
  - Annual savings $140

- Eliminate or control bottled water coolers
  - Cost $1
  - Year 1 savings $385
  - Annual savings $386

- Fix all water leaks
  - Cost $300
  - Year 1 savings $15
  - Annual savings $315

- Determine the DHW needs of the building; install new water heater in the Borough Building
  - Cost $3000
  - Year 1 savings -$2278
  - Annual savings $722

- Control air conditioning (as is); install programmable thermostats and adopt aggressive setback strategies
  - Cost $800
  - Year 1 savings -$374
  - Annual savings $426

- Control cold drink vending machines
  - Cost $530
  - Year 1 savings -$279
  - Annual savings $251

- Check steam traps and repair
  - Cost $600
  - Year 1 savings -$415
  - Annual savings $185

Total Energy and Water Annual Savings (after initial investments): $2814 (with payback in 22 months)

Waste Minimization, Recycling, Composting and Green Procurement

- Notify Waste Management that 32 of the 242 borough buildings with 6 or more units (i.e. 13.2%) are vacant/abandoned. The borough's hauling fees should be reduced proportionately.
  - Cost $1
  - Year 1 savings $82,084
  - Annual savings $82,085

- Consider notifying the City of Pittsburgh that 527 of the 5,196 buildings with 5 units or fewer (i.e. 10.1%) are vacant/abandoned. The borough's hauling fees should be reduced proportionately.
  - Cost $1
  - Year 1 savings $6,630
  - Annual savings $6,631

- Contact and build active relationships with urban greening organizations active in Allegheny County in order to provide compost to them.
  - Cost $1
  - Year 1 savings $10,999
  - Annual savings $11,000 (at $12/yard)

- Wilkinsburg can realize substantial revenues by increasing its participation and capture rate of recyclable materials. The revenues depend upon these increased participation and capture. Details are provided in Tables 12 and 15.

Total Waste, Recycling, and Composting Annual Savings (after initial investments): $99,715 (with nearly immediate payback)

Total Tier-1 quantifiable, estimated annual savings: $102,529 (with initial investment of $5236)

Energy

Like many municipalities and consumers across the country, the Borough of Wilkinsburg is faced with rising energy prices and shrinking revenue. Energy needs of the borough building, department of public works garage and Eastridge Library cost Wilkinsburg $87,300 each year. This does not include $7,600 for standard water/sewage charges and $252,300 for street lighting.

The potential for upgrading these facilities provides an opportunity for the borough to reduce energy costs and to use these realized savings to help stabilize the borough's finances, as well as contribute to the sustainability of the region. A 30% energy reduction in the three facilities can save Wilkinsburg $26,190 each year into perpetuity. This figure is likely to be even higher over time, as energy prices continue to climb. Additionally, this same energy consumption reduction will reduce emissions of greenhouse gasses and other pollutants shown to contribute to global warming and environmental degradation.

Savings from reduced energy expenditures should be reinvested into the borough's sustainability program. For example, implementation of initial energy reduction measures should be applied to progressively higher cost measures, thus offsetting the total cost of each additional project. Eventually, as the borough reaches an optimum energy budget, the yearly savings can be redistributed among the other components of the borough's overall sustainability program. With the information provided in the study, the Borough of Wilkinsburg should devise a multi-year plan, setting targets and actions, to achieve deep energy cuts.

Scope and Approach

This chapter of the sustainability assessment focuses on examining the electric, natural gas, and water usage of the borough building, the department of public works garage, and the Eastridge Branch Library. The chapter also explores energy conservation opportunities that lead to the reduction of energy consumption and energy costs. Also included are strategies related to the future outlook for municipal street lighting, including the use of newer technologies, such as LED fixtures.

The goals of this assessment were achieved by collecting utility and site data for the three facilities. The data included, but were not limited to, utility consumption and cost histories, room-by-room collection of energy end-use components, and discussions with borough staff. The data were analyzed to identify anomalies, to determine annual consumption and spending, to perform preliminary end-use analysis, to estimate consumption/weather relationships, to develop building and system descriptions, and to explore and recommend energy consumption and cost saving measures.

Through this process, the findings were evaluated and organized to help the borough understand how energy is used in its facilities and in order to better manage energy use through operational and capital improvements. The borough's street lighting network was reviewed to explain current costs and utility rate structures and to explore the borough's options for reducing street lighting costs.

Summary of Existing Conditions

<u>Borough Building</u>

The borough building is a three-story structure with a basement, located at 605 Ross Avenue. It houses the fire station, police station, code enforcement offices, borough finance and administration offices, the mayor's office, council chambers, an auditorium, a library, and the Weed and Seed program offices. The total interior floor space is 47,550 square feet and there are approximately 95 rooms. There is a center

staircase leading from the first floor to the third floor, one staircase leading from the first floor to the basement, and two emergency stairwells from the basement to the third floor. This building is typically occupied from 8:30 a.m. to 6:00 p.m., with some longer days due to library, police and council hours, and activities.

The structure, built in 1939, is predominantly of hollow tile construction and a red brick facing. The roof is hipped with a flat center section and two gabbled extensions. The flat section of the roof has a rubber membrane, while the slopes are slate. The roof deck is concrete planking supported by steel framing, creating an attic space below that has limited access and is sparsely used for storage. Insulation on the attic floor consists of two inches of loose-fill cellulose. There is some duct work in the attic that is part of the central exhaust system. The original windows in this facility are single-pane glass, set in metal framing with lower sashes sliding in the upward direction. Many of the original windows were recently replaced with double pane insulated glass, namely on the West elevation and first floor of the South elevation. There are approximately nine exterior door assemblies, predominantly steel, except for the West and South entrances, which are full-view glass. The South entrance has two sets of double doors, creating an air lock. There is a two-bay-wide garage door at the fire truck entrance. A hose tower adjoins the fire trunk bays, and is used for drying fire hoses. There are also gas and oil cans stored in the tower.

Two newer, 2.3MMbtu, atmospheric steam boilers provide heat to the building. The two boilers provide a redundant system, are located in a large boiler room in the basement, and are piped to two separate loops. Based on the original design drawings, these loops separate the building from East and West. Each loop has a motor operated valve that is said to be non-functioning and kept fully open. The boiler has a simple controller that allows the boiler to run based on pressure when the outside temperature falls below 50^{o}F. There were no signs of outdoor temperature reset, night set-back or interior temperature controls. Steam from the boiler is piped to radiators or one of approximately eight fan coils in the building. The radiators have thermostatic radiator valves (TRV,) but the fan coils are manually adjusted using the supply valve at each unit. The fan coils are said to be difficult to control, allowing building temperatures to rise to the point where mechanical cooling is needed to lower temperatures in their zones.

Mechanical cooling is accomplished by five ducted package units, five split systems and approximately 14 window air conditioning units. These systems are all additions to the original building design and set in plain view with exposed duct work. The total cooling capacity is estimated at 94 tons. At the time of our visit, many of the central systems were not functioning due to mechanical failure. Control of the systems is primarily achieved by dedicated remote or internal manual thermostats. Exhaust and ventilation is limited to a few exhaust systems for restrooms and shower areas, and outside air supplied to some of the central air conditioning systems.

Domestic hot water (DHW) is supplied by one of two-60 gallon, older natural gas water heaters. The other heater has been abandoned in place. There are plans to remove both heaters, and replacing them with one heater. DHW temperature was measured at 120^{o}F with a wait time of 30 seconds at a first floor fixture. The heaters are piped with a return line, but there is no circulating pump.

The lighting systems in this building are primarily older T12 fluorescent and incandescent technology. There is no occupancy or day-lighting controls. The exterior area lighting is mainly metal halide. Exit lights have been retrofitted with LED upgrade kits, replacing the original incandescent lamps.

There are several offices utilizing typical office equipment, including computers, copiers and printers. The library has approximately 25 computers for public use.

The fire department is manned 24/7, necessitating a full kitchen, laundry and showers. Other appliances found throughout the building include refrigerators, microwaves, toaster ovens, coffee makers, etc. There are several bottled water coolers that dispense hot water as well.

Utility Consumption & Cost Analysis:

The U.S. Department of Energy statistics for electric and natural gas consumption for a commercial building are 13.4 kWh per sq. ft. and 0.0497 Mcf per sq. ft. Based on this building's utility history, electric and natural gas consumption is near the national average, with electric consumption slightly below the average.

Period and Weather Data

Usage Period	Mar '09 – Feb '10
Heating Degree Days (HDD)	5,650 HDD
Cooling Degree Days (CDD)	717 CDD
Average Daily Mean Temperature	52°F

Electric

Account Number(s)	7000-599-209-001
Estimated Square Footage Serviced	47,550 s.f.
Annual Electric Consumption	508,560 kWh
Annual Electric Intensity	10.7 kWh per s.f.
Annual Electric Cost	$48,574
Annual Electric Cost Intensity	$1.02 per s.f.

Natural Gas

Account Number(s)	1-4614-0085-8060
Estimated Square Footage Serviced	47,550 s.f.
Annual Gas Consumption	2,402 Mcf
Annual Gas Intensity	.05 Mcf per s.f.
Annual Gas Cost	$21,136
Annual Cost Intensity	$0.44 per s.f.

Natural Gas and Electric

Annual Cost	$69,710
Annual Cost Intensity	$1.47 per s.f.
Annual Energy Intensity	88.54 Mbtu per s.f.

Water & Sewage

Annual Cost	$5,794
Annual Consumption	519,700 gallons
Average Cost per Gallon	1.1115¢ per gal.*

* Billing invoices do not differentiate sewage cost from water cost. Invoices refer to the data above as water charges. It is unclear if sewage costs are included, however, the borough has not provided any additional sewage bills.

End-Use Analysis

End-use analysis represented in **Tables 1 and 2** use logical inferences based on U.S. utility data. Department of Energy statistics, energy engineering principles, and site survey observations to estimate energy end-use intensity and costs. Continued investigation of energy end-users will increase the accuracy of these findings.

Note that **Table 1** identifies "other" as a major contributor to the energy costs of this facility. Additional investigation may reveal that, due to the concentrated use of computers, the portion of the costs attributed to "other" could be redistributed to the "office equipment" category.

Table 1: End-Use Energy Intensity Analysis D.O.E. Facility Group Public Assembly / Office	Energy End-Use Intensities For Sum of Major Fuels (thousand BTU per sq. ft. per year)									
	Total	Space Heating	Cooling	Ventila-tion	Water Heating	Lighting	Cooking	Refrig-eration	Office Equip-ment	Other
Borough of Wilkinsburg Borough Building	88.5	45.7	9.2	0.8	6.4	20.6	1.1	0.5	0.8	3.9
	100%	52%	10%	2%	7%	17%	1%	< 1%	< 1%	9%
National Averages (adjusted)	85.5	43.2	6.6	7.9	1.5	13.6	0.4	2.8	0.9	8.5
Variance	3.0	2.4	2.6	-7.1	4.9	7.0	0.6	-2.3	-0.5	-4.6

Table 2: End-Use Cost Analysis	Estimated Annual Energy Costs by End-Use (total dollars spent)									
	Total	Space Heating	Cooling	Ventila-tion	Water Heating	Lighting	Cooking	Refrig-eration	Office Equip-ment	Other
Borough of Wilkinsburg Borough Building	$69,711	$18,740	$12,253	$1,066	$3,110	$27,368	$800	$687	$537	$5,150
	100%	27%	18%	2%	4%	39%	1%	<1%	<1%	7%
Primary Fuel		NG	E	E	NG/E	E	NG/E	E	E	E

Public Works Garage

The Department of Public Works (DPW) garage is located at 1230 Park Avenue. It is used to house and service borough trucks and maintenance equipment. There is a carpenter shop, sign shop, weight room, storage areas and several large truck bays in this building. This facility also houses a fire station, in which a two-story, building-within-a-building, is used by fire fighters for 24 hour housing. Fire trucks occupy one of the garage bays.

The square footage of this building is estimated at 11,500 square feet. The original structure is approximately 8,500 square feet and was built in 1945. An addition was added to the east side of the building in the mid 1970s, and is estimated to be 3,000 square feet. The DPW garage is of masonry construction, built slab-on-grade and has a flat built-up roof on concrete decking. The fire fighter's apartment/locker room building is a two-story building built within the original garage. The fire fighter's apartment/locker room shares the garage's north exterior wall, and has a foot print of 32' x 28'. The roof of the apartment extends above the garage roof and is flat, built up and on wood sheath decking. Drawings indicate some insulation in the apartment ceiling space. The windows in the garage are primarily glass block, with the apartment having newer double pane glass, double hung units. The building has five large garage doors which may be allowing uncontrolled infiltration of outside air.

The garages are intended to be heated by five 125,000 btuh, natural gas unit heaters hung near the ceiling. Only two of the five are said to be operational. The apartment/locker room building is heated by one 240,000 btuh, hot water boiler with room radiators or fin tube. One thermostat, located in the second floor living room, controls the boiler. Mechanical cooling is provided in select areas by thru-wall or window air conditioners. There are sidewall propeller fans in the apartment and garage, and an exhaust fan for the locker room. DHW is provided by one newer 71 gallon, 75,100 btu natural gas water heater.

The lighting system in this building is primarily T12 fluorescent with magnetic ballast or incandescent technology.

There are three computer stations, two refrigerators, a natural gas stove and various cooking and laundry equipment. Being a maintenance facility, this electric consumption is also attributed to the use of power tools, five horsepower air compressor, welders and a 7,500 watt, heat activated glue oven used for sign making.

Utility Consumption & Cost Analysis

The U.S. Department of Energy statistics for electric and natural gas consumption were interpolated in an attempt to match this building's current use. The calculation estimates this type of building, on average uses about 11.1 kWh per sq. ft. and 0.0419 Mcf per sq. ft. This rough application of national averages suggests that the natural gas use of this building is well above average but electric use is below.

Period and Weather Data

Usage Period	Mar '09 – Feb '10
Heating Degree Days (HDD)	5,667 HDD
Cooling Degree Days (CDD)	717 CDD
Average Daily Mean Temperature	51°F

Electric

Account Number(s)	1000-696-127-001
Estimated Square Footage Serviced	11,450 s.f.
Annual Electric Consumption	67,480 kWh
Annual Electric Intensity	5.89 kWh per s.f.
Annual Electric Cost	$6,726
Annual Electric Cost Intensity	$0.59 per s.f.

Natural Gas

Account Number(s)	7461200858050
Estimated Square Footage Serviced	11,450 s.f.
Annual Gas Consumption	866 Mcf
Annual Gas Intensity	.08 Mcf per s.f.
Annual Gas Cost	$8,090
Annual Cost Intensity	$0.71 per s.f.

Natural Gas and Electric

Annual Cost	$14,816
Annual Cost Intensity	$1.29 per s.f.
Annual Energy Intensity	98.01 Mbtu per s.f.

Water & Sewage

Annual Cost	$1,049
Annual Consumption	152,550 gallons
Average Cost Per Gallon	0.6876¢ per gal.*

* Billing invoices do not differentiate sewage cost from water cost. Invoices refer to the data above as water charges. It is unclear if sewage costs are included, however, the Borough has not provided any additional sewage billings.

End-Use Analysis

End-use analyses represented **Tables 3 and 4** use logical inferences based on utility data, U.S. Department of Energy statistics, energy engineering principles, and site survey observations to estimate energy end-use intensity and costs. Continued investigation of energy end-users will increase the accuracy of these findings.

Note that the table identifies space heating and lighting as the two greatest users in this facility. Attention to reducing consumption from these end-users will prove financially rewarding.

Table 3: End-Use Energy Intensity Analysis D.O.E. Facility Group Service / Lodging	Energy End-Use Intensities For Sum of Major Fuels (thousand BTU per sq. ft. per year)									
	Total	Space Heating	Cooling	Ventila-tion	Water Heating	Lighting	Cooking	Refrig-eration	Office Equip-ment	Other
Borough of Wilkinsburg DPW Garage	98.0	75.	1.6	1.4	2.1	8.9	0.8	0.5	0.5	6.5
	100%	77%	2%	1%	2%	9%	< 1%	< 1%	< 1%	7%
National Averages (adjusted)	79.8	34.8	2.9	4.0	7.1	15.6	0.6	2.3	0.9	11.6
Variance	18.2	40.9	-1.3	-2.6	-5.1	-6.7	0.2	-1.8	-0.4	-5.1

Table 4: End-Use Cost Analysis	Estimated Annual Energy Costs by End-Use (total dollars spent)									
	Total	Space Heating	Cooling	Ventila-tion	Water Heating	Lighting	Cooking	Refrig-eration	Office Equip-ment	Other
Borough of Wilkinsburg DPW Garage	$14,815	$7,870	$538	$474	$215	$2,978	$227	$179	$167	$2,168
	100%	53%	4%	3%	1%	20%	2%	1%	1%	15%
Primary Fuel		NG	E	E	NG	E	E/NG	E	E	E

Eastridge Library

The Eastridge Branch of the Wilkinsburg Library serves the general public and is open 41 hours per week. This branch offers reading and reference material reading and lending, along with computer use. The library is housed in the basement of the First Church of Christ, Scientist, at 1900 Graham Boulevard. This portion of the church is partially below grade and of masonry construction. The square footage of the Library is 3,132 square feet. Heating and cooling is provided by two of five, high-efficiency, natural gas furnaces each with a five ton split system air conditioning. The other three units serve the church above. The lighting systems are primarily older T12 fluorescent and incandescent technology. The

windows are single-pane and fitted with plexiglass interior coverings. Aside from the heating and cooling system, the major energy users are lighting and computers.

This space is leased from the church, and all utility bills are paid through the church. Based on a reimbursement invoice issued to the library from the church dated July 7, 2009, the library is responsible for 20% of the total cost of electric and natural gas and 100% of water and sewage. The estimated annual consumptions for the entire building are 42,720 kWh and 615.5 mcf per year for electricity and natural gas, respectively.

Wilkinsburg Library staff indicate that the First Church of Christ, Scientist is interested in selling this building, and the Wilkinsburg Library has "first right of refusal" to place an offer. These discussions are said to be on-going. This report identifies some capital improvements to the Eastridge Library which will reduce energy spending. It is thought, however, that until a final discussion about the ownership of the building is made, these improvements may be delayed.

Utility Consumption & Cost Analysis

Note: The consumption and cost data presented below was retrieved from utility data that includes the Church building as well as the Library. Based on a reimbursement invoice issued to the Library from the Church dated July 7, 2009, the Library is responsible for 20% of the total cost of electric and natural gas and 100% of water and sewage.

Period and Weather Data	
Usage Period	July '08 – June '09
Heating Degree Days (HDD)	5,839 HDD
Cooling Degree Days (CDD)	637 CDD
Average Daily Mean Temperature	51°F
Electric	
Account Number, Duquesne Light Co.	8000-004-837-001
Annual Electric Consumption	42,720 kWh
Annual Electric Cost (estimated)	$6,200[1]
Natural Gas	
Account Number, Peoples Natural Gas Co.	7-4608-0024-9717
Annual Gas Consumption	615.5 Mcf
Annual Gas Cost (estimated)	$8,100[1]
Natural Gas and Electric	
Annual Cost (estimated)	$14,300[1]
Water & Sewage	
Annual Cost	$727.00[2]
Annual Consumption	39,280 gallons[2]
Average cost per gallon	1.8508¢ per gal.[2]
Water cost to sewage cost ratio	1(water) to 1.39(sewage)[2]

[1]Electric and natural gas annul cost were estimated using limited utility invoice information. Wilkinsburg is responsible for 20% of the electric and natural gas charges shown.

[2]Water and sewage data extrapolated from limited utility information, actual annual consumption and cost may differ significantly.

Note: A detailed end-use analysis of the Library's energy use was not performed at this time, due to the Library's sharing of the Church building. Accurate consumption and cost segregation requires detailed monitoring of energy use, which is not in the scope of this study.

Street Lighting

In addition to the evaluation of energy and water use at the borough's three primary facilities, this assessment also investigates street lighting. Based on discussions with borough staff and billing information, the borough's street lighting network is a Duquesne Light Company unmetered service consisting of 1,366 fixtures. Penn Avenue has the most fixtures with approximately 115. The next highest fixture counts are between 30 to 40 fixtures and are on streets such as Franklin, Rebecca, Swissvale Avenue and Graham Boulevard. The monthly charge for the existing network, based on a January 2010 utility invoice, is $21,025. The existing fixtures are a variety mercury vapor and sodium vapor lamps ranging from 70 watts to 175 watts.

Our review of Duquesne Light Company's Tariff indicates that there are primarily two rates that cover municipal street lighting. They are, Rate SE, Street Lighting Energy, **(Appendix B)** which is "available for the entire electric energy requirements of municipal street lighting systems where the municipality has not less than 15,000 street lamp installations and provides for the ownership, operation, and maintenance of its own street lamp installations and takes its entire energy requirements for street lighting under this rate"; and Rate SM (Street Lighting Municipal,) which is "available for mercury vapor and high pressure sodium lighting of public streets, highways, bridges, parks and similar public places, for normal dusk to dawn operation of approximately 4,200 hours per year." Under the current tariff the Borough of Wilkinsburg, having fewer than 15,000 installations and not having ownership of its streetlights, fits the Rate SM. On Rate SM the monthly charge per street light varies with the type and wattage of the lamp. On Rate SE there is a flat fee per lamp and a kilowatt-hour charge. In essence, on Rate SM the borough is leasing the fixture, including its operation and maintenance from the utility. On Rate SE, if it were available to the borough, the borough would own the fixture, be responsible for maintenance and operation, and may need to rent pole space from the utility. Other un-notable rules and stipulations may apply.

The discussion on how municipalities can reduce street lighting costs, including installing LED technology is growing in popularity and intensity. Although, at this time, it appears that Rate SM is the only available rate for Wilkinsburg, a good understanding of the borough's current position will help discern the impacts of any future rate or rule changes. To help explain the borough's current and explore hypothetical, but plausible conditions the following scenarios are offered.

Table 5: Scenario #1
Rate SM - Current Condition
(includes all street lighting costs including maintenance and operation)

Fixture Details		Utility Charges				TOTAL
Qty	Description	Generation	Transmission	Distribution	Pole Rental	
94	100W MV CC	$245	$18	$1,177	$0	$1,440
1	175W MV CC	$4	$0	$13	$0	$17
149	100W SODV CC	$441	$31	$1,943	$0	$2,415
193	150W SODV CC	$813	$58	$2,551	$0	$3,422
929	70W SODV CC	$1,598	$111	$12,021	$0	$13,731
	TOTAL	$3,101	$219	$17,705	$0	**$21,025**

Scenario #1, shown in **Table 5**, represents the current rate and billing structure from the utility. All costs for street lighting are included in Rate SM, including maintenance and operation (O&M) costs. Although a breakdown of the O&M charges was not available at the time of this report, a rough indication may be found by subtracting the generation, transmission and distribution costs calculated under Rate SE from the total charges calculated under Rate SM, or $12,604. In this case, O&M includes the use of the fixture and pole, and any maintenance required to provide reliable street lighting.

Table 6: Scenario #2
Rate SE
(does not include maintenance and operation costs, also assumes 50% of the existing fixtures will be required to rent poles from the utility)

Fixture Details		Utility Charges				TOTAL
Qty	Description	Generation	Transmission	Distribution	Pole Rental	
94	100W MV CC	$245	$18	$298	$482	$1,043
1	175W MV CC	$4	$0	$3	$5	$13
149	100W SODV CC	$441	$56	$472	$764	$1,734
193	150W SODV CC	$812	$192	$612	$990	$2,605
929	70W SODV CC	$1,596	$726	$2,945	$4,766	$10,033
	TOTAL	$3,098	$992	$4,330	$7,008	**$15,428**

Scenario #2, shown in **Table 6**, represents applying Rate SE, if it were available, to the borough's current street lighting network. Unlike Scenario #1, Scenario #2 does not include O&M costs. Under this scenario the borough would be responsible for all O&M cost, including utility pole rental if the fixture were mounted on a pole that is not part of the utility's general distribution, as explained in the tariff. Scenario #2 assumes that 50% of the poles will fall in this category. Additionally the tariff stipulates that the fixtures must be owned by the borough; this may cause the borough's payment to the utility to cover the utility's original investment or portion thereof.

Table 7: Scenario #3
Similar to Rate SE - Assuming LED technologies will reduce lamp consumption by 80%
(does not include maintenance and operation costs, also assumes 50% of the existing fixtures will be required to rent poles from the utility)

Fixture Details		Utility Charges				TOTAL
Qty	Description	Generation	Transmission	Distribution	Pole Rental	
94	100W MV CC	$49	$4	$298	$482	$833
1	175W MV CC	$1	$0	$3	$5	$9
149	100W SODV CC	$88	$11	$472	$764	$1,336
193	150W SODV CC	$162	$38	$612	$990	$1,803
929	70W SODV CC	$319	$145	$2,945	$4,766	$8,175
	TOTAL	$620	$198	$4,330	$7,008	**$12,156**

Scenario #3, shown in **Table 7**, is similar to Scenario #2 except that it assumes that LED technology will reduce lamp consumption by 80%. As with Scenario #2 the borough would be responsible for O&M costs, be required to have ownership of the fixtures and may be responsible for payments to the utility to cover the utility's original investment, as stated above.

Our interpretation of the tariff is that under any of these scenarios, including Scenario #1, the borough has the option to purchase its electric energy requirements from an Electric Generation Supplier (EGS) other than the utility. The borough may benefit if it were to secure its electric generation from a supplier offering better pricing. However, energy prices are very volatile and there can be uncertainty associated with any energy purchase.

It is clear that from the above set of scenarios that, at this time, the issue of reducing municipal street lighting cost has limited options, and future opportunities must be evaluated thoroughly. The City of Pittsburgh recently completed an LED street lighting study which speaks favorably on the installation of LED street lights. This study validates the technology and bolsters the argument for more LED installations. While LED lighting continues to take hold in the street lighting market, Duquesne Light Company currently does not have a rate in their tariff to charge for LED street lighting, and attaining one requires Public Utility Commission application and approval. LED lighting is making advances rapidly, and delays in implementation will continually cause reevaluation of available products. It would be in the borough's best interest to remain active in seeking more favorable street lighting rates, explore its options in purchasing electricity from an EGS, and keep abreast of LED products in the event that an opportunity should present itself either though a pilot program with funding or a utility rate change.

Review of Positive Advances

The Borough of Wilkinsburg recognizes the need for reducing energy related consumption and cost. Through our discussions and building surveys, we found that several aggressive measures have been taken to reduce energy spending. Measures such as the installation of new boilers, thermostatic radiator valves and new windows have been recently taken. Borough officials are investigating funding possibilities and are alert to the need for quick action when funds become available. Using this study to aid in the completion of a facility improvement and energy reduction plan, steps already taken or underway can be incorporated into the recommendations presented to assure optimum use of available resources and technologies.

Review of Potential Improvements

Table 8 lists many areas where the borough can reduce its energy consumption. Several of the measures are low or no cost, while others will require significant capital spending. Of the projects that required capital spending, this study finds that lighting projects and temperature control of the borough building will result in the cost effective actions. The borough building's cooling systems sometime operate in the winter to maintain tolerable building temperatures. This is a serious contributor to unnecessary energy costs. Optimally, the borough building should receive a new HVAC system, as the existing cooling system has reached the end of its useful life. A new system could consist of a variable air volume system with digital controls. However, prior to the design and installation of a new system, the building needs improvements to reduce heating and cooling loads and to guard against uncontrolled ventilation. The better performing building will result in reduced HVAC equipment and distribution requirements. In the meantime, reasonable measures that will help control building temperatures are the installation of programmable thermostats on the existing systems, and control of the floor standing fan-coil cabinets, which are sometimes referred to as unit ventilators. The boiler also needs to be controlled. This may be achieved with a simple interior programmable thermostat wired to hold off the boiler when the building is warm, or the installation of a more sophisticated controller such as a "Heat Timer" controller. These

boiler control options require further investigation to determine feasibility with the existing boiler control scheme. Many of the projects listed in this report may qualify for funding through the Act 129 electric utility energy conservation program and other programs sponsored by the EPA or other supporters.

As shown in **Table 8**, recommendations are categorized into three tiers. These tiers are not a sequence in which the projects should be completed, but a separation of the projects' costs, savings, and intensities. The sequence of project implementation depends on several factors, including available funds, existing equipment condition and logical timelines. Installation of a new HVAC system prior to upgrading the lighting and building envelope systems would not be advised. However, in the interim, installing reasonable temperature control equipment may be a prudent action. **Table 8** provides a quick reference to the estimated savings and costs, as well as the environmental benefits of each recommendation. For additional information refer to the "Specific Findings and Recommendations" following **Table 8** and **Appendix C**.

Table 8: Quick Reference for Energy Recommendations

Tier	Recommendation	Estimated Annual Savings ($)	Estimated Investment	Lbs. CO2 Emissions Saved	Cars Removed	Trees Planted
1	Control computers	$389	$1	6,300	1	10
1	Eliminate dorm style refrigerators	$140	$1	2,268	1	4
1	Eliminate or control bottled water coolers	$386	$1	5,897	1	9
1	Fix all water leaks	$315	$300			
1	Determine the DHW needs of the building; install new water heater in the Borough Building.	$722	$3,000	989	1	2
1	Control air conditioning (as is); install programmable thermostats and adopt aggressive setback strategies	$426	$800	6,904	1	11
1	Control cold drink vending machines	$251	$530	4,062	1	7
1	Check steam traps and repair	$185	$600	253	1	1
2	Isolate hose drying tower from the conditioned building	$361	$200	494	1	1
2	Control building temperatures; install temperature controls on the unit ventilators	$2,024	$7,000	7,814	1	12
2	Upgrade lighting at Borough Building	$10,150	$31,327	145,480	13	216
2	Upgrade lighting at Department of Public Works garage	$1,200	$5,210	17,527	2	26
2	Install occupancy sensing lighting in emergency stairwells	$449	$3,750	7,271	1	11
2	Install occupancy controls in restrooms and other areas	$172	$800	2,787	1	5
2	Upgrade lighting at Eastridge Library	$632	$2,975	8,923	1	14
2	Replace refrigerators	$191	$2,808	3,095	1	5
2	Upgrade clothes washer	$272	$1,200	4,410	1	7
2	Air seal and insulate DPW Fire Fighter Dormitory	requires additional testing				

Table 8 (Continued)

Tier	Recommendation	Estimated Annual Savings ($)	Estimated Investment	Lbs. CO2 Emissions Saved	Cars Removed	Trees Planted
3	Air seal and insulate Borough Building attic floor	$3,326	$13,000	7,528	1	12
3	Upgrade window air conditioners	$605	$6,000	9,803	1	15
3	Install radiant pipe heat system in garage	$2,974	$10,000	4,076	1	7
3	Consider installing a boiler controller	$1,980	$3,500	2,713	1	5
3	Finish window replacements	$2,895	$151,750	29,882	3	45
3	Install low-flush toilets	$600	$5,500			
3	Install skylights in garage	$584	$22,500	9,450	1	14
3	Install solar PV electric system at borough building	$931	$60,000	15,085	2	23
3	Install solar PV electric system at DPW	$3,353	$216,000	54,305	5	81
3	Install solar hot water system at DPW garage	$114	$10,000	157	1	1
The following ECM's do not warrant detailed financial and environmental analysis at this time. Many are of low cost, have dynamic savings characteristics or are conceptual recommendations needing additional development. However, each of these ECMs should be considered. For more information on a particular ECM, see the associated detailed description for the ECM in the "Specific Findings and Recommendations" in this report.						
1	Turn things off					
1	Increase employee awareness					
1	Provide Facilities Manager with a copy of every monthly utility bill					
1	Read your own natural gas meter					
1	Organize drawings					
1	Reduce DHW water temperature					
1	Clean lamp lenses					
1	Clean unit ventilators					
1	Remove window air conditioners in winter					
1	Control drinking fountains					
1	Install low-flow aerators					
2	Reduce temperatures in emergency stairwells and isolate from the rest of the building					
2	Evaluate water meter sizes					
2	Upgrade outside lighting controls					
2	Blank-off all abandoned ducts					
2	Install control on garage heaters and garage doors at DPW					
2	Seal duct work in Borough Building attic					
3	Fix lantern lights					
3	Replace flex duct on Eastridge Library HVAC and other units					
3	Install new HVAC system in Borough Building					
3	Install new HVAC system in DPW Fire Fighter apartment					

Note: The figures shown in this table are estimates and are particular to the recommendation listed. Due to the interaction of individual improvements and their combined influence on energy savings, the total of any two or more individual recommendations may not reflect their savings as a whole.

Detailed Findings and Recommendations

Energy Conservation Opportunities

The primary objective of the following Energy Conservation Opportunity (ECO) explanations is to provide details that will help the Borough of Wilkinsburg understand the requirements and benefits of addressing each ECO. Each ECO is explained and a reasonable action or Energy Conservation Measure (ECM) is recommended. Opportunities are introduced with a descriptive title, and then typically followed by the existing condition, recommendations and potential economic benefits.

The economic benefits, when presented, are general in nature to provide support for quick consideration of proven measures. Many of the measures below are of low or no cost to implement when using in-house resources, resulting in favorable pay-backs. Other suggested recommendations require project design development and pricing to calculate pay-back periods. To accurately determine their economic benefit, these recommendations require more detailed investigation, which is outside of the scope of this study; however, cost-benefit analysis can be performed on a case-by-case basis. Additional economic analysis can be found in the "Investment Table" located in **Appendix C**.

Note: Verification of compliance with all codes, standards, local ordinances and/or procedures must be performed prior to the implementation of any recommendation listed below and/or throughout this document. Qualified personnel familiar with the specific equipment installation and operation must accomplish the energy conservation measures listed throughout this report.

Tier I Recommendations

- Turn things off

Existing Condition

It is common to find lighting, computers, exhaust fans, HVAC and other equipment left "on" unnecessarily during unoccupied times or times of non-use.

Recommendation

Turn things off. This simple strategy can save a significant amount of energy. Installing friendly, concise placards as reminders or that describe the proper operation of equipment will increase its "off time."

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Energy savings from this measure is dependent upon human behavior and the effectiveness of the placard program.

- Increase employee awareness

Existing Condition

Borough offices and operation are major users of energy in these buildings.

Recommendation

Energy conservation should be a part of every employee's daily work experience. Short discussions during regularly scheduled meetings will heighten awareness and encourage positive behaviors. Dedicate a telephone extension and/or email address to accept energy wasting observations by employees and facility users. Automate the system to limit additional work load.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Energy savings is unpredictable, however, human behavior is a major contributor to energy waste.

- Provide Facilities Manager with a copy of every monthly utility bill

Existing Condition

Currently the borough does not have a dedicated Facility Manager. These responsibilities appear to be assigned to the Fire Chief. Utility bills are paid by the Finance Department, and the consumption data is not shared with a Facilities Manager.

Recommendation

The Facilities Manager should receive and track monthly utility consumption and expenses. Tracking this information is essential to identifying waste and measuring energy reduction program effectiveness. One individual, assigned as the Energy Manager, should be in charge of tracking and implementing an energy reduction program. If in-house resources are not available, outside energy management services can be contracted.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Although direct energy savings from this recommendation cannot be determined; a command of utility data and quick identification of energy waste will minimize unnecessary costs.

- Read your own natural gas meter

Existing Condition

The natural gas utility is basing several of the monthly bills on estimated meter readings.

Recommendation

Avoid estimated natural gas bills and increase the accuracy of monthly billing by reading the natural gas meter and submitting readings to the utility company. Many utilities are installing Automated Meter Reading (AMR) systems. Contact the utility to verify meter reading procedures. Monthly AMR readings can eliminate the need for "customer readings."

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: There is no direct cost/savings associated with this measure, however, accurate consumption data is necessary to track one's energy reduction initiatives.

- Organize drawings

Existing Condition

The process of organizing the borough's design drawings was being performed by a "Mature Worker" who recently passed away. This project has not been completed.

Recommendation

Continue the project of organizing and preserving design drawings of all borough-managed facilities. Original design drawings are an important record of how a building and its systems were designed and built. Revisions to these drawings, or additional drawings that reflect changes over the years, may also be available. Without these drawings, understanding the intent of the designer and hidden components are lost. Once all the drawings are organized, they should be electronically scanned in a workable format compatible with AutoCAD software.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: If lost or destroyed, re-creation of these drawings is expensive if not impossible. The future cost of any project may be substantially reduced if reliable drawings are available.

- Reduce Domestic Hot Water water temperature

Existing Condition
The DHW temperature was verified at 120°F.
Recommendation
Periodically measure and adjust the DHW temperature. Proper water temperature is 120°F.
Financials
Estimated Annual Savings: see note Estimated Investment: see note
Note: An undetected DHW temperature rise can result in higher energy costs and potential scalding risks.

- Control computers

Existing Condition
There are over 75 personal computer stations in these facilities.
Recommendation
Control computers. Many of the computer station settings are programmed to activate sleep mode when the computer is unused for a predetermined time period, but many are not. Seek the advice of the IT manager or consultant to determine the steps necessary to program computers with the most optimal energy saving settings. Power strips may also be used to turn off computers and peripherals overnight or during long periods of inactivity.
Financials
Estimated Annual Savings: $389 Estimated Investment: $1
Note: One computer station may draw 60-100 watts in sleep mode. Savings assumes 50 computers can be turned off instead of sleeping only three hours per day.

- Eliminate dorm style refrigerators

Existing Condition
We found at least seven dorm style refrigerators during our site surveys, some of which are for convenience only.
Recommendation
Evaluate the need for each of these refrigerators and eliminate as many as possible.
Financials
Estimated Annual Savings: $140 Estimated Investment: $1
Note: Savings estimates assume elimination of five refrigerators.

- Eliminate or control bottled water coolers

Existing Condition
There are nearly one dozen bottled water coolers in use. Many of these coolers also produce hot water.
Recommendation
Eliminate as many bottled water dispensers as possible. Energy cost related to bottled water dispensers that heat and cool the drinking water can range between $45 to $65 per year.
Financials
Estimated Annual Savings: $386 Estimated Investment: $1
Note: Savings is based on eliminating six coolers that also dispense hot water.

- Clean lamp lenses

Existing Condition

Many of the lighting fixture lenses are dirty. This is reducing the amount of light eminating from the fixture.

Recommendation

Clean any lighting fixture that is not being replaced by a lighting upgrade project. The entire fixture should be cleaned, including the lens and reflective surface.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: No energy savings is produced by this measure, however, lighting efficacy is increased.

- Clean unit ventilators

Existing Condition

Approximately 14 unit ventilators were noted during our survey. Routine maintenance on these ventilators is paramount to their proper and efficient operation.

Recommendation

Place the unit ventilators on a routine maintenance schedule for cleaning and operational checks.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Dirty coils in unit ventilators decrease the rate of heat transfer which reduces the efficiency of the unit. Energy savings is minimal, however, regular cleaning and servicing can prevent costly repairs.

- Remove window air conditioners in winter

Existing Condition

There are over 30 window air conditioners in use. 90% of these units are in the Borough Building. These units may be left in the windows year around. Window air conditioners are very leaky as compared to a closed window.

Recommendation

Remove window air conditioners during the heating season.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Estimated savings depends on the amount of air leakage that can be reduced. Generally air infiltration can be felt by hand during the heating season.

- Fix all water leaks

Existing Condition

Except for the hot water tanks and some commodes, few water leaks were reported, however, even small leaks can waste a significant amount of water.

Recommendation

Incorporate inspection of faucets and other water-consuming devices into a monthly preventive maintenance program. Cleaning staff can be instructed to report all leaks. Although water leaks were not prominent in these facilities, vigilance about limiting water waste through a strict maintenance program will detect problems early. One faucet dripping once per second can waste 3,154 gallons of water per year.

Financials

Estimated Annual Savings: $315 Estimated Investment: $300

Note: Savings based on correcting ten dripping faucets.

- Determine the DHW needs of the building; install new water heater in the Borough Building.

Existing Condition

The Borough Building has two DHW heaters. One of the heaters is no longer used or needed, and the second is an old inefficient model. The relief valve of the operating heater was leaking at the time of our survey. The existing DHW piping system has a return line (typical in a circulating system), but no circulating pump, and it took over 30 seconds for hot water to reach the Manager's conference room sink.

Recommendation

Determine the DHW needs of the building. There are approximately 27 sinks and three showers in this building. It is thought that shower use is limited. The hot water requirements of this building should be investigated to determine where, when and how much hot water is needed or used at each fixture. Occupants using distant fixtures may turn on the hot water faucet only to turn it back off before the hot water ever reaches the fixture. This results in DHW energy being lost in the pipe. Consideration should also be given to installing a properly sized circulating pump that is controlled by an aqua stat and timer, and insulating all DHW piping.

Financials

Estimated Annual Savings: $722 Estimated Investment: $3,000

Note: Savings listed are based on the efficiency gains of a new water heater. Savings, if any, associated with installing a circulating pump requires exploring several parameters, however, having hot water available quickly at the sink promotes proper hand washing.

- Control drinking fountains

Existing Condition

There are a few wall mounted and floor standing water fountains in these facilities that cool the drinking water.

Recommendation

Install timers on the water fountains and set to coincide with the occupancy hours of the area. On/off setting of timer should be one hour ahead of normal occupied/unoccupied times of area.

Financials

Estimated Annual Savings: see note Estimated Investment: $1

Note: Savings from this measure is dependent on the existing temperature use of these fountains.

- Control air conditioning (as is), install programmable thermostats and adopt aggressive setback strategies

Existing Condition

Some areas may be cooled when not occupied, such as the Council Chambers. The HVAC system in this building lacks good control and does not incorporate temperature setback strategies.

Recommendation

Install programmable thermostats on all ancillary HVAC systems. Programmable thermostats can be set to setback room temperatures when the area is unoccupied. There are eight major air conditioning systems in the Borough Building. Most of these systems are not controlled by a programmable thermostat capable of supporting an aggressive setback strategy. Window air conditioners can be manually turned off at the end of the day.

Financials

Estimated Annual Savings: $426 Estimated Investment: $800

Note: Saving is estimated assuming that a 5% reduction in the run time of the non-window unit air conditioning is achieved. It is likely that even greater savings can be realized.

- Install low-flow aerators

Existing Condition

Many of the lavatory sinks have vintage hot and cold faucets. This type of faucet will not accept aerators. There are, however, several modern faucets that will accept low-flow aerators.

Recommendation

On faucets and shower heads that will accept low-flow aerators, install aerators as follows: showers should receive 2.5 gpm; sinks should receive 2.0 gpm.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Savings is dependent upon the usage of these fixtures. The low cost of implementation makes this a prudent measure to implement.

- Control cold drink vending machines

Existing Condition

There are cold drink vending machines outside of the fire station and in the vestibule at the rear of the Fire Station. Vending machines can cost $200 - $350 per year in energy use.

Recommendation

Reduce the energy use from vending machines by one of the following: eliminate the machine, remove or upgrade the lighting inside the machine, or install a vending machine controller, such as the VendingMiser which turns the machine on and off according to occupancy.
http://www.michigan.gov/documents/CIS_EO_Vending_Machine_05-0042_155715_7.pdf

Financials

Estimated Annual Savings: $251 Estimated Investment: $530

Note: When considering two machines, installation of a VendingMiser can save approximately $230 per year. Eliminating both machines can save an estimated total of $500 per year.

- Check steam traps and repair

Existing Condition

The Borough Building has a steam heating system. Steam heating systems utilize steam traps to allow condensate to move from the steam side of the system to the condensate return side, without allowing live steam to pass. When traps fail, they either allow steam to pass or block both condensate and steam. Either situation will have a negative effect on comfort and energy use.

Recommendation

Inspect, repair/replace steam traps. There are several methods that can be used to detect a faulty trap. One method is to compare the temperature of the metal piping before and after the trap. A more accurate and sophisticated method is an ultrasonic test.

Financials

Estimated Annual Savings: $185 Estimated Investment: $600

Note: Cost/savings is estimated assuming five traps are found in need of repair.

Tier II Recommendations

- Isolate hose drying tower from the conditioned building

Existing Condition

The fire hose drying tower's original design has been defeated by covering the bottom outside air intake. The design of the tower is to have outside air enter the tower from below. Blocking the

tower's outside air intake and keeping the doors open to the fire house draws conditioned air from the main building. As air is drawn into the tower, replacement air enters the building wherever it can, causing comfort problems and higher energy costs.

Recommendation

The hose tower should be isolated from the main building. Return the tower back to its original design by opening the bottom intake and sealing the tower from the rest of the building through properly weather-striped and insulated doors. Also a temperature and humidity controller can be installed to control the tower's exhaust fan based on temperature and humidity.

Financials

Estimated Annual Savings: $361 Estimated Investment: $200

- Reduce temperatures in emergency stairwells and isolate from the rest of the building

Existing Condition

There are two emergency stairwells. These stairwells run from basement to the third floor, and may be creating a stack effect that draws conditioned air from the main building.

Recommendation

Isolate the emergency stairwells by sealing all openings, and weather-stripping the doors to the exterior and interior spaces. The temperature of these stairwells should also be minimal; about 45°F during the winter months.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: The savings from this recommedation depends on the amount of air that is escaping thorugh the emergency stairwells. This air loss can be dynamic and requires additional testing to determine relative values. It is, however, know that stack effect in stairwells causes conditioned air to leave the building. Cost of weather stipping the doors and sealing penetraions should be minimal to low.

- Evaluate water meter sizes

Existing Condition

The water meters in these facilities were sized based on the buildings' original design and intended use.

Recommendation

Reevaluate the size of the water meter currently installed in each facility. There is a probability that current characteristics of the buildings would allow for a smaller water meter. Depending on the application of current water company rates, installation of a smaller meter may reduce monthly water company charges.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Saving is dependent the size reduction, if any, of the new meter. Consultion with the water company is required to determine rules and rates associated with water meter resizing.

- Control building temperatures; install temperature controls on the unit ventilators

Existing Condition

This building is said to have poor temperature control. Air conditioning units are coming on to offset overheating by the steam heating system. Most of the radiators have been outfitted with thermostatic radiator valves (TRV.) There are, however, several unit-ventilators in the libraries and fire truck bay that are causing over heating of the space due to poor control.

Recommendation

It is important to control the building temperature and prohibit the occurrence of heating and cooling simultaneously in the same area. The unit ventilators appear to be the cause of much overheating. These units should be retrofitted to control the flow of steam to the unit and its fan speed in response to room temperature requirements. The Auditorium, Children's Library, Council Chambers, Library, Fire Truck Bays/ Hose Tower are areas that have unit ventilators. Areas where air conditioning units and unit ventilators share the same space are of particular concern.

Financials

Estimated Annual Savings: $2,024 Estimated Investment: $7,000

Note: The borough has indicated that proposals have been solicited for the project from Powell Mechanical. We were not able to aquire these proposals. Cost can vary depending on the staitigy used to control the heaters.

- Upgrade lighting at Borough Building

Existing Condition

The Borough Building's lighting system is comprised of older T12 and incandescent technologies.

Recommendation

Upgrade the lighting system in the Borough Building to newer T8, electronic ballast and CFL technologies. See the lighting upgrade summary in **Appendix D**.

Financials

Estimated Annual Savings: $10,150 Estimated Investment: $31,327

Note: For more details, see the lighting upgrade financial summary in the Appendix.

- Upgrade lighting at the Department of Public Works Garage

Existing Condition

The DPW building's lighting system is comprised of older T12 and incandescent technologies.

Recommendation

Upgrade the existing lighting system in the DPW garage to newer T8 with electronic ballast and CFL technologies. See the lighting upgrade summary in **Appendix E**.

Financials

Estimated Annual Savings: $1,200 Estimated Investment: $5,210

Note: For more details, see the lighting upgrade financial summary in the Appendix.

- Install occupancy sensing lighting in emergency stairwells

Existing Condition

Currently the emergency stairs are continually lighted.

Recommendation

Install a motion sensor controlled, bi-level lighting system such as the Occu-Smart® system.

Financials

Estimated Annual Savings: $449 Estimated Investment: $3,750

Note: If implemented, this measure replaces the emergency stairwell lighting upgrade described in the lighting upgrade table found in the Appendix.

- Upgrade outside lighting controls

Existing Condition

There were some outdoor lights on during daylight hours.

Recommendation

All outdoor lighting should be controlled by photo sensors. Adjust sensors to turn on outdoor lights only when dark.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: A faulty or poorly adjusted photo sensor on a two-hundred watt fixture that allows only two extra hours of light per day, will cost a needless $14 per year, plus cause premature lamp failure. Cost for adjustment isor replacement is minimal. A new installation's cost will vary.

- Install occupancy controls in restrooms and other areas

Existing Condition

There are approximately 14 restrooms or locker rooms in the three facilities, all of which have a manual wall switch to control the lights (and exhaust fan in some cases.) These restrooms see very little traffic, and should the light be left on unnecessarily, could burn for hours undetected. Also, human nature is to leave things as they are found, so that anyone entering a restroom in which the light is on, will most likely leave it on when they leave.

Recommendation

Install occupancy sensors in all rest rooms and locker rooms. Select an occupancy sensor that is activated by motion and sound to increase detection capabilities.

Financials

Estimated Annual Savings: $172 Estimated Investment: $800

- Upgrade lighting at Eastridge Library

Existing Condition

The Eastridge Library's lighting system is comprised of older T12 and incandescent technologies.

Recommendation

Upgrade the lighting system in the East Ridge Library to T8 lamps, electronic ballast and CFL technologies. *See the lighting upgrade summary in **Appendix F**.

Financials

Estimated Annual Savings: $632 Estimated Investment: $2,975

Note: For additional details, see the lighting upgrade financial summary in the Appendix.

- Blank-off all abandoned ducts

Existing Condition

There are two abandoned ventilators on the roof and some exhaust grills on the South face of the Borough Building.

Recommendation

Determine the need for these openings. It appears that some exhaust equipment may be connected, but others are no longer required. Verify those that are no longer needed, and blank off associated ductwork at both ends.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: Savings from this measure is realized by the elimination of unwanted air infiltration. Cost will depend upon the number and location of duct termination points. Initial assessments suggest this project can be achieved at a reasonable cost.

- Install control on garage heaters and garage doors at DPW

Existing Condition

There is the possibility that the unit heaters remain on when the doors are open, and the bays are heated during unoccupied hours.

Recommendation

Replace the standard thermostat with an electronic seven-day programmable thermostat. Interlock the thermostat with the garage doors to prevent heater operation if door is left open in excess of 15 minutes.

Financials

Estimated Annual Savings: see note Estimated Investment: $300

Note: Saving, while not quantifiable, can be significant when door remains open for extended periods in cold weather.

- Air seal and insulate DPW Fire Fighter Dormitory

Existing Condition

The DPW Fire Fighter's Dormitory is a 24-hour occupied living space. This is a space-within-a-space with one exterior wall.

Recommendation

Air seal and insulate the DPW Fire Fighter Dormitory. The air leakage target should be 0.35 air changes per hour and an R38 attic insulation value.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: To accurately determine savings and verify air sealing results, a blower door test should be completed. Cost may vary, but could be around $3,000

- Replace refrigerators

Existing Condition

There are six refrigerators between 11 and 18 cubic inches. These refrigerators average 770 kWh per year.

Recommendation

Replace these refrigerators with new EnergyStar® models, These models average 363 kWh per year.

Financials

Estimated Annual Savings: $191 Estimated Investment: $2,808

- Upgrade clothes washer

Existing Condition

There are top loading washing machines in the Borough and DPW Buildings. Top loading machines use more energy and water than the new front loading models.

Recommendation

Replace existing top loading washing machines with EnergyStar rated front loading models.

Financials

Estimated Annual Savings: $272 Estimated Investment: $1,200

Note: Savings is based on the replacement of two washing machines.

- Seal duct work in Borough Building attic

Existing Condition

There is duct work running through the attic. It is suspected that this is exhaust duct work.

Recommendation

The connection points of this ductwork should be sealed to avoid the unwanted exhausting of the attic space air, and to assure that air from the ducts' inlets is being exhausted as designed.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: A duct leakage test is required to determine the relative leakage of the duct work and the savings. This project will be most cost effective if performed in conjunction with air sealing the attic floor, recommended later in this report.

Tier III Recommendations

- Air seal and insulate Borough Building attic floor

Existing Condition

There is evidence of air leakage paths to the attic of the Borough Building. Air leakage to the attic space (attic bypass) results in heat loss from the conditioned space, which is exaggerated by the stack effect of the building's height. Attic bypass is also a primary contributor to the formation of ice dams in cold weather. Ice dams may damage building components and pose risk of injury from falling ice. There is also less that two inches of loose-fill cellulose insulation on the attic floor.

Recommendation

The attic floor should be surveyed and all openings that lead to the conditioned space should be sealed with a proper sealing material, typically rigid board insulation and expanding foam. This should be accomplished by an air-sealing professional experenced in identifying and sealing attic penetrations. Additionally, the attic floor should receive loose-fill cellulose insulation to achieve a minimum insulation value of R38 across the entire surface.

Financials

Estimated Annual Savings: $3,326 Estimated Investment: $13,000

Note: These estimates are based on our energy modeling of this building.

- Upgrade window air conditioners

Existing Condition

Of the over 30 window air conditioners in use at these facilities, many are older and most likely have an average energy efficiency ratio (EER) of 8 EER or less.

Recommendation

Replace lower EER-rated window air conditioners with a new ten EER or better units.

Financials

Estimated Annual Savings: $605 Estimated Investment: $6,000

- Install radiant pipe heat system in garage

Existing Condition

There are currently five natural gas unit heaters installed at the DPW garage, only two of which are functional. The garage is said to get cold in the winter. This situation compromises worker effectiveness.

Recommendation

Install a new radiant pipe heating system at the garages. Radiant pipe heating systems are said to reduce energy costs by 30% to 50%.

Financials

Estimated Annual Savings: $2,974 Estimated Investment: $10,000

Note: The garage has not been adequately heated for some time. Utility billing histories do not show the cost of heating this building. This building is in need of a new heating system and a radiant heat pipe system may prove to be a good option.

- Consider installing a boiler controller

Existing Condition

The Borough Building is heated using steam boilers. This building is said to be over heated in the cold weather. Overheating is a serious waste of energy.

Recommendation

Currently the building's steam radiators are equipped with thermostatic radiator valves (TRV) to control zone heating. The exceptions to this are the libraries, Council Chambers and fire truck bays. These areas have unit ventilators that lack good control. (See "Control building temperatures. Install temperature controls on the Unit Ventilators" recommendation.) When considering installing a boiler controller such as a "HeatTimer", building temperatures should be monitored and documented to determine the nature of the overheating problem. In the case of the Borough Building, overheating may be limited to the areas with unit ventilators, in which case controlling the unit ventilators may solve the problem. If overheating is building-wide, then a boiler controller may be needed. "HeatTimer" steam boiler controllers regulate the steam cycle in relation to the outdoor temperature. This helps to provide only enough steam heat to keep the building comfortable, without over heating. The boiler controller can also be equipped with temperature setback functions.

Financials

Estimated Annual Savings: $1,980 Estimated Investment: $3,500

Note: Savings and costs are based on the installation of a new boiler controller if warranted by the findings from the building temperature monitoring.

- Finish window replacements

Existing Condition

Not counting the glass block windows, the Borough Building has approximately 90 window units. 37% of these windows have been replaced with double-pane insulated windows, but there are nearly 60 windows remaining, including the large architectural arched windows, that are the original single-pane, steel frame style.

Recommendation

Continue to replace the windows. Although at first look window replacements are expensive and have a long payback period, benefits from smaller HVAC equipment requirements, comfort and maintenance improvements support the installation of new windows. This building is a candidate for a new HVAC system. Building improvement such as air sealing, window improvements, insulation and lighting upgrades should be completed prior to the design of the new HVAC system, as these improvements can reduce the HVAC size requirements.

Financials

Estimated Annual Savings: $2,895 Estimated Investment: $151,750

Note: Saving are based on our energy modling of this building. Cost based on Borough’s recient grant application

- Fix lantern lights

Existing Condition

The two lanterns on the Ross and Hay Street sides of the building are in disrepair.

Recommendation

These are attractive fixtures and should be repaired and retrofitted with energy efficient lamps suited for the fixture. Vandal-proof glazing should be used, and these fixtures should be controlled by a photo cell controller.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: This recommendation may produce little energy savings since one of the existing lanterns is not working. However, when repairing these lanterns, the incorporation of energy efficient technologies should be considered.

- Replace flex duct on Eastridge Library HVAC and other units

Existing Condition

There is an over use of flex duct on the HVAC system.

Recommendation

Replace flex duct with rigid ductwork on the Eastridge Library and other HVAC systems. The design of the air distribution system is as important as the selection of the equipment itself. Flex duct, while easer to install and may reduce installation cost, should be minimized. Flex duct increases friction losses, increasing the fan power needed to deliver the proper air flow to each diffuser.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: A detailed analysis of the existing duct system is required to determine accurate efficiency gains. However, industry standards restrict the overuse of flex duct as a rule.

- Install new HVAC system in Borough Building

Existing Condition

Air conditioning (cooling) in the Borough Building is accomplished with the use of five split systems, five packaged units, and approximately 14 individual window units. Heating is provided by steam boilers, and radiators or fan-coil units. The operations of these systems are poorly controlled and the building temperatures are frequently uncomfortable.

Recommendation

Consider replacing the entire existing HVAC system with an entirely new system. A new system can be engineered for comfort, efficiency and improved indoor air quality. There may be several options for a new HVAC system, and all should be explored through preliminary design. Prior to the design and installation of a new HVAC system, all building envelope and lighting improvements should be completed. These improvements will reduce the requirements of the new HVAC system.

Financials

Estimated Annual Savings: see note Estimated Investment: see note

Note: The benefits of a new HVAC system go beyond energy savings. It will improve building comfort and productivity. Estimated savings and costs can be determined during the preliminary design phase.

- Install new HVAC system in DPW Fire Fighter apartment

Existing Condition

There is a two-story building within the DPW garage that houses locker rooms, lunch rooms and an apartment for the firefighters. This building is cooled by window air conditioners and heated by a central hot water boiler.

Recommendation

This two-story building should be treated as a separate entity from the DPW garage. The building should be air sealed and insulated (see earlier recommendation), and a new HVAC system should be installed. The new system should be sized according to the improved characteristics of the building.

Financials

Estimated Annual Savings: $704 Estimated Investment: $14,000

- Install low-flush toilets

Existing Condition

There are about 24 toilets in these buildings--few if any are low-flush, and some were leaking into the bowl during our survey.

Recommendation

Prioritize which toilets see the most use and install low-flush models. Begin replacing the toilets starting with those that are used most frequently. Conventional toilets can use over 3.5 gals of water per flush. New low-flush toilets are rated at 1.6 gallons or less per flush.

Financials

Estimated Annual Savings: $600 Estimated Investment: $5,500

Note: Savings depends on the number of times the toilets are currently flushed in one year. The saving and cost shown represents replacing 10-3.5 gpf toilets with 1.6 gpf toilets that are flushed an average of 60 times each per week.

- Install skylights in garage

Existing Condition

We assume that the DPW original garage is frequently unoccupied, but requires lights to be on.

Recommendation

Install skylights in the DPW original garage to provide free ambient lighting. The light provided by the skylights will allow for the electric lighting system to remain off unless needed to perform work inside the garage.

Financials

Estimated Annual Savings: $584 Estimated Investment: $22,500

Note: Savings estimate is based on leaving a new lighting system off an additional average of two hours per day. Cost is estimated at 15 skylights at $1,500 each, installed.

- Install solar photovoltaic (PV) electric system at Borough Building

Existing Condition

The roof area may accommodate a solar PV system electric generation system.

Recommendation

Consider installing a solar PV electric generation system. PV technology converts sunlight directly into electricity. It works any time the sun is shining, but more electricity will be produced when the light is more intense (a sunny day) and is striking the PV modules directly. Investing in PV allows one to produce electricity with no noise, no air pollution, and no moving parts while using a clean, renewable resource.

Financials

Estimated Annual Savings: $931 Estimated Investment: $60,000

Note: PV-generated electricity is usually more expensive than conventional, utility-supplied electricity. Improved manufacturing has reduced the cost, but the cost is still about 25 cents per kilowatt-hour. This is about two and a half times the retail price for electricity from local utilities. Financial incentives can help make PV more affordable, but it can't match today's price for electricity from the utility. The savings / cost presented are estimates based on a 10 kW system.

- Install solar PV electric system at DPW

Existing Condition

The roof of the DWP garage may be a candidate for solar PV panels.

Recommendation

Consider installing a solar PV electric generation system. PV technology converts sunlight directly into electricity. It works any time the sun is shining, but more electricity will be produced when the light is more intense (a sunny day) and is striking the PV modules directly. Investing in PV allows one to produce electricity with no noise, no air pollution, and no moving parts while using a clean, renewable resource.

Financials

Estimated Annual Savings: $3,353 Estimated Investment: $216,000

Note: PV-generated electricity is usually more expensive than conventional, utility-supplied electricity. Improved manufacturing has reduced the cost, but the cost is still about 25 cents per kilowatt-hour. This is about two and a half times the retail price for electricity from local utilities. Financial incentives can help make PV more affordable, but it can't match today's price for electricity from the utility. The savings / cost presented are estimates based on a 36 kW system.

- Install solar hot water system at DPW garage

Existing Condition

The roof of the DWP garage may be a candidate for a solar hot water system.

Recommendation

Consider installing a solar hot water system on the roof of the DPW. The Fire Fighters' 24-hour housing in this building suggests that this building may have a reasonably constant need for hot water. The natural gas needed for hot water in this building is estimated at 18 mcf per year. A solar hot water system can supply most of the hot water needs.

Financials

Estimated Annual Savings: $114 Estimated Investment: $10,000

Note: Cost of this project is dependent on the system selected which may vary considerably.

Curbside Recycling Program

Background

The Borough of Wilkinsburg shares the experiences of a great many municipalities throughout the country, and likely the great majority. The 'traditional' challenge of increasing waste stream recycling participation rates, and through them diversion rates, has been joined with ever more force in recent years by a second challenge: improving the economics of the curbside program. Two factors explain the growing urgency of the second challenge. On the one hand, municipal budgets have been facing ever-growing shortfalls, even before the current recession. Wilkinsburg has had to make do with limited means for years. On the other hand, global markets for the basic recyclable commodities plummeted a couple of years ago and have struggled since then. Only over the past few months have markets begun to stabilize and commodity values begun to rebound.

One of the few external sources of funding/support for municipal recycling programs have been the DEP 902 Program and 904 Performance Grants programs, based on diversion rates, as well as on percent improvement in these rates. The dramatic downturn in commodity markets has made it clear that increasing participation and diversion rates do not, by themselves, necessarily improve the economics of curbside recycling.

The environmental benefits of conventional recycling include reductions in energy use, air and water pollution, and greenhouse gas emissions. If more direct and local use is made of recyclables, these benefits, as well as social benefits (e.g. fiscal and employment) may be far greater.

Scope and Approach

The Sustainable Solutions team obtained and reviewed the following documents as part of this assessment:

- Current Wilkinsburg Borough Solid Waste Ordinance (PDF)
- Agreement with Waste Management (solid waste hauler) (PDF)
- Invoices to and from Pittsburgh Recycling Services (recyclables processor) (PDF)
- Daily Tonnages of Recyclables and prices paid/costs incurred, 2010 (from PRS) (PDF)
- Maps of Curbside Recycling Routes (PDF)
- Street Addresses for each Curbside Recycling Route (PDF)
- Abandoned Property Inventory (Excel)
- Borough-Owned Vacant Lots Assessment (Word)
- Fuel Invoices for Borough-owned vehicles (PDF)

The team had conversations and interviews with the Borough Manager, Department Directors and staff regarding the borough's Curbside Recycling program. Those interviewed include: Marla Marcinko, Borough Manager; Melanie Hall, Public Works Operations Manager; Lawrence Focareta, acting Director of Public Works; Larry Mallone, William Davis, and Kevin Santillo, Public Works drivers who service the curbside collection program. The two curbside recycling staff with the longest experience (Mr. Mallone and Mr. Davis) was asked to assign ranks to each of the ten recycling routes, based on the total volume of recyclables per route (1: very light; 2: light; 3: moderate; 4: heavy; 5: very heavy). The team also conducted a participation survey of three of these routes, based on contrasting rankings. On each of the designated mornings, the team was guided over the route a few moments ahead of the truck. The following information was noted on each street of the route:

- The number of houses that had garbage containers along curb, but no visible recyclables (borough-distributed containers as well as plastic bags with obvious content).

- The number of houses that had visible recyclables along curb.
- The number of houses that had visible paper recyclables along curb (either the borough-distributed taller, thinner container or bags with obvious paper content).

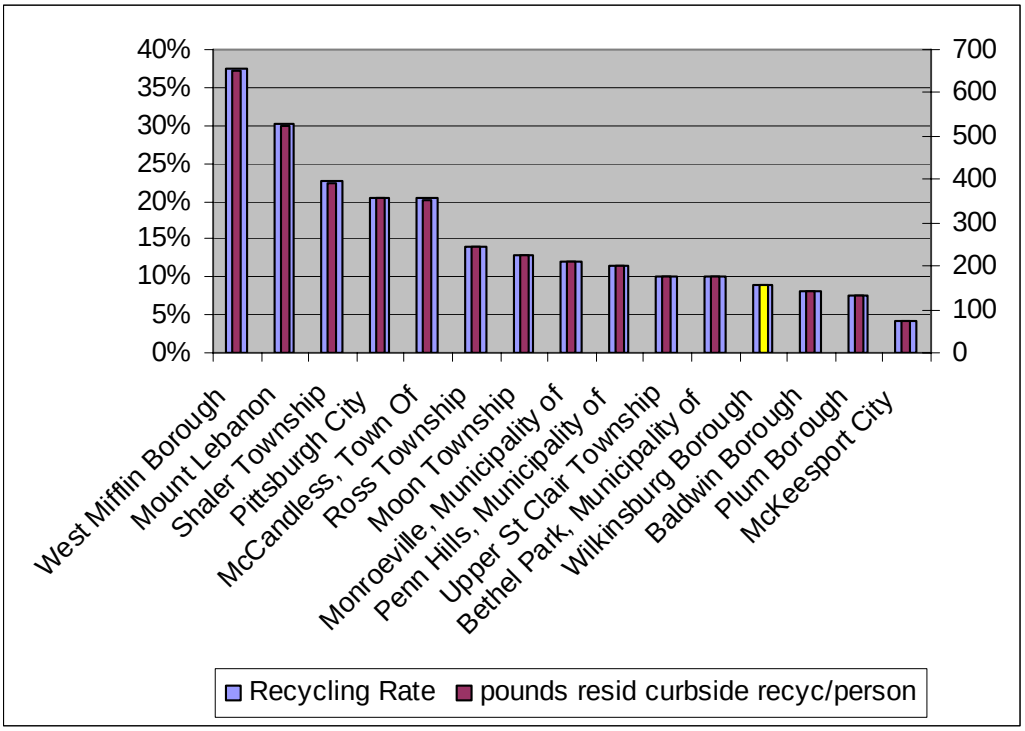
Existing Conditions

The borough accepts all kinds of paper, paperboard and cardboard; and all metal, glass and plastic containers. It provides two containers, one for each group of materials. The curbside recycling program divides the borough into ten routes. Each route is serviced once every two weeks: the ten routes combine to form two alternating Monday-through-Friday weeks. Three Public Works staff alternate servicing these routes: one driver and one runner at a time. The official recycling shift runs from 6am to 2pm.

Current Diversion Rates

According to the most recent figures from the PA DEP, the borough had a recycling rate of 9% in 2008. This gave it a rank of twelve lowest among the fifteen most populous municipalities in Allegheny County.

Figure 1. Municipal Recycling Rates and annual pounds residential recycling per person.
Allegheny County Recycling Coordinator, 2008



Household Participation Rates

The team performed a survey of household participation rates for three routes, as described above. The results are summarized in **Table 9**.

Table 9: Summary of Survey of Recycling Routes

	Recycled	Did Not Recycle	Occupied Buildings	Paper Bin	Staff Ranking
Thurs 501	56	162	218	20	1
	26%	74%		9%	
Mon 502	125	271	396	47	2.5
	32%	68%		12%	
Fri 502	282	131	413	135	5
	68%	32%		33%	

Table 9 reveals several noteworthy patterns. First, the recyclable hauling staff appears to have a solid sense of the relative volumes of recyclables collected on each of the ten routes. Second, the light routes have very low participation rates. Third, there appears to be a clear relationship between the participation rates and the total number of occupied buildings on each route. In other words, 'heavy' routes not only have a greater percentage of participants: they also have a higher number (and density) of occupied dwellings. These two factors both contribute to the greater raw number of participants, so that Fri 502 has over five times the number of participating households of Thurs 501. Two factors may contribute to this positive relationship between participation and occupancy rates:

- Higher occupancy routes may have higher incomes and educational levels, and both of these are often associated with higher recycling rates.
- Low occupancy routes are essentially routes with high rates of abandoned property (vacant buildings, vacant lots). This may well have a discouraging impact on participation, even if one controls for median income or educational attainment. Conversely, when one has many close neighbors, their recycling bins are more apparent; and this may be a spur or reminder to recycle.

There is a fourth pattern suggested by this table. Participation rates and occupancy rates both appear related to the percentage of recycling households who put out a bin for paper recyclables. Of those who recycle, only 36%, 38% and 48% respectively put out paper recyclables. Even if a few added paper to the commingled containers, it's likely that the borough average is no more than 40%.

That there may be as much a five-fold difference in the volume or weight of materials collected on a route suggests that there is significant potential in adjusting both the official and actual time spent in servicing them. This question will be addressed later in this report.

Income and Expenses incurred with Pittsburgh Recycling Services

Over the past two years, the net financial impact of the borough's curbside recycling program has experienced several dramatic changes, due to the changing prices paid per ton, and costs incurred per ton, of recyclable commodities.

- Between Jan and Oct 6, 2008, the borough was paid $4,938 for recyclable material it collected. Extending these nine months to a full year, this would be roughly *$6,584 of income per year.*
- Between Oct 7, 2008 and Feb 8, 2009, no money changed hands in either direction.
- Between Feb 9 and Dec 21, 2009, the borough paid PRS $8,035 and received no income for its recyclable materials. Factored into 12 months, this would be *a cost of $9,083 per year*.
- The most recent period (January 4 through July 15, 2010) shows a return, roughly, to the net fiscal impacts of the first three-quarters of 2008. This is the only period for which we have tonnages, prices or fees paid per ton, and net income or cost of each commodity category.

Over this last period, per ton prices paid for loose cardboard (CL) increased from $40 in January to $60 in late February through late May, and to $75 in mid June; and then dropped back down to $60 over the past

month. With a few very small exceptions, per ton prices of newsprint has stayed at $20 over this entire period. The poorest commodity in terms of returns has been commingled: *it has cost the Borough $25 per ton to recycle* from January through May; since June 1, it has cost the Borough $20 per ton.

Table 10: Recyclable Commodity tonnages, prices and income impacts. Jan 4—July 15, 2010, extrapolated over a full year

	Tons	Avg Income per Ton	Income
Cardboard, loose	75.4	$ 71.38	$ 5,380.30
Brown paper bags	7.0	$ 50.00	$ 350.74
Newspapers	312.3	$ 20.18	$ 6,301.53
Commingled	238.4	$ (23.63)	$(5,632.93)
TOTAL	633.1		$ 6,399.64

Other Funding Sources

Between January 3 and November 1, 2008, the borough received $84,562 in DEP grants. Over 90% of this ($76,535) was from 902 grants awarded in the previous year; the remainder was from two smaller 904 Performance grants. No records were available of grants received between November 1 2008 and the end of 2009. In 2010 so far, the borough has received one 904 Performance grant for $3,453, and one 902 grant for $22,000. Taking the entire period from Jan 2008 (19 months), this *averages $69, 483 of total external (grants) funding per year* ($110,015 x 63%). 2010 so far, this averages *$43,634* of external funding per year. For estimating overall net costs of the curbside program, the average of these two ($56,559) is used.

Internal Costs of Program

The curbside recyclables collection truck is staffed with two public works employees on each shift. Collection shifts on the books are seven hours per day (6am to 1pm), five days per week. Average hourly wage plus benefits of this staff is $26.61 per hour. This gives and estimated *labor cost* of $1,862.70 per week or $93,135 for a 50-week year. If the average hours worked per staff per route is reduced to six hours, the weekly total is $1,596.60 and the annual total is $79,830.

The curbside recycling truck has a fuel capacity of 50 gallons. It is reported to be filled "about once a week", and diesel prices have averaged "around 3 dollars per gallon". This gives an estimated *fuel cost* of $150 per week or $7,500 per year for a 50-week year. Fuel receipts were reviewed between May 3 and July 1, 2010. The average fuel use per week was 49.6 and the average price per gallon was $2.39. This gives an estimated fuel cost of $119 per week or $5,950 for a 50-week year. No estimates for truck depreciation or truck operating costs were located beyond fuel (e.g. maintenance, repair, oil, tires, etc.).

Estimated Net Costs of Curbside Program

Based on the above costs and sources of income, **Table 11** summarizes the estimated net annual costs of the residential curbside recycling program. Vehicle depreciation and non-fuel operating costs, as well as the costs of curbside containers are both very rough, 'ballpark' estimates.

Table 11: Estimated Net Annual Costs of Curbside Program

Expenses		Income	
Labor	$ 93,135	Grants	$ 56,559
Fuel	$ 5,950	Net Income from Pittsburgh Recycling Services	$ 6,400
Vehicle Depreciation and operating costs*	$ 5,000		
Curbside containers*	$ 2,000		
TOTAL	$ 106,085	TOTAL	$ 62,959
* Estimates		$ 43,126	Estimated net annual cost

Current Solid Waste contracts

The economics of residential solid waste hauling should be considered in conjunction with hauling of residential recyclables. The borough currently divides residential waste hauling in two contracts. The borough pays the City of Pittsburgh $66,306 to haul waste from all **single-family and small multi-family** (5 units and under) buildings, including the collection of bundled residential branches (no grass, no leaves). This is based on an estimated 7,580 units in an estimated 5,196 buildings. A close review of the borough's Tax Duplicate Use Code spreadsheets revealed that 527 of these buildings are abandoned (10.1%). However, the current hauling rate, even with this reduced number of units is still a significant bargain ($0.82 per unit per month).

The borough pays Waste Management $621,858 to haul waste from **multi-family** buildings of 6 or more units. This is based on a contract signed Nov 22, 2006, which gave $15.21 as the per unit, per month cost of waste hauling, an estimated 3,120 units in 242 larger multi-family buildings, and a 3% annual increase in per unit hauling cost. A close review of the borough's Tax Duplicate Use Code spreadsheets revealed that 32 of the 242 borough buildings with 6 or more units (i.e. 13.2%) are abandoned. Unlike the current City contract, the current WM contract is not a bargain. In a recent study completed for Penn Hills, it was found that the average monthly cost per household of solid waste hauling in six large municipalities in Allegheny County was *$11.01*. The monthly per unit cost in the WM contract is $16.61, based on 3,120 units. Based on the actual number of units (2,708), the monthly cost per household rises to *$19.14*.

Waste Management also has a contract, for additional fees, to haul waste from 13 playgrounds and parks, 70 municipal trash cans, and dumpsters at the Municipal Building and Municipal Garage. All of the above contracts expire on Dec. 31, 2010.

Innovations already implemented

The curbside collection program provides two different receptacles for each household in the borough: a wider container for mixed commingled materials (metal cans; plastic and glass containers) and a taller container for mixed paper (newspaper, magazines, junk mail, etc). These two broad categories of materials—and the wide range of materials acceptable in each— make participation in the recycling program quite simple for residents. A pick-up once every two weeks is the standard frequency in most municipalities.

Potential solutions

There is no single simple solution to the twin challenges of increasing diversion and containing costs, summarized above. One response to the above set of conditions might be to 'cut one's losses', i.e. to identify the routes of lowest participation and consolidate these, reducing the weekly hours in servicing curbside routes. However, given the low levels of employment throughout the municipality, we do not

recommend reducing total hours or wages for any borough staff. Rather, it is believed that the current hours of existing public works staff could be used more productively in other ways. Several are mentioned in this report: expanding the composting site; expanding the range and volume of materials accepted; managing the site more actively and effectively; affixing notices to inspire greater participation on recycling containers (for those who currently recycle) and door handles (for those who do not); and, following Tier 3 recommendation below, working in effective separation and distribution of commingled materials to targeted local enterprises; and servicing biweekly residential yard and food waste collections from selected routes as a pilot program.

Given the highly fluctuating and uncertain markets for recycling, the surest ways to reduce costs of the borough's overall waste management program is to reduce the costs of residential solid waste hauling.

Specific Findings and Recommendations

Tier 1 Recommendations

- *Notify Waste Management that 32 of the 242 borough buildings with 6 or more units (i.e. 13.2%) are vacant/abandoned*. This should reduce the total number of units in these buildings by the same percent (from 3,120 down to 2,708); and the current annual cost of waste hauling from these buildings by the same percent: $539,773 instead of $621, 858 (*an annual savings of $82,085*).

- *Consider notifying the City of Pittsburgh that 527 of the 5,196 buildings with 5 units or fewer (i.e. 10.1%) are vacant/abandoned*. This should reduce the total number of units in these buildings by the same percent (from 7,580 units down to 6,822 units); and the current annual cost of waste hauling from these units by the same percent: $59,676 instead of $66,306 (an annual savings of $6,631). However, as the current rate even with this reduced number of units is a significant bargain ($0.82 per unit per month); Wilkinsburg might leave well enough alone in this case.

- *Contact adjacent municipalities to discuss joint bids for solid waste hauling*. Penn Hills has asked for an informal extension of their current contract (for both recycling and waste hauling), but have not yet signed a new formal contract. They are very interested in cost containment. Chris Blackwell is the lead in their recycling program. He works out of the Penn Hills Planning Dept: 412-798-2128; cblackwell@pennhills.org. Other neighboring municipalities worth contacting along these lines include Edgewood, Swissvale, Braddock and Churchill. Several other groups of neighboring municipalities have forged joint hauling contracts, with significant savings, e.g. those in the South Hills COG (Upper St Clair, Mt. Lebanon, Peters Township, Baldwin, Whitehall, etc).

- *Publicize acceptance of all types of paper and printed material*. As noted above, Pittsburgh Recycling Services' price of $20/ton for mixed paper has held steady since January of this year. However, curbside hauling staff share the opinion that many residents do not realize that all types of paper are recyclable, and the survey found an estimated 60% of recycling households do not recycle paper. If it is assumed that PRS' rates hold steady, and the 904 Performance Grant base awards continue to give $5 per ton, then each additional ton of residential mixed paper provides the borough with $25 (**Table 12**).

Table 12: Increased Revenue from Increased Rates of Paper Recycling

Additional Percentage	Additional tons/year	Additional Income/year
20%	62	$ 1,562
40%	125	$ 3,123
60%	187	$ 4,685
80%	250	$ 6,246
100%	312	$ 7,808
140%	437	$ 10,931
160%	500	$ 12,492
180%	562	$ 14,054
200%	625	$ 15,615

- *Offer free cardboard hauling to selected businesses in the Borough*, i.e. ones that generate significant amounts and lie along one of the current residential curbside routes. While Pittsburgh Recycling Services' prices for loose cardboard have been more variable than for newsprint, they have consistently been the highest of any recyclable commodity: averaging over $71/ton since January, 2010. The 904 Performance Grants adds another $5/ton to this income. The great majority of uncaptured corrugated is likely to be generated by businesses rather than residences. Investing in a cardboard baler would further increase the value of this cardboard: see below.

Tier 2 Recommendations

- Conduct a small cost-benefit analysis to *examine the option of investing in a cardboard baler*. Last year, when Pittsburgh Recycling Services was paying $25 per ton of loose cardboard, they were paying between $50 and $60 per ton of *baled* cardboard, depending on the density of the bales. If this ratio is the case at present, this would mean a price of $140 to $160 per ton of baled cardboard. The borough may have adequate room (in the public works building or garage?) for a baler and for some storage. Storage, even for a few weeks, will provide further increase per ton prices: PRS favors larger volumes; the borough could time sales to short-term market prices.

- *Increase public education/awareness*. The borough needs to increase educating residents about the options that are available and the benefits of increasing the volumes of recyclables residents separate from their solid waste. Costs for these educational efforts vary from several thousand to tens of thousands of dollars. The offset is the potential for increased revenue from the marketing of the recyclables and increased 904 Performance Grants. Again, the residential material with the greatest per ton benefit and the greatest potential from households who already recycle is mixed paper, including junk mail.

- *Increase enforcement efforts*. It appears that roughly two-thirds of borough households do not recycle regularly. While a portion of these may well be inspired to do so by an effective awareness campaign, others may require at least the threat of fines. Significant increases in participation may well require this. While the difficulties associated with enforcing the borough's recycling ordinances is recognized, the potential benefits of higher recycling rates and the collection of fines could offset the investment in staffing and administration costs.

- *Provide incentives for routes with the greatest improvement in participation (via tonnage)*. While residents do not think of their recycling route as a meaningful 'community', each route is, after all, comprised of all of the neighbors on one's street, and most of those on nearby streets. It would take less than half an hour per week to enter daily residential tonnages from PRS invoices

into an Excel spreadsheet. There were two confusions in the invoices that would need to be clarified for this to work: on some weekdays there was more than one tonnage entry; and on others there were none. This would allow monitoring the progress of each route and the impacts of any outreach intervention; and clarify the different work levels required to service each route. Priority siting of urban greening efforts would be a sensible and attractive incentive for residents.

- *Utilize public works staff in these outreach efforts.* Half of the ten routes generate 'light' or 'very light' volumes, according to veteran public works staff. While it was more difficult than anticipated to match tonnage invoices to daily routes, it is likely that there is at least a three-fold difference in the average amounts collected on the lightest and heaviest routes. As the lighter routes should require significantly less time to service, and include precisely the neighborhoods that require the most encouragement to participate, it makes sense to assign outreach tasks to recycling crews along these routes. For instance, notices can be affixed to inspire greater participation on recycling containers for those who currently recycle and on door handles for those who do not.

Tier 3 Recommendations

- Develop contacts and strategies to *help develop a recycling processor in the borough, particularly for glass, metal and/or plastic.* Four factors suggest significant promise in this undertaking. First, these materials ('commingled') continue to experience the worst returns on investment of all curbside recyclables. If the borough is going to continue to collect them as part of the curbside service (and fulfill Act 101 requirements), the borough might as well build a better market for them. Second, siting a glass, metal and/or plastic processor in the borough would add much needed jobs. As surrounding municipalities are likely to experience the same negative ROIs for these materials, it is likely that the borough could receive these from them at very modest rates. Third, the current two-bin system accommodates this split perfectly, especially if all three commingled materials could be processed at the same site. Fourth, these three materials are the basic inputs in building greenhouses, hoop-houses and cold-frames: perfect complements to compostables and compost in the green revitalization of vacant lots throughout the borough and county. There are real synergies here, in terms of job training, youth engagement, job creation, quality of life and increased property values. As with the curbside food and yard waste pilot described under Composting Tier 3, the much more direct and local benefits of this recycling may well attract many households who do not currently recycle to do so, and thereby increase income from sales of all recyclables and Performance grants. Investigate funding opportunities and write applications to gain support for this enterprise.

- *Expand the drop-off program to allow for the diversion of additional materials* from the waste stream (i.e. e-waste, HHW, usable building materials, etc.). Again costs for these services vary widely. However, 902 Program grant funds and the potential for solid waste disposal costs saving could be utilized to offset some of these costs.

- *Automated collection system*. The borough should consider converting to a multi-bin toter system utilizing semi or fully automated collection vehicles. Capital costs would be significant starting, with 150,000 to 200,000 for per collection vehicle and $40 to $70 per unit for toters. This system has the potential to increase collection efficiency while reducing labor costs and the potential for worker related injury/workman's compensation claims. The borough could apply for DEP 902 grant funds to cover capital costs for equipment and could see reduced labor and workman's comp fees as a long term ROI.

Composting Program

Background

The borough has utilized a set of abandoned tennis courts in Hunter Park to develop an operation for the composting of leaf and yard waste. Every autumn for the past nine years, they have picked up leaves from residences, with a truck equipped with a power vacuum. Most municipal leaf/yard waste operations do not turn their piles as often as is required for efficient composting.

The situation of compostable waste is in some ways the converse of the situation of traditional recyclable waste. While the infrastructure to collect, transport, process and market traditional recyclables is well established, our composting infrastructure is in the very early stages of development. While traditional recyclable markets are global; the most promising markets for compost are quite local.

Compost is an especially valuable resource for municipalities like Wilkinsburg. If it is produced and utilized effectively, it addresses two chronic challenges of the Borough:

- the extensive area in vacant lots (and in buildings that should be razed); and
- the high levels of un- and under-employment.

Scope and Approach

Sustainable Solutions team staff had conversations and interviews with the Borough Manager, Department Directors and staff regarding current composting operations: Marla Marcinko, Borough Manager; Melanie Hall, Public Works Operations Manager; Lawrence Focareta, acting Director of Public Works; Roy Clark, Public Works driver; and Robert Noe, Public Works heavy equipment operator. PRC staff obtained and reviewed the following documents for this part of the Assessment:

- Abandoned Property Inventory (Excel)
- Borough-Owned Vacant Lots Assessment (Word)

Sustainable Solutions team staff visited the composting operation on two occasions. On the second visit, we measured the area, perimeters and compost pile dimensions of the current site; as well as area and perimeters for possible expansion. The 2009 autumn leaf curbside collection dates and estimated volumes were obtained from Mr. Noe, who managed these collections and deliveries, and discussed with him, Mr. Clark and Mr. Focareta topics of other sources of material on site; ongoing site management; and the distribution and uses of finished compost.

Existing Conditions

The current composting site lies within a chain link fence and on top of a cement base that was the former site of a tennis court (in Hunter Park, adjacent to a baseball field). This fenced area is 104 feet across and 120 feet long (12,480 square feet or about 30% of an acre). The site visit showed three long composting piles (windrows) that were reported to have just been turned and (re-) formed.

Volume of Materials on Site.

The site visit showed three composting piles with the following average dimensions: 75 feet long, 15 feet wide and about 10.5 feet high. This gives the total current volume of compostables on site as 1,313 cubic yards.

Sources of Feedstock.

"Feedstock" refers to all compostable materials that are processed in a composting operation. Currently, the great majority of the feedstock comes from the autumn curbside leaf collections. Bob Nelly did all of the leaf collection last year (2009): a total of 20 mornings, the first on Nov.3, the last on Dec. 9. Based on measurements of the truck bed, the truck has a capacity of 14 cubic yards. It was reported that the truck was filled up each time. If 2009 was a typical year, some 280 yards of curbside leaves are deposited on the site each year. The only other source of feedstock has been tree trimmings from contractors with Duquesne Light. There is no record kept of the dates, volumes or composition of these deliveries. However, in the late autumn of 2009, the borough decided that the site could no longer accept any of this supplemental material: the site was considered to be at maximum capacity.

Distribution and Use.

The borough has not kept records of either its own use of finished compost or the use of the material by borough residents. Public works staff agreed that all but a very small quantity of outgoing compost has been used by the borough itself, to improve soils and in plantings in its parks and playgrounds. This past spring, an estimated 12 truckloads (24 to 30 cubic yards) of compost was applied in two borough parks. However, it was reported that the borough does not use any of this compost some years. As for residents' coming to get some compost, it was reported that there is very infrequent and modest resident usage.

Current Management.

In an efficient composing operation, the piles are managed like an 'assembly line,' that is, a pile at one end of the site contains the material with the longest time composting; a pile at the opposite end contains material of most recent delivery; and intermediate piles contain materials of intermediate composting time. Two rough-and-ready observations suggested that this has not been standard practice. There appeared to be roughly the same portion of larger, relatively intact, woody chunks in each of the three windrows. When the team inserted their hand up to the elbow at three points in each pile, they appeared to have roughly the same internal temperatures. Discussions suggest there has been no systematic placement of new material; inadequate frequency of pile turning; and no 'assembly line' movement of materials through to a final, 'curing' pile.

In an efficient composting operation, it takes about five months to produce finished compost (about 3 months in active turning, once every two weeks; and 2 months in a curing pile). The exception here is larger pieces of wood. There are two options here. The operation can purchase (rent or borrow) a grinder and grind these pieces; or it can purchase (rent or borrow) a screen, and screen these out, incorporating some in a new pile (which helps with inoculation of decomposing microbes) and distributing or selling some as mulch. While each current pile had a significant volume of relatively intact wood chips, evidence suggests that each contains material that is several years old.

Over the course of composting, the volume of material typically reduces by roughly 50%. Recall that there is currently roughly 1300 cubic yards of material on site. Even if one assumes minimal turning of piles, and a volume reduction of only 30%, this would mean about 200 yards of leaves per year on the site. Even if one assumes a very generous estimate of incoming woody material per year (100 yards), this would combine for 266 incoming yards of material, after the modest volume reduction rate. With these assumptions, *it would take roughly five years to accumulate the material on the site*.

In an efficient operation, the volume of finished material withdrawn is roughly equal to the volume of material accepted, less volume reduction. Taking estimates for the past year as a sample, there has been some 266 yards incoming (after volume reduction), and perhaps 30 yards withdrawn.

Room for Expanded Site. The borough owns land immediately adjacent to the current site: roughly 230 feet behind the site, moving slightly uphill; and at least 30 feet on either side. Both areas are currently in shrub, with a small number of trees, none of them very large. Expanding the site uphill makes especially good sense: windrows should ideally be oriented parallel to a gentle slope (between 2 and 5 degrees). Expanding the current site 210 feet in length and 30 feet in width would expand the total area roughly three and a half times, to just over 1 acre. This is certainly more than the borough needs to accommodate residential curbside leaves and occasional tree-trimmings from a few contractors; and to allow adequate movement of the front-end loader to effectively turn piles. However, it would provide area for a curing pile, and for allow expansion of feedstock into several promising areas: leaf/yard waste and food-waste.

Innovations already implemented

By developing this abandoned tennis court into a composting operation, and servicing residential autumn curbside leaves, the borough has fulfilled Act 101 mandates and shown steps in the direction of increased sustainability.

Potential solutions/paths to take

It would not take more than one morning every two weeks of a single staff person to manage the composting site for more efficient production of quality compost. Beyond this, there are some significant benefits in expanding the site and its capacity; the range and sources of feedstock accepted; and the distribution and uses of finished compost.
Reasons why site has reached capacity and the borough has been forced to turn away feedstock:

- Inadequate usage of compost
- Inadequate management of piles
- Possible need for a grinder (or screen)

Specific Findings and Recommendations

Tier 1 Recommendations

- *Contact and build active relationships with urban greening organizations* active in Allegheny County: Grow Pittsburgh, G-Tech Strategies the Western Pennsylvania Conservancy; Friends of the Pittsburgh Urban Forest; Allegheny County Cooperative Extension and the Penn State Center. Express to them the Borough's active interest in helping them green vacant lots and plant and care for trees by a) assisting them in identifying priority lots and tree sites; b) providing contact information for neighborhood and civic organizations likely to be interested in participating; and c) informing them of the availability of compost (and mulch?) for these projects. If the material is of adequate quality (i.e. stable; of relatively uniform size; and free of contaminants like gravel, plastic and glass) they would certainly be willing to pay the borough for it. Even if the borough only sold one half of its compost (at the expanded capacity, including commercial and residential food waste) at only $12 per yard—which is likely to be considered quite reasonable—the Borough would generate over $11,000 per year.

- To produce quality compost with current feedstock, the borough needs *at a minimum*
    - a dial thermometer with a 3-foot stem, a pointed tip for easy penetration through denser material, and a range of 0-200^{o}.
    - Windrow management in the 'assembly line' manner described above.
    - Turning of each windrow at least once every two weeks.
    - Monitoring of windrow temperatures and moisture (at the same time).

- Accurate and diligent record keeping of each feedstock delivery (source, composition, volume, date); and of windrow data (weeks of composting; temperature and moisture levels).

- *Contact Public Works Departments in neighboring municipalities that manage leaf/yard waste composting operations*. Ask each if they currently have either a screen. If any have one, ask if they would be willing to either lend or rent it to the borough for a couple of days. With a screen, public works staff could separate out larger woody pieces and then distribute, sell or use both finished compost and wood chip mulch. An alternative for some or all of the woody pieces is to incorporate them into newly formed piles to inoculate the piles with decomposing microbes, and to give the pieces another few months to decompose further.

Tier 2 Recommendations

- *Increase publicity to residents to come by and obtain finished compost free of charge*. This would have the dual benefit of allowing the borough to accept and process additional organic material, thereby diverting material from the solid waste stream, and providing a valuable soil amendment to residents to improve their properties, and property values.

- *Expand the site onto adjacent borough-owned property*. Even without expanding the sources and volumes of incoming materials, greater area is required to maneuver delivery vehicles and pile management equipment. Because there are significant benefits in accepting greater volumes of feedstock, and producing greater volumes of finished compost, it makes sense that any expansion be adequate to accommodate these greater volumes. The borough can use the area, and perimeter and material cost estimates in **Table 13** to estimate total costs of this expansion. **Table 13** provides the area and perimeter of the current composting site and of an expanded site, building out from the current one onto adjacent borough-owned land. It also offers estimated material costs (in cement and chain-link fence) for this expansion.

Table 13: Estimated Costs of Expanding Current Composting Site. Estimated costs include materials and labor.

	length	width	area (sq ft)	perimeter (ft)
Current Site	120	104	12480	448
Expanded Site	331	134	44354	930
		New amount of material needed	31874	482
		Est. cost per (sq) ft	$5.00	$27.02
		Est. cost	$159,370	$13,022
		Est. Total Cost	$172,392	

- *Apply for DEP permit WMGRO25*, to accept and process a wide range of compostable feedstock, including food-waste.

- *Develop contacts with local haulers and non-profits to build hauling routes from food-waste generators within five miles* of the site to the site. While Wilkinsburg itself does not currently have a large number of these businesses and institutions (restaurants, supermarkets, cafeterias), it is situated in very close proximity several areas of high concentration: e.g. Squirrel Hill, Edgewood Town Center, and Monroeville. The borough can expect to earn about $6/yard for *tipping fees*. At three hauling routes mornings per week and a 20-yard capacity truck, this would

gross about $19,000 per year. If the borough also *serviced the hauling routes*, it could expect to earn another $8/yard, for an *additional gross of $25,000 per year*.

Tier 3 Recommendations

- *Select one or two neighborhoods for a pilot program in year-round residential yard and food-waste curbside pickup*, after having gained DEP permit WMGRO25. The borough might consider starting with two routes: one with typically high participation (i.e.Tues. 502, Fri 502 or Fri 501) and one with typically low participation (i.e. Mon 501, Thur 501, Tues 501 or Wed 502). 5-gallon lidded containers would be distributed to households that express interest. These would be emptied and collected once every two weeks as part of current curbside recycling. Adding this service to one of the low routes would still keep staff hours well within the allocated six hours per route. Adding to one of the high routes would require additional staff time (but could be subtracted from another low route). Mowed grass, smaller twig and branch clippings, all food waste, even soiled paper towels could be included. If public communication stressed its connection to urban greening efforts in the Borough, this would increase the appeal of participation. This appeal of the pilot may well attract many households who do not currently recycle anything, and thereby increase income from sales of other recyclables and Performance grants. The borough may want to contact State College, PA, who has just begun a curbside food-waste program. The borough should explore and pursue opportunities for grants to support this pilot: it would be the first of its kind in Southwestern Pennsylvania.

- *Invest in additional equipment*. As the borough increases the volume of material collected, accepted and processed, and monitors the costs and benefits of expanded composting, it may consider investing in additional equipment. A truck with a special compartment for compostables; a grinder; a chipper; a screen would each improve efficiency of the operations. The borough should contact neighboring municipalities to explore sharing of these pieces (all but the truck may only be used a few times each year). The borough should also explore and pursue opportunities for grants and loans to purchase these items.

Solid Waste Minimization and Recycling

With an accurate picture of current operations and possible scenarios the borough can determine the optimal sequence for increasing recycling/waste minimization efforts at the municipal building and could potentially utilize this information to implement recycling/waste minimization efforts at other borough owned/operated facilities. Benefits include streamlining and enhancing the current recycling/waste minimization efforts (and implementing new strategies), instituting waste minimization techniques that maximize diversion while minimizing economic impacts, strengthening internal and external methods of communication, obtaining a higher level of environmental compliance and creating a higher level of understanding and support from staff and visitors. Finally, this effort fits with Wilkinsburg's Green Initiatives as outlined in the Wilkinsburg Comprehensive Plan and Business District Revitalization Plan.

Scope and Approach

The following tasks were completed:

- Analyzed several months' waste and/or recycling invoices to benchmark current volumes and weights of solid waste and recycled materials generated, collected and hauled; and costs for hauling/tipping (**Appendix G**).
- Conducted a waste sort at the Municipal Building to determine the current composition of solid waste (recyclable, compostable and true waste), by weight and volume.

The following will be provided in this report:

- Contacts, product lists and prices of indoor recycling containers and liner bags.
- A plan to help the borough in deciding on container number, size, placement and recycling operations
- Samples of signage and training/communication for both staff and visitors

The following task was not completed:

- Provided contacts, service lists and fee schedules of recycling haulers/processors. Upon further understanding of the borough building's location and operation this task was deemed unnecessary given the proximity to a borough maintained drop off for commingled, cardboard and mixed paper.

Summary of Existing Conditions

In terms of traditional recyclables, the municipal building is currently collecting paper building-wide and cardboard, metal, glass and plastic in a completely volunteer program (**Appendix G**). Paper is collected in containers from the curbside recycling program for placement into an Abitibi Paper Retriever dumpster while other materials are collected by various individuals in different containers that are then picked-up and/or delivered to the borough drop off point located across the street. Participation and cohesion in the program are low, with office/ mixed paper being highest. Cleaning services for the municipal building are contracted through Achieva. They are responsible for recyclable paper getting to the Abitibi dumpster. Because of its nonprofit status, the library is able to receive funds generated from the collection of paper and paid by the Paper Retriever program. The building's trash collection is provided for under the borough wide trash service contracted with Waste Management. The borough is such a small part of the contract that any reduction in trash will not reduce the cost of the contract.

Beyond the traditional recyclables of mixed paper (including hard/soft cover books), cardboard, comingled recyclables (glass, plastic, metal), the borough also generates e-waste (computers, printers, keyboards, etc.), Printer/Toner cartridges, Media (DVDs / VHS Tapes), Batteries, Florescent tubes/CFLs

and miscellaneous evidence from criminal investigations. Of these, only printer ink cartridges are being recycled via Empties4Cash, a mail in program that will pay for certain brands and types of ink cartridges. The program is promoted via a building bulletin board and newsletter.

Although the implementation of a recycling program at the borough building may be relatively inexpensive in terms of infrastructure (container, signage, etc), training of staff and coordination with existing cleaning crew, there will still be a cost incurred which may be hard to justify given larger budget concerns and environmental and economic sustainability goals. Fractures in the borough structure may also inhibit any volunteer driven recycling program depending on the willingness of the administrative, fire, police and library staff to coordinate their efforts. Currently the fire department areas are not serviced under the current cleaning contract. Any expansion of recycling into that department will be an increase in cleaning contract and/or will require increased participation by fire department personnel.

Review of Positive Advances

The existence of an Abitibi dumpster in the borough building's parking lot indicates a desire to both increase paper recycling rates and produce monetary benefits which will help justify expenses. While contamination is an ongoing issue and the amount paid for materials generated are low, the Abitibi dumpster still remains a potential for engaging the public, other businesses located close to the borough building, conserving resources and generating a small amount of income for the library. The ink cartridge recycling program is another such program which generates a small amount of money for the library and keeps those materials out of a landfill. The library is the coordinator of the five year old ink cartridge recycling program.

Review of Potential Solutions

For the microcosm that is the borough building, there is potential to increase, albeit in a small way, the revenue from the few recycling initiatives that generate revenue as well as increase the environmental benefit of diverting materials from the landfill. Sustainable Solutions team's initial waste sort indicates that about 50% of the borough building's waste is recyclable (commingled/ paper/ cardboard-OCC) by weight and about 46% by volume. Currently the borough is only capturing about half of the paper that it generates and by taking some simple steps they could capture and divert more material within the structure of the existing program. Because of the current terms of the waste disposal contract, there will be no savings in hauling costs if the building reduces the amount of trash going into the onsite dumpsters. Increases in diversion could possibly increase the amount of money being paid to the borough under its contract with Pittsburgh Recycling Services or from the Abitibi Paper Retriever program. Given the building's proximity to a borough maintained recycling drop off, hauling would be of no cost to the administrative offices, but would still require an individual or individuals to transport that materials to the containers across the street. Based on the amount of revenue generated from the Abitibi Paper Retriever program compared to the amount from Pittsburgh Recycling Services for material generated/ dropped off at borough recycling drop offs, it may make sense to discontinue the Abitibi program in favor of promoting and servicing the borough drop location closest to the borough building.

Of course any reduction in waste will have environmental benefits. Using the EPA's Waste Reduction Model (WARM) we can measure the benefits of implementing recycling of organics, paper, commingled materials and cardboard. In terms of carbon dioxide equivalents and energy saved, the benefits would be about the same as taking 2 to 4 passenger cars off the road per year (10 to 20 metric tons of carbon dioxide equivalent) and a savings of 28 to 56 Million BTUs per year (5-10 barrels of oil or 226-452 gallons of gasoline).

Specific Findings and Recommendations

Tier 1 Recommendations

- Strengthen current paper recycling efforts by:
  - Increasing education. Reminders on how to participate and how participation in the existing paper program helps the Borough and environment. Include information in employee handbooks (if used), official memos, and/or employee newsletters. This would require an input of staff time of 1-2 hours per month.
  - Pairing all trash receptacles in public areas and centralized locations with recycling containers. Give visitors and staff a chance to make the correct decision. In general people will discard materials in whichever container is closest to them. By pairing recycling with trash containers, the borough would increase the possibility that individuals will make the correct choice. This would require an input of staff time to make sure that all trash containers have a recycling container.
  - Using only paper recycling containers for collecting paper. In some cases, the containers that look like recycling containers ("Wilkinsburg Cares" on them) used for paper recycling in one part of building are used for trash in other parts of the building. If the borough does not have enough of the containers, similar to the size and shape of the existing containers used at the borough building, new ones can be purchased for about $9.35 per container through the PA Costars Program.
  - Being consistent with the use of different colored bags for paper recycling (white), general trash (black) and/or eliminate liners for paper recycling bins altogether. Cleaning crews currently use different color bags for recycling and trash, but are not always consistent. Maintaining this visual cue will help both visitors and staff understand which materials go where. Different colored bags have the added benefit of helping the cleaning staff keep track of what materials go into which dumpster. (no cost)
  - Developing consistent signage. Currently plastic liners obscure signage on sides of recycling containers which is another good reason to do away with plastic liners in paper recycling containers. There are many websites that have signage that can be printed cheaply and should be hung above the location of the container, not on the side of existing containers, for quicker identification. See **Appendix G** for websites that have ideas and downloadable signage. Staff time would be required in downloading, customizing, printing and placing recycling signage.

Table 14: Estimates for Increased Paper Recycling

	Quantity Needed			Total Cost	
Item	Lower	Upper	Cost per unit	Lower	Upper
14.5" x 14.5" x 18"H Containers	0	15	$ 9.35	$ -	$ 140.25
Signage	30	40	$ 0.05	$ 1.50	$ 2.00
				$ 1.50	$ 142.25

Potential yearly revenue from increased recycling from Abitibi could be almost doubled if 100% of the borough's paper is diverted, but the real increase in revenue would come from sending all paper to

Pittsburgh Recycling Services under the current payment rate of $20 per ton. See breakout below of generation amounts and payments of paper recycled via the Abitibi compared with what Pittsburgh Recycling would have paid and will continue to pay given the current demand for recycled paper. A modest investment in expanded recycling would pay for itself in less that half a year in terms of infrastructure (signs and recycling containers). Staff time could be paid for shortly thereafter.

Table 15: Projection of Paper Recycling and Revenue Differences Between Using Abitibi and Pittsburgh Recycling Services

	Tons of Paper		Abitibi		Pittsburgh Recycling	
Month	Actual Collected	If 100% diversion from building	Actual Paid	Total Payment w/ 100% Diversion	Total payment if sent to PRS	Total Payment w/ 100% Diversion
January-10	0.59	1.29	$ 2.95	$ 6.45	$ 11.80	$ 25.80
February-10	0.31	1.01	$ 1.55	$ 5.05	$ 6.20	$ 20.20
March-10	1.19	1.89	$ 5.95	$ 9.45	$ 23.80	$ 37.80
April-10	0.96	1.66	$ 4.80	$ 8.30	$ 19.20	$ 33.20
May-10	0.89	1.59	$ 4.45	$ 7.95	$ 17.80	$ 31.80
June-10	1.59	2.29	$ 7.95	$ 11.45	$ 31.80	$ 45.80
July-10	0	0.7	$ -	$ 3.50	$ -	$ 14.00
Sub totals	5.53	10.43	$ 27.65	$ 52.15	$ 110.60	$ 208.60
Projected Collection Amounts and Payments						
August-10	0.79	1.49	$ 3.95	$ 7.45	$ 15.80	$ 29.80
September-10	0.79	1.49	$ 3.95	$ 7.45	$ 15.80	$ 29.80
October-10	0.79	1.49	$ 3.95	$ 7.45	$ 15.80	$ 29.80
November-10	0.79	1.49	$ 3.95	$ 7.45	$ 15.80	$ 29.80
December-10	0.79	1.49	$ 3.95	$ 7.45	$ 15.80	$ 29.80
Sub totals	3.95	7.45	$ 19.75	$ 37.25	$ 79.00	$ 149.00
Totals	9.48	17.88	$ 47.40	$ 89.40	$ 189.60	$ 357.60

- Reconsider participation in paper recycling through the Abitibi Recycling Program. The amount paid by Pittsburgh Recycling Services for mixed paper (categorized as newsprint) collected by the borough seems to have been higher, on average, than what Abitibi has been willing to pay especially in the last seven months. The library gets $5 per ton of materials recycled through the Abitibi program while, since January, Pittsburgh Recycling Services has been paying about $20 per ton. Since the beginning of the year, the borough has had the ability to make 4 times the amount paid for recyclable paper deposited in the Abitibi dumpster.

- Re-evaluate the need to empty trash and recycling cans every night. If a can is not overflowing with trash or recyclables, cleaning crews can save time, money and resources by not pulling a partially full or nearly empty bag out of a container.

- Increase communication/feedback with current cleaning crew and staff- ongoing communication about changes in current recycling and updates on successes will keep people engage with the recycling effort.

- Expand current ink cartridge recycling program to include toner cartridges by switching to another vendor. This change would require little effort, could be implemented immediately and could increase revenue generated from the program over a relatively short period of time. Promote the program to borough building and community as a whole using newsletter, bulletin board and website. Include a drop off container in lobby of Borough Building by re-tasking an existing container and print signage indicating what is being accepted and who to contact regarding questions. (No Cost)

Tier 2 Recommendations

- Include Bottles and Cans (commingled) in building wide recycling program by:
  - Purchasing containers for a commingled recycling program. (See **Figure G2 in Appendix G**) The borough's drop off box is "dual stream" and therefore requires any recycling program to keep materials separate. If comingled materials are to be added to the collection, then the Borough will need more containers.
  - Choose one centralized station in each of the following 5 areas: Police break room (basement), administration offices (3rd Floor), lobby (1st Floor), outside council chambers (2nd Floor), fire department kitchen. Since bottles and cans are not generated as widely (in as many places) as paper, commingled collection containers can be limited to a few select stations that will serve the entire building.
  - Invest in permanent signs- Permanent signs provided a higher level of legitimacy to the program.
  - Develop a building operations manual for the recycling program. Assemble all the information about the building recycling program (guidelines, instructions, contracts, etc.) in one place so that it can be used as reference when questions arise and as a resource when staff changes occur. Cost will vary based on the complexity and size of the manual, but allow for 20 to 40 staff hours for gathering the information and assembling the manual.

Table 16: Cost Estimates for Increased Commingled Recycling

	Quantity Needed			Total Cost	
Item	Lower	Upper	Cost per unit	Lower	Upper
Slim Container Station	3	15	$ 59.00	$ 177.00	$ 885.00
Lids	3	15	$ 20.00	$ 60.00	$ 300.00
Permanent Signage	15	15	$ 5.95	$ 89.25	$ 89.25
14.5" x 14.5" x 18"H Containers	4	0	$ 9.35	$ 37.40	$ -
				$ 363.65	$ 1,274.25

Since some of the investment in a commingled system will be paid for by intangible public relations and education, having at least two well promoted public recycling stations (commingled, paper and trash containers) is a good idea. Additional containers can be placed in select areas behind the scenes for collecting the few bottles and cans that are produced during administration, police, library and fire

department staff meals. In **Table 16**, two scenarios are pictured. One in which only 2 of the 5 comingled/paper recycling stations are the slim style container and the other in which they all are the slim style container. There seems to be no value in the commingled material, through Pittsburgh Recycling Services, which has been costing the borough $20-$25 per ton to since the beginning of the year. The extra cost of recycling these materials are paid for by the value of the paper recycling when using the current rates from Pittsburgh Recycling Service are used. **Table 17** shows the potential yearly income from a system that includes commingled materials.

Given the relatively low amounts of revenue generated from the recyclable materials diverted from the borough building, the increase cost of containers (compared to a paper only recycling program) and the potential increase in staff time to organize and educate, the pay back on a complete recycling system like this would be longer. Implementing the minimum program using existing containers and few new containers would have a pay back period of a year to a year and a half. As mentioned before there will be intangible benefits from the public seeing recycling stations in the borough building through the course of daily business, visiting the library or attending council meetings. Environmental benefits include the reduction of green houses gases, conservation of energy and resources.

Table 17: Projection of Cost Associated with Implementation of Commingled Recycling Program Including Paper Recycling

	Tons of material		Value of Materials		
Month	Paper	Commingled	Paper	Commingled	Net Cost / Revenue
January-10	1.29	0.02	$ 25.80	$ (0.50)	$ 25.30
February-10	1.01	0.02	$ 20.20	$ (0.50)	$ 19.70
March-10	1.89	0.02	$ 37.80	$ (0.50)	$ 37.30
April-10	1.66	0.02	$ 33.20	$ (0.50)	$ 32.70
May-10	1.59	0.02	$ 31.80	$ (0.50)	$ 31.30
June-10	2.29	0.02	$ 45.80	$ (0.40)	$ 45.40
July-10	0.7	0.02	$ 14.00	$ (0.40)	$ 13.60
Sub totals	10.43	0.14	$ 208.60	$ (3.30)	$ 205.30
Projected Collection Amounts and Payments					
August-10	1.49	0.02	$ 29.80	$ (0.40)	$ 29.40
September-10	1.49	0.02	$ 29.80	$ (0.40)	$ 29.40
October-10	1.49	0.02	$ 29.80	$ (0.40)	$ 29.40
November-10	1.49	0.02	$ 29.80	$ (0.40)	$ 29.40
December-10	1.49	0.02	$ 29.80	$ (0.40)	$ 29.40
Sub totals	7.45	0.1	$ 149.00	$ (2.00)	$ 147.00
Totals	17.88	0.24	$ 357.60	$ (5.30)	$ 352.30

- Install a permanent drop-off station in the lobby of the municipal building for cell phones, printer/toner cartridges and alkaline batteries that is available to the general public on a year round basis. The initial cost of the collection station ranges from $600 to $2,000 depending on style and manufacturer. While the initial cost will more than likely have to be born by the borough, ongoing costs are virtually non-existent as the revenue generated by the cell phones and printer/toner cartridges will cover the disposal costs of the alkaline batteries. It will require at most an hour or two of staff time per month to empty the container and ship the materials. This modest investment provides a means for residents and employees to keep these potentially harmful products out of the landfill.

Tier 3 Recommendations

- Hold regularly scheduled one day collection events for hard to recycle/dispose of materials (paints, household chemical, tires, Freon appliances, pharmaceuticals, e-waste, etc.). Again costs will vary based on the items collected and the frequency of the events but plan to budget $10k to $20k annually. Some of this money is recoverable via the DEP's HHW collection reimbursement program, obtaining local business sponsorships and by charging a small fee to participants for dropping off materials. The benefits include increased diversion and proper disposal of potentially hazardous materials, decrease in illegal dumping and an overall improvement in the community's environmental health.
- Implement an organics recycling program. Organics make up 23% of the borough building's waste stream by volume and 34% by weight. The landfilling of organics both removes valuable nutrients from the natural cycle, it also creates potent green house gasses in the form of methane when it breaks down. The Borough building's parking lot is also on the backside of a restaurant which would allow for easy access to a cooperative organics hauling agreement. Sharing the cost would reduce the overall financial burden for the two buildings, but would still be an added cost to both. Compostable collection containers could be added to recycling stations where organic/ non-recyclable waste is generated and emptied on a regular basis.

Table 18: Cost Estimates for Food Waste/ Organics Recycling Program

	Quantity Needed			Total Cost	
Item	Lower	Upper	Cost per unit	Lower	Upper
Slim Container Station	2	5	$ 59.00	$ 118.00	$ 295.00
Lids	2	5	$ 20.00	$ 40.00	$ 100.00
Compost Liners for one year	243	1,825	$ 0.90	$ 219.00	$ 1,642.50
Permanent Signage	5	5	$ 5.95	$ 29.75	$ 29.75
Educational Signage	1	2	$ 200.00	$ 200.00	$ 400.00
Compost Caddies	3	0	$ 24.95	$ 74.85	$ -
Hualing per year	52	104	$ 40.00	$ 2,080.00	$ 4,160.00
				$ 2,761.60	$ 6,627.25

The above tables show two scenarios. One includes the purchase of two 23 gallon slim containers. One for the fire department's kitchen and one for the 1st floor lobby with enough compostable liners bags to empty the containers once every three days. The one in the lobby would be for educational purposes with the understanding that the potential for contamination (rejection by food waste hauler) being high. An educational piece explaining the benefits or diverting food waste and organics would be produced to go with the now four bin system (paper, commingled, organics and trash). The compost caddies could be positioned in places, such as the police department's break room, to collect food waste and other organics that could be diverted. Organics would be picked up once per week at a rate of $40 per pull. The higher

estimate includes more 23 gallon slim containers, emptying the bags everyday at most, and two pick up a week.

Estimates do not include additional staff time for training, addition to overall education effort and doesn't take into consideration that the restaurant behind the borough building might be interested in a food waste hauling partnership which could split the hauling costs in half. Benefits of food waste recycling include conservation of resources and the elimination of potent green house gases created in landfill conditions by materials diverted.

- Implement a comprehensive e-waste recycling program for the building's operations. There is currently a fair amount of computers, monitors and peripherals sitting around the building. Most of these items will require a fee to dispose of correctly and securely. Fluorescent tubes, which container mercury, corded equipment (including tv's radios, coffee makers) should also be included in any e-waste recycling program. CPU's and laptops can be disposed of for free in some programs, but destruction of the data will cost about $5 per hard drive. Cathode ray tube (CRT's) monitors will cost around $10-$15 dollars (15"-19") and fluorescent tubes $1 (under 4'). Environmental and social benefits of disposing of e-waste correctly and responsible include: the conservation of various energy, ferrous and non-ferrous metals, reduction of toxics metals leaching into ground water and streams, aiding low income families and individuals through reuse of repairable computer equipment, saving space in landfill and securing individual residents and borough employee's data through destruction of old hard and storage devices.

Environmentally Preferable Procurement (EPP) Program

Although different entities such as government, non-profit, or industry may define environmentally preferable purchasing (EPP) in different ways, it generally means purchasing "products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose." This comparison applies to raw materials, manufacturing, packaging, distribution, use, reuse, operations, maintenance, and disposal.

The benefits of this portion of the assessment would be that it would allow the borough to evaluate the feasibility of adopting an environmentally preferable purchasing policy. The information provided in this report will provide product and costs comparisons that would enable the borough to set price points for the purchase of environmentally preferable products including office and cleaning supplies. The report will also provide product substitutions for regularly purchased items, vendors for items and cost comparisons. Additional benefits often associated with implementing “green purchasing” are:

- Improved ability to meet environmental goals
- Potential to trim operating costs
- Improved worker safety and health
- Reduced liabilities
- Reduced disposal costs by generating less waste
- Reduced material costs for manufacturers
- Reduced repair and replacement costs when using more durable and repairable equipment
- Increasing operating efficiency
- Serving staff and residents who have a stated interest in "environmentally friendly" products and practices
- Distinguishing a business or institution (Borough/ Township) from neighboring municipalities

Scope and Approach

The following tasks were completed in the Phase II Environmentally Preferable Procurement Program:

- Contact purchasing/finance staff; ask for relevant lists (below); and set up times to interview them.
- Review current procurement system and usage information.
- Estimate transition costs and summarize transition environmental benefits.

Summary of Existing Conditions

Currently the Wilkinsburg has no policy regarding Environmentally Preferable Purchasing, although interest and movement towards sustainability suggest both the need and a desire for greener purchasing practices. A large amount of the cleaning and all of the bathroom paper products are provided as needed through the cleaning company, Achieva. Since the costs of those materials are included in the contract it is hard to say what the cost different would be of substituting these materials with more environmentally preferable ones. An individual dedicated to EPP issues is one of the most critical needs of any EPP program. However, inadequate funding often times prevents businesses and institutions from hiring a dedicated EPP staff person to perform product-specific research, monitor vendor compliance with contract specifications, track the impacts of EPP activities, and conduct outreach and education efforts such as purchaser training and pilot programs. Understanding and education about the performance of recycled content products may also be a barrier to implementation of EPP policy.

Review of Positive Advances

Although there is no specific language requiring that the cleaning company, Achieva, adhere to any EPP policy, there are still a few products used at the facility that would meet and or exceed any EPP policy the borough would enact. Currently the company uses some Green Seal certified cleaners, a few paper products with EPA recommended ranges of post consumer content fiber, and some trash liners with high enough levels of post consumer plastic to qualify for credits under the Leadership in Energy and Environmental Design (LEED) Existing Building Operations and Management certification.

Review of Potential Solutions

At the very least the borough should think about purchases from the EPP point of view. Although the cost of many environmentally preferable products may be out of the range of the current budget, some may not. Given the borough's flexibility in purchasing (no contract with one company for office products) it would be worthwhile to check for greener alternatives that are cost competitive with current products used. Any program success should be promoted to the general public as well as other interested parties. Wilkinsburg can build on a positive public image by publicizing its ongoing commitment to conserving natural resources by displaying a commitment to the concept that a cleaner, healthier environment goes hand in hand with a strong economy. Furthermore, developing positive working relationships with vendors will play a key role in enabling the borough meet its environmental purchasing goals. External promotion of the Borough of Wilkinsburg's EPP program, will not only demonstrate the borough's commitment to the environment but it will allow employees to take pride in the borough's environmental stewardship, increasing positive sentiment throughout the borough.

Specific Findings and Recommendations

Tier 1 Recommendations

- Develop a formal written EPP policy (See **Appendix H** for resources). The most critical yet straightforward step the Borough of Wilkinsburg can take to promote sustainable purchasing is to finalize, introduce, and codify a formal written EPP policy. It is essential to point out that Wilkinsburg need not abandon its current purchasing practices once the EPP policy is adopted. Rather, the borough can incrementally incorporate EPP practices into its current purchasing procedures. Once one procedure or practice is successfully implemented borough officials can move on to another.

  Below are general policy guidelines to assist borough officials to begin the EPP implementation process:
  - Adopt a general Environmentally Preferable Purchasing (EPP) policy and reference it in any employee training manuals/materials (**Appendix H**).
  - Adopt a green cleaning products policy and reference it in any training manuals/materials and in bids for cleaning related products and services.
  - Include a statement in all bid specifications (RFP's) that the borough has an EPP policy in place and that vendors should highlight any environmentally friendly aspects of their products in bid specifications. RFP's could also target and request EPP products or services exclusively.
  - Compare the prices of common products currently being used with green or environmentally friendly options offered. Purchase the green or environmentally friendly option whenever cost and performance allow. (no cost)

- Ask current vendors to provide lists of green or environmentally friendly products that may meet needs or requirements. (no cost)
- Ask contacts in neighboring communities for information on green and/or environmentally friendly products they are currently purchasing. (no cost)

Tier 2 Recommendations

- Extend the scope and breadth of the EPP program by:
  - Providing oversight for EPP program. While many EPP directives are nonspecific in terms of goals and strategies, some lay the groundwork for EPP implementation by requiring businesses or institutions to designate a particular individual or teams comprised of department members, committees, or volunteers. These teams, which are often comprised of purchasing representatives and environmental experts are typically responsible for conducting research, targeting product categories and attributes, recommending EPP initiatives, and developing implementation plans for those initiatives.
  - Monitoring results. Organizations that gather data on their EPP efforts are able to determine which strategies are producing intended outcomes, and which strategies require adjustment. More importantly, organizations that can demonstrate the positive results of EPP (e.g., cost savings) are in a better position to justify their expenses and request additional resources. The appointment of an individual or committee to oversee the EPP program is recommended.

- Wilkinsburg should appoint a Green Team to conduct the following:
  - Develop and maintain information about environmentally preferable products and recycled products containing the maximum practicable amount of recycled materials.
  - Promote and recommend the purchasing of these products whenever possible.
  - Inform other entities and departments within the community of their responsibilities under this policy and provide implementation assistance.
  - Disseminate information on recycled and environmentally preferable product procurement opportunities, specifications, and performance, to various departments
  - Communicate with borough entities to review policy requirements and new procurement opportunities.
  - Monitor and publicize the progress and status of the policy implementation.
  - Submit reports as required to the borough on the procurement program. These reports should include a compilation of data procured from all borough entities responsible for implementation, evaluations of products being used, and assessments of the program's effectiveness, evaluation of program goals, and future opportunities.

- Specify at least 30% post consumer recycled content in all copy paper purchased, preferably process chlorine free (PCF). Make sure the paper or office supply vendor knows that it is not acceptable to receive substitutes unless that product meets the same recycled content specifications as the original order. Also, make sure that whatever ordering system is used (through an office supply company or with a paper vendor) it has the recycled content option as the default. This will make it easier for all staff to order the correct paper without having to search for it each time an order is placed. Depending on the vendor and amounts purchased recycled content copy paper may cost a bit more than non-recycled content paper. However, this increase can be reduced, if not eliminated, by implementing paper conservation strategies such as setting the copier's default mode to double sided and using the backs of unneeded one sided copies for scratch paper.

The cost of such a program depends on paper pricing and contract agreements with office supply companies. Based on the limited data provided by the borough regarding purchasing of office supplies, the following cost comparisons from a select group of commonly used office products can be seen in **Table 19.**

Table 19: Cost Comparison of Commonly Ordered Office Products

	0% Recycled Content	30% Recycled Content	Cost Difference per Unit	Post Consumer Recycled Content
Product	Cost/Unit	Cost/Unit		
20# Copy Paper 8.5" x 11" (10 Reams/Case)	$ 35.36	$ 47.39	$ (12.03)	
20# Copy Paper 11" x 17" (10 Reams/Case)	$ 48.89	$ 47.99	$ 0.90	
Post-its 3"x3"- 100 sheets/ pad (12 Pads/Package)	$ 12.99	$ 13.29	$ (0.30)	
16# Legal Pads 8 1/2" x 11 3/4 (12 Pads/Case)	$ 6.99	$ 12.99	$ (6.00)	
28# 9"x12" White Envelopes (100-125/ Case)	$ 13.99	$ 13.99	$ -	100%
Manila File Folders w/ Tabs, Letter, (100/Box)	$ 20.99	$ 19.89	$ 1.10	
Hanging Folders, 1/3 Cut, Letter Size, Green, (25/ Pack)		$ 9.99	No Comparable Product Found	

Based on this information we can see that recycled content products don't equal more expensive. Even copy paper is not necessarily more expensive as seen in the case of 11" x 17" paper found on Office Depot's website. Some products have recycled content version that are cost neutral while other cannot even be found with less than 30% post consumer recycled content. An EPP policy can help direct the purchasing department to look at these cost neutral options and help promote a cost saving option.

Tier 3 Recommendations

- Add Additional product categories to EPP policy
  - Paints: Green Seal makes available a report with standards, vendors, and products to help purchasers buy environmentally friendly architectural finishes. It is important to make sure that the paint meets all of the standards listed in the report, such as prohibiting certain harmful ingredients and being within the VOC limits stated in the report.
  - Office Equipment: It is recommended that all office equipment purchased or leased in the future be EnergyStar compliant. Examples include copiers, computers, fax machines, and even vending machines. EnergyStar is a federal program that certifies that equipment meets energy efficiency standards. They have an excellent website that outlines the types of equipment certified, describes the standards, and provides specifications.

- Alternative fuels: Biodiesel is available in the Pittsburgh Area from Giant Eagle in Oakland and may come to stations and producers closer to Wilkinsburg. The higher the percentage of biodiesel, the better, but Borough equipment may be limited to B-20 (20% biodiesel and 80% petroleum diesel). Currently Giant Eagle (GetGo) is offering B-2 (2% biodiesel and 98% petroleum diesel).

Transportation Access

Background

Even though Wilkinsburg is steeped with transit infrastructure and bus service, residents do not perceive that it is connected effectively to the community. The Martin Luther King, Jr. East Busway, a buses only right-of-way that provides express service to downtown and Oakland for the eastern suburbs, moves people through Wilkinsburg rather than bringing people to it. The East Busway and Wilkinsburg Station, the community's main stop, is located on the north side of a freight railroad corridor, not visible and isolated from Wilkinsburg's business district and residences. As a result, the Busway is seen more as a disadvantage rather than an asset that benefits the community. Local public transportation does not seem to fit the needs of residents as evidenced by the increased use of jitney services to get around Wilkinsburg. There are several neighborhood bus routes that travel between Wilkinsburg and local shopping centers but there seems to be a lack of awareness or understanding of these services. Adding to the disconnection is the fact that Wilkinsburg does not have public infrastructure to support intra-community movements. It lacks amenities like bus stops, pull-over areas, pedestrian crossings on side streets, bike lanes and other safety features.

Many ideas for improving accessibility throughout Wilkinsburg emerged from a meeting held with the Borough Manager and a review of previous planning efforts. Those ideas can be synthesized into two key objectives:

- Improving bus, pedestrian and bike connections locally; and
- Utilizing the current transit infrastructure to revitalize community development.

Despite Wilkinsburg's exemplary public transportation services, these objectives pose a problem to achieve. Because Wilkinsburg's business district and community evolved long before the East Busway and related transit infrastructure was implemented, a separation exists between transportation access and land use. The good news is that the components upon which to improve access and build success are at least present in the community; however, the solutions may have to be retrofits or other innovative initiatives. Regardless, sustainable communities are the ones that integrate transportation successfully with land use strategies. And identifying ways to improve this integration in Wilkinsburg will be a key component to its overall sustainability.

Scope and Approach

The focus therefore of the Transportation Access element of this Sustainability Assessment is to identify ways to improve local connections within the community and leverage transit infrastructure to facilitate development. The general process and approach is identified as follows.

<u>Document Baseline Conditions</u>

A one-day field view was conducted to collect current conditions related to transportation infrastructure such as station and park-n-ride locations, pedestrian access and approaches, local Port Authority bus services and cross connections, bike lanes and amenities, intersections and signals, and general land use.

Previous reports, most notably Wilkinsburg's Comprehensive Plan and Business District Revitalization Plan, were reviewed relative to transportation access and Transit Oriented Development (TOD)

recommendations. This information will be summarized and considered when identifying transportation access findings and solutions, thereby eliminating redundant efforts and ensuring consistency with Wilkinsburg's previous work.

Conduct Meetings/Interviews

Meetings conducted with Wilkinsburg's Borough Manager, Community Development Corporation (CDC) director, and Port Authority's planning and service personnel. Ongoing meetings were conducted with the Land Use and Green Design consultant in order that transportation access and land use (zoning) recommendations were coordinated.

Conduct Research

The consultant looked at how local transportation services and connectivity is approached in communities that have major transit infrastructure facilities most notably busway infrastructure. Because there are a limited number of areas nationally that have busways, the team looked to local examples and work recently conducted in Carnegie and Sheraden.

Summary of Baseline Conditions

A one-day field view was conducted to collect current conditions related to transportation infrastructure including station and park-n-ride locations, pedestrian access and approaches, local Port Authority bus services and cross connections, bike lanes and amenities, intersections and signals, and general land use. The data collected as a result of the site visit is presented in several tables included in **Appendix I** of this report. A description of the existing conditions in Wilkinsburg and ways transportation access works, or does not work, is provided throughout this section.

Transit

Wilkinsburg has exemplary public transportation infrastructure featuring the Martin Luther King, Jr. East Busway, a buses only right-of-way connecting Pittsburgh's eastern suburbs with downtown. Nearly 30 Port Authority bus routes travel through Wilkinsburg carrying about 25,000 people to downtown each day. Wilkinsburg has a major station on the Busway that is accessible from the intersection of Pitt Street and Wallace Avenue. The station includes a 748-space park-n-ride lot with access to limited stop, commuter bus service every six to 10 minutes. Wilkinsburg also has local bus service along Penn Avenue through the heart of the community that operates frequently. A bullet point summary of Wilkinsburg's bus service is provided below.

- There are nine routes that travel through the community of Wilkinsburg that have downtown as the final destination. These local, east-west routes provide an average of 292 weekday trips in the area.

- There are two express routes that travel through Wilkinsburg providing 14 daily trips to downtown Pittsburgh during peak hours.

- Port Authority operates 32 routes on the East Busway. With these routes, Port Authority provides approximately 822 weekday vehicle trips and more than 24,000 weekday passenger trips.

- The East Busway offers service to downtown and Oakland. The EBA provides access to all East Busway stations as well as downtown. The EBO serves busway stations from Swissvale to

Negley Avenue before exiting on the Neville Ramp to provide access to Oakland. The EBS provides trips between Wilkinsburg and downtown.

- The East Busway provides express transit service to communities in the Allegheny Valley and eastern Allegheny County (on approximately 15 routes). The majority of the express routes travel on the East Busway, generally allowing passengers to get off at the Wilkinsburg Station on inbound trips and board at the Wilkinsburg on outbound trips.

- Port Authority operates three routes that provide cross route connections (not to downtown) to a variety of destinations including Oakland, Edgewood, Regent Square, Homewood, East Hills and Lincoln Park among others. The cross routes offer 28 weekday trip options.

- Port Authority generally provides the following customer amenities for its patrons along the Busway and at major station locations: covered waiting areas; benches; trash receptacles; rider information and route maps; bike racks; and payphones.

Table 20: Summary of Transit Services in the Wilkinsburg Area

Route No.	Number of Roundtrips Weekday / Sat / Sun	Service Frequency (minutes)			Average Route Weekday Ridership
		Weekday Peak	Saturday	Sunday	
67A	22 / 19 / 10	25 to 30	30 to 45	60	2,240
67C	2 / -- / --	--	--	--	115
67E	2 / -- / --	--	--	--	104
67F	26 / 25 / 10	15 to 35	45	100	1,942
67J	6 / -- / --	30 to 100	--	--	290
71C	64 / 62 / 40	9 to 20	17 to 70	25 to 60	5,700
71D	56 / 44 / 40	9 to 25	20 to 44	25 to 60	5, 210
86A	40 / 31 / 15	20 to 37	26 to 60	75	4,040
86B	74 / 62 / 40	7 to 20	11 to 45	23 to 54	6,800
LP	11 / -- / --	15 to 60	--	--	890
W	3 / -- / --	40 to 60	--	--	100
69A	11 / -- / --	20 to 40	--	--	420
79A	10 / 10 / --	60	60	--	83
79D	7 / 11 / 11	--	75 to 165	69 to 98	140

Source: Port Authority of Allegheny County, Transit Development Plan, Route Evaluations, 2008.

The community is lacking transit amenities like signs and bus shelters. The field view revealed that, although there are bus stop signs posted throughout the community, most are outdated and or lacking accurate information. Other than signs posted at the entrances of the busway stations, there is no directional signage from the central business district or approach streets identifying where to go to access the East Busway's transit services. There is a new bus shelter located at Penn and Braddock avenues but otherwise shelters are not prominent features along the Penn Avenue corridor.

It should be noted that Port Authority has been streamlining and modifying its routes as part of Connect 09, a Transportation Development Plan (TDP) intended to result in operational efficiencies and cost savings, and also has been cutting service as a result of current economic conditions and transit funding deficiencies at the state level. Therefore, the information related to Port Authority's current conditions and routes is in a state of flux which may result quickly in out-of-date information.

Pedestrian and Bicycle

The Wilkinsburg Business District is a short walking distance along Pitt Street from Port Authority's Busway Station where the sidewalk is in good condition as are most of the sidewalk conditions at the station locations. However, the sidewalks along Brushton Avenue, Rosedale Street and Hill Avenue leading to Wilkinsburg Station are in poor condition and in some locations are non-existent. Wilkinsburg Station can only be accessed from the northeastern side of the East Busway. There are railroad tracks on the southwestern side and there are no underpasses except at North Braddock Avenue and near the intersection where Penn Avenue meets Pitt Street.

Pedestrian amenities along Penn Avenue including curb cuts, pedestrian crossings, signalized intersections and street lights are prevalent and in good condition.

The bicycle network is extremely limited within the study area. Throughout the community there are no trails or established bicycle routes or lanes. However, Port Authority's station sites include bike racks with space for up to five bikes. At the time the field view was conducted, there were no bikes utilizing the racks at the station locations.

Parking

Port Authority's Busway Stations in Wilkinsburg both feature free park-n-ride lots. Wilkinsburg Station has 748 paved and striped spaces which are almost always occupied on weekdays. Hamnett Station has 128 spaces all of which are also occupied. During the field view it was noted that about 30 spaces were available in the back/overflow lot at Wilkinsburg Station. However parking still encroached onto the local streets around the park-n-ride. Only two spaces were available at Hamnett Station the day the field view was conducted.

There is available on-street parking throughout the community. There are metered parking spaces along Penn Avenue between Center and Swissvale. However, at various locations the heads of the meters have been removed leaving posts sticking up out of the sidewalks. Off of Penn Avenue, along Wallace and Ross streets, most of the on-street parking is for residential uses.

Recent Planning Projects

Wilkinsburg recently completed two important planning projects: The Wilkinsburg Plan, which is the community's comprehensive plan; and the Business District Revitalization Plan, which focuses on revitalizing the Penn Avenue corridor. A bullet point summary of each report relative to transportation objectives of this report is offered below.

From a review of *The Wilkinsburg Plan*:

- Nearly 30 percent of Wilkinsburg's households do not have a car and 49 percent only have one car.
- The consensus plan for Wilkinsburg's business district states, "TOD should be pursued around the focus area to take advantage of state programs and local foundation support."
- One goal identified in the plan states that, "Wilkinsburg will use TOD to attract new residents and provide new convenient housing options for current residents."

- TOD is identified as a high priority strategy.
- Neighborhood redevelopment strategies should incorporate a strong TOD focus.
- One particular strategy identified in the plan is to assemble a number of contiguous parcels that could make the area more attractive for private investment.
- In addition to the business district, three other neighborhoods were identified in the plan as focus areas with primary strategies centered around TOD: Hamnett Place; Singer Place and Upper Center; and Peebles Square and Kelly West.
- The comprehensive plan recommends that Wilkinsburg submit an application to the state for TRID planning funds.
- Another recommendation states that Wilkinsburg initiate high density, pedestrian oriented housing development in projected TOD areas.
- On page 139 of The Wilkinsburg Plan, an overall TOD strategy is identified.
- One priority initiative identified in the plan was to work with Port Authority to increase local neighborhood service.
- Pedestrian access improvements were mentioned as part of the TOD strategies for the district and neighborhoods.
- The plan notes that there are no dedicated bike routes in or near the corridor and that the community is not bike friendly.

Wilkinsburg Business District Revitalization Plan

- Port Authority's Martin Luther King, Jr. East Busway was identified as a "physical, social and psychological barrier," an overall weakness to the community.
- The Busway, park-n-ride and future transit center were all identified as opportunities for the community.
- Vibrant urban centers, identified under "Key Market Considerations," are typically surrounded by dense residential; to that end, the level of transit in Wilkinsburg presents the opportunity for residential development/redevelopment.
- TOD near the train station and around Wilkinsburg Station is considered a Priority Planning and Phasing strategy.
- The train station, according to the Plan, should be renovated as a new Busway Station that includes both public and private commercial space.
- Another priority is to reopen the pedestrian underpass near the train station and replace the vehicle underpass on Penn Avenue with a widened entry including public art.

- It was stated that TOD should be pursued around the focus area to take advantage of state programs and local foundation support.

- According to the plan, certain factors need to be present or implemented for the community to be successful including: being a bike, pedestrian, auto and transit friendly community; implementing dense development around the transit stations; making bike, pedestrian and transit facilities convenient and attractive; making trails and walkways to transit facilities convenient and well-lighted; conducting a TRID Study and establishing a TRID; and pursing TOD around Wilkinsburg Busway Station.

Review of Positive Advances

Wilkinsburg has made progress in the area of transportation access by completing two important planning initiatives that can serve as the foundation for using transportation and related infrastructure to revitalize the community. *The Wilkinsburg Plan* and the *Business District Revitalization Plan* both identify ways to improve transportation access and use the community's transit infrastructure to jump start development. Subsequent planning and implementation initiatives should continue to align directly with these plans. Just as important alliances were built with funding agencies and project partners throughout these planning efforts which should provide a foundation for support for future related planning and implementation projects.

Wilkinsburg has undertaken another positive advance by identifying a champion who can lead initiatives to advance projects utilizing current transit infrastructure to revitalize community development. The executive director's position for the Wilkinsburg Community Development Corporation (WCDC) was recently filled. This hiring will provide the leadership and direction essential to improve the community and business district by attracting development opportunities. The WCDC in collaboration with Wilkinsburg Borough will oversee the implementation of recommendations and initiatives identified in the recently completed Wilkinsburg Plan and the Business District Revitalization Plan. Both of those plans focus on revitalizing the community by utilizing TOD strategies to renovate and stabilize areas around Wilkinsburg's transit infrastructure.

The intersections along Penn Avenue between Braddock and Swissvale Avenues have been upgraded for pedestrian access and safety. Sidewalks run the entire length of this area providing a safe and convenient place to walk along the business district. Every corner at every intersection along that stretch has curb cuts for handicapped accessibility. There are street lights along the corridor that enhance safety conditions for pedestrians along Penn Avenue. All of the intersections except those at Pitt Street and Coal Street have traffic signals. And most all of the intersections have crosswalks and signals designating pedestrian movements and safe crossings.

The impact that a grocery store has on transportation access and spin-off development opportunities cannot be minimized. A few years ago, Wilkinsburg opened a new Save-a-Lot grocery store bringing to the community a local option that it had not had in decades. The local store eliminated the need for transportation services to move people outside of the neighborhood to other communities and provided the opportunity for residents to walk, bike or take local buses to the store. The store itself is an important first step to creating an "activity center" which is necessary for TOD-type development to occur. Save-a-Lot is a destination for employment and shopping all of which creates economic activity that can be accessed by car, bus, bike and foot.

Wilkinsburg officials realize that an increase in jitney services demonstrates the community's need for better local transportation access and, as such, Wilkinsburg has identified local transportation improvements as an important priority. Some of Wilkinsburg's local bus services, most notably those to the Hilltop neighborhood (up Center Street) and Laketon Road, were eliminated recently as part of Port Authority's service changes. Additionally, according to Port Authority and feedback it has received from communities that have jitneys, this service is used primarily for return trips from the grocery store because of the convenience it provides for transporting bags door-to-door. Regardless of the reason, Wilkinsburg officials are interested in identifying strategies and solutions to improve transportation within the community.

Review of Potential Solutions

Streetscape Improvements

Potential solutions or strategies to improve transportation access to the East Busway and its station sites in Wilkinsburg can be found in a project that was recently completed by Allegheny County Economic Development and Southwestern Pennsylvania Commission. This work included strategies to improve transportation access that support the vision for TOD at the station sites along the West Busway corridor including at Carnegie and Sheraden stations.

Carnegie Station, although not isolated visually from the community, is located across a four-lane roadway and inactive railroad tracks making it hard to get to from the neighborhood. Study of this site focused on ways to create safer and more enjoyable walking experiences to and from the station. Some of the more prudent and short-term solutions to improve access from that study included:

- Incorporating street furniture like seating, lighting, trash receptacles
- Implementing bicycle and pedestrian crossing improvements
- Incorporating signage and/or way-finder signs
- Improving pedestrian safety at cross streets

Not unlike Wilkinsburg, Sheraden Station is located remotely and removed visually and physically from the heart of the community. The potential solutions identified to improve access to this station site were more capital intensive and long-term. It was determined that a pedestrian bridge and path would provide a link between the Station and the neighborhood, which is located to the east. Other streetscape improvements at and around the Station vicinity could accompany the bridge implementation to improve safety and aesthetics.

Identifying streetscape improvements that enhance pedestrian and bike movements and developing plans to implement those improvements are a few potential ways to make transportation access better immediately in Wilkinsburg.

Local Transportation Access Improvements

Another important path to take to enhance transportation access in Wilkinsburg is to implement a local network of transportation services that increase access in and around the community including connections to the East Busway. To fully understand the residents' needs relative to local transportation access a more focused inspection of deficiencies and gaps in available services and infrastructure would need to be undertaken. Once those needs are more fully defined, a course of action to improve local services and amenities can be developed. Potential solutions include raising awareness of current Port

Authority community bus routes, implementing a local shuttle(s) to key neighborhood activity centers, and prioritizing pedestrian and bike improvement projects to encourage alternative modes of movement.

Facilitating TOD Opportunities

Both of Wilkinsburg's recently completed plans identify priorities to pursue TOD around Wilkinsburg's East Busway stations by leveraging the transit services and resultant activity that occurs there. In order to do so, more detailed planning work needs to be completed that specifies market conditions, potential land use mixes, supporting transportation infrastructure, and associated costs and funding sources. This planning work will determine the likelihood of implementing successful TOD and create detailed site specific TOD visions for each station area. Therefore a potential way to utilize transit infrastructure to revitalize the community is to take the first step by advancing the next phase of TOD planning activities at each of Wilkinsburg's busway station sites.

Major Transportation Capital Campaign

There are major transportation facilities in Wilkinsburg, which were cited in the community plans that need to be upgraded in order to remove local transportation barriers. The most notable of those are to reopen the pedestrian underpass near the train station and to replace the vehicle underpass on Penn Avenue with a widened entry. In order to accomplish potential solutions like these, detailed architectural and engineering work would need to be undertaken following completion of the planning activities identified above. To advance major efforts like these, a capital program would need to be developed that identifies priority projects, phasing and funding needed to accomplish Wilkinsburg's transportation infrastructure goals.

Specific Findings and Recommendations

Tier 1 Recommendations

- Raise Awareness about Available Transportation Services

  Port Authority already provides a basic level of bus service in and around Wilkinsburg. Those routes travel within the neighborhood on local streets and connect to places outside of Wilkinsburg including downtown, Oakland, the Strip District, Swissvale, Regent Square, and Edgewood to name a few places. It is possible that Wilkinsburg's residents do not know or understand the levels and locations of current bus services. In order to raise awareness about existing bus routes Wilkinsburg could work with Port Authority to develop a neighborhood bus service brochure that isolates the routes serving Wilkinsburg, and identifies local routings, bus stop locations and route maps, trip times and frequencies, and connections to Wilkinsburg's key landmarks and activity centers. This recommendation is cost-effective consisting of the cost to develop and print the brochure, and easy to implement, making the brochure available at gathering places throughout the community. An undertaking such as this one should take no more than a month or two to complete.

- Assess the Community's Need for Local Transportation

  Jitney services in Wilkinsburg have increased demonstrating demand for transportation services that are unmet by conventional delivery methods. It is important for Wilkinsburg officials to understand what is driving this need and to identify ways to legitimately and comprehensively address the deficiencies in services. As such, it is recommended that local officials develop and implement a survey to determine where residents need to go locally, when they need to get there and how they would like to travel. Surveys could be available on the borough's website, at the borough building,

local grocery store, senior citizen centers and other public locations throughout the community. As part of this survey, inquiries could be made as to who uses jitney services, where they go and what is appealing about those services. Based on the outcome of the survey responses, Wilkinsburg officials could develop alternative solutions for improving local transportation in the community. The survey instrument is a recommendation that is inexpensive, and easy to develop, disseminate and summarize. The effort to complete such an initiative should take no more than six months.

Tier 2 Recommendations

- Implement the Preferred Local Transportation Solution(s)

  Potential local transportation solutions identified from the resident survey could be prioritized, developed and implemented. It is likely that the range of alternative solutions would consist of initiatives such as developing a brochure of Port Authority's local bus routes and services, working with Port Authority to enhance their current routes, organizing vanpool or carpool services, or designing and implementing a community shuttle or shuttle network. These potential solutions could change the community by eliminating jitney services thereby taking cars off the road and providing other reliable, energy efficient ways for residents to travel. Other than developing and implementing a community shuttle, which might be able to be subsidized by a strategic partner, most of the recommendations are no to low cost ideas that benefit the community.

- Undertake a TRID or TRID-like Study

  The comprehensive and illuminating information resulting from a TRID or TRID-like study would be invaluable to Wilkinsburg. The planning activities that are completed as part of this kind effort would reveal critical market information, development capacity, land use strategies, zoning changes, public infrastructure needs and costs, financial projections and a plan to achieve TOD at each Wilkinsburg station site. At a minimum this planning effort would determine whether TOD around a particular station is a real possibility or not achievable at all.

  The TRID program, however, is currently precarious at best. The funding for TRID, which was available through the Land Use Planning and Technical Assistance Program (LUPTAP), was reduced significantly last year and, therefore, is difficult to obtain. Adding to the problem is that the TRID program, as it is currently administered, does not work. Nearly a dozen TRID studies have been undertaken statewide and none have resulted in implementation.

  Regardless of the issues surrounding the TRID program, it is recommended that Wilkinsburg seek planning funds and undertake a study similar in scope to that required by TRID. An analysis of each busway station site (or TOD district identified in Wilkinsburg's plans) relative to the likely success of TOD would be completed and a subsequent development approach, budget and timeline would be accomplished for each site. Because a major component of the TRID study process is outreach, important alliances would be forged with residents, adjacent communities, local agencies, government officials, private investors and funding sources that are critical to achieving support for development initiatives like TOD.

  The cost to complete a TRID study is approximately $100,000 consisting of $75,000 from a state funding source like LUPTAP and an additional $25,000 from a local match source. Wilkinsburg has multiple sites so the cost would be more. However because there are economies of scale related to proximity, data collection and common marketplace features, it is conceivable that there could be cost savings associated with a comprehensive study. Obtaining the funding will be difficult although well

worth the effort in order to understand the potential and likely success of TOD in Wilkinsburg. Such an undertaking, after obtaining funding, would take about nine months to one year to complete.

Tier 3 Recommendations

- Implement a Transportation Infrastructure Capital Plan

  One outcome of the TRID or similar study is a transportation infrastructure plan which identifies specific public improvements that need to occur to improve local movements and support TOD along with cost estimates and a speculative funding strategy. Regardless of whether the TRID study results in implementation, components of the plan can still be prioritized and advanced by Wilkinsburg. As such it is recommended that, if a study is completed, Wilkinsburg assess the transportation infrastructure plan, determine a phased approach and implement improvements that provide an immediate return on investment. This will not only result in improved access but also demonstrate to both the public and private sector Wilkinsburg's commitment to investing in and advancing TOD in its community.

  A capital campaign resulting from a TRID or TRID-like study could not be initiated until a plan is completed, which would take about a year. Subsequent capital fundraising efforts and implementation of projects could take as long as 10 years. However the upside and benefit is a community that is multimodal and doesn't rely on cars as the primary mode of movement. The resultant TOD will create 24/7 life activity centers that are accessible by walking, biking or riding local shuttles or mainline transit buses.

Land Use Administration & Green Design Guidelines

This component addresses existing and potential municipal policies and processes related to land use management. This includes the zoning and subdivision/land development ordinances that are key to implementing the comprehensive plan. This work has been informed by municipal ordinances and processes as well as other relevant work. The intent is to recommend ways in which to modify municipal ordinances and other means to:

- Be consistent with proposed Wilkinsburg Sustainability Principles
- Remove any possible barriers to accelerating sustainability through codes and ordinances
- Facilitate redevelopment and blight eradication
- Promote infill development
- Advance green infrastructure
- Incorporate green design guidelines in land development standards

This section of the report focuses on Land Use Management and Green Design. This project involved evaluating the Wilkinsburg's newly prepared draft Comprehensive Plan, Business District Revitalization Plan, and Management Audit as well as the existing zoning and subdivision/land development ordinances for the purpose of assessing efficacy in promoting sustainability.

The potential benefits of this section are to ensure that redevelopment and any new development in the borough are guided by the vision contained in the comprehensive plan as implemented through consistent ordinances. This will in turn support the community in providing the highest possible quality of life for current and future citizens. Specifically, modifications to the zoning and subdivision/land development ordinances should be consistent with the plans and how they are implemented.

The recommendations here were developed by both top-down and bottom-up processes. The top-down process consisted of identifying specific sections of the existing land use management ordinances that need to be modified by action of elected officials as advised by merchants, the Wilkinsburg Community Development Corporation (CDC) and others. It outlined actions necessary to codify the proposed future land use plan in the Comprehensive Plan. This included the proposed Transportation Opportunity District (Transportation Revitalization Investment District – TRID - in Pennsylvania) and the Traditional Neighborhood Development District. The TRID process was informed by the experience of the Allegheny County Development Department, the Port Authority of Allegheny County and publications by the American Planning Association, the Urban Land Institute and by other successful models.

The bottom-up approach involved soliciting ideas from community organizations plus other organizations active in the borough. This involvement is intended to identify activities that citizens or neighborhood organizations can undertake. Recommendations identify key organizations to be contacted for discussions regarding best practices in community revitalization and also funding potentials for projects and programs.

Benefits of implementing the ordinances suggested in this section include:

- Ensuring that future development is consistent with the vision for the borough's future contained in the comprehensive plan.
- Making any future development more consistent with the existing development in the borough.
- Making any new development or redevelopment more sustainable and less costly both initially and in operation and maintenance over time.

The major benefit of the borough adopting a Specific Plan is that it permits it to prescribe in great detail what activities will be permitted in the affected area and the type of buildings and public improvements. This should increase investment by promising stability and assurance that the area will be developed to high standards.

Recommendations

Language to Amend the Wilkinsburg Zoning Ordinance with Applicable Green Design Guidelines

The following recommendations apply to Wilkinsburg's Zoning Ordinance, Chapter 260, effective May 15, 2002:

The municipal governing body should adopt the comprehensive plan as a guideline for future public and private sector policy and investment decisions. As a guideline this adoption does not impose a positive duty on the governing body to implement the comprehensive plan. However, because the plan is a vision of the future created by citizens and elected officials it should be honored. There are several techniques to do this including, zoning ordinance, subdivision/land development ordinance, the official map, the capital program and the capital budget. The zoning and subdivision/land development ordinances are the major tools available to the municipality.

Zoning is comprised of two parts; a map and the text. The map illustrates the zoning districts into which the municipality is divided. The text prescribes what land uses can be accommodated in each zoning district plus administrative rules. The recommendations in this report are directed towards the text portion of zoning.

- Section 260.1.1 does not make reference to the 2000 amendments to the MPC.
- **ADD** Section 260.1.4.10; "implement recommendations contained in the LEED_ND guide to ensure a green community." This guide is included as **Appendix J** to this report.

DEFINITIONS

- 260.2.1 should mention gender
- 260.2.3 "Building"; Commonly a site may contain only one principle use.
- "Deconstruction"-- the demolition of a building in such a manner that useable components are salvaged intact and made available for reuse.
- "Granny flats/garage apartments" – living space intended for one or two person occupancy in addition to the main dwelling on the lot and located either in the main dwelling or in a separate structure such as over a garage.
- "Transit stations" should provide for open air passenger waiting areas.
- "Family" permits five unrelated individuals to be considered a family. This is an unusually high number. Commonly three is the number.
- "Loading Space" should be more restrictive to prevent blocking a street or alley.
- "Parking Facilities" should provide for and perhaps require that the surface be pervious or, minimally, that bio-retention be required.
- "Signs"; commonly signs are not permitted to extend above the roof line.
- 260.3.3; the lot size and width requirements are not compatible with the existing building stock in the Borough. The larger sizes would disrupt the urban fabric of the existing neighborhoods and/or prevent revitalization. Add a provision that lot sizes and setbacks be consistent with the adjacent properties or an average of structures along the same block face.
- 260.3.1 the residential zones should be revised to reflect that home occupations are a permitted use in any district.

- 260.3.6; conflicts with the definition of building.
- In the C-1 zone uses are permitted that will reduce the vitality of a commercial street. Vitality requires a commercial establishment with windows on the street frontage with lively displays. Funeral homes and catering businesses (unless they also house a restaurant) do not do this.
- The sections dealing with public areas such as the commercial, mixed use and TOD zones should specify the street furniture required and who is responsible for providing and maintaining it. (See part 5.) Benches at least five feet long with arm rests to prevent them being used for sleeping shall be provided every fifty feet along the curb side of the sidewalk.
- Table 260.3.2; the table should reflect the uses permitted in Article 5 – the Transit Oriented Development Overlay District. Also, transit terminals and depots should be a permitted use in a TOD.
- 260.3.6; the MPC provides for Special Exceptions "…pursuant to express standards and criteria…" In a few cases in Sections 260.4.9 through 260.4.18 requirements applicable to specific uses are included. However, there is not a direct correlation between this discussion and the Special Exceptions shown in the table at 260.3.2 or in Article Seven which creates the Zoning Hearing Board.
- **ADD**; 260.3.8.1; Structures necessary to capture wind as a source of renewable energy may be constructed to a height necessary to do so. The design of such structures and any guy wires necessary shall be signed and sealed by a competent professional engineer to ensure stability.
- **ADD** 260.3.8.2; no structure shall block solar and wind access to any neighboring lot.
- The MPC provides for Conditional Uses that are granted by the governing body "…pursuant to express standards and criteria set forth in the zoning ordinances." The Wilkinsburg ordinance does not provide for Conditional Uses. In terms of procedure the main difference between a Special Exception and a Conditional Use is that the latter is permitted by the governing body and the former by the Zoning Board.
- Mullti-Family Dwellings are permitted in the R-2, R-3, Mixed Use and the TOD districts but are not defined in the definition section. They should be.
- 260.4.2 is contradictory. The first reference to rear yards should be deleted.
- 260.4.3.5; This should be amended to permit granny flats/garage apartments.
- 260.4.18.5.3 should be clarified to require off street parking in the rear of commercial buildings.
- 260.4.18.9 and 10 should be re-written to recognize that shared parking can be less than the total of uses. For example, an office and an adjacent church could use the same lot at different times of the week.
- 260.4.18.11; see above.
- The parking section is deficient with respect to a requirement for screening – preferably with evergreen hedges four feet in height. This, along with any similar provision for plantings, must contain a requirement for maintenance and replacement of unsightly material.
- Alleys should be required for access to parking, location of utilities and trash/garbage storage and pickup.
- 260.4.21.3; Off street parking should contain two requirements that promote pedestrian safety:
    - SUVs and trucks should be segregated from automobiles to provide clear sight lines for drivers backing out of stalls.
    - A pedestrian walkway that is separate from the roadway should be provided to permit safe access to and from stores.
    - Parking areas should be required to use permeable surfacing to permit stormwater infiltration.
    - In addition parking areas should be required to include bio-retention to collect any runoff and treat it via infiltration.

    - Parking requirements should include both minimum and maximum numbers. Also, transit use and walking should be encouraged by permitting a maximum number of spaces less than required by full use of the residential or non-residential facility.
- **ADD**: 260.4.34; Deconstruction in which building materials are re-used is encouraged relative to demolition.
- **ADD**: 260.4.35; If demolition is used to remove a vacant, blighted structure all material including the foundation is to be removed from the site and the basement void shall be filled with clean fill. Top soil shall be added in which grass is planted.
- 260.4.24.9 and 260.4.26.6; These sections prohibit billboards and, therefore, is in conflict with the requirement that all municipalities permit all legal uses. It is recommended that billboards be permitted in industrial zones.
- 206.6.2.2; in the second line the word "and" should be "an".

<u>Language to Amend Subdivision and Land Development Ordinance with Applicable Green Design Guidelines</u>

The following recommendations apply to Chapter 229 of Wilkinsburg's Subdivision and Land Development Ordinance. These recommendations, especially in Section 229.3.7, emphasize a number of United States Green Building Council's LEED-ND guidelines.

- ADD: 229-1.6.1; Intent: This ordinance is intended to produce and maintain a compact, vibrant, walkable community.
- 229-1.7 and 229-3.6 H; consider delegating approval to the planning commission
- 229.2.1; add deconstruction and demolition to the definition of development
- 229-3.5; the requirements for a voluntary pre-application are heavy – consider reducing them for the purpose of encouraging such conferences
- 229.3.7; **ADD**: Intent; Development is encouraged within ¼ mile walking distance of transit stops. Such development should be high density residential and/or high intensity non-residential.
- **ADD**: 229.3.7

(14) bio-habitat, imperiled species, and ecological communities must be identified and specific provisions for their preservation must be included.

(15) development is not permitted within 100 feet of wetlands and water bodies. Walkways and observation platforms are permitted.

(16) slopes over 15 percent should be preserved. An exception is permitted for development on 50% of slopes between 15 and 25 percent if a qualified engineer determines that such construction will ensure that no instability will result.

(17) Development should take place on brownfield sites and on an in-fill bases rather than disturbing land that is previously undeveloped.

(18) Sidewalks shall be constructed throughout the development. In residential areas sidewalks shall be 5 feet in width. In commercial areas the sidewalks shall be 15 feet in width. (**NOTE**: this should over-ride any conflicting items in section 229.4.8)

(19) Bicycle and walking trails shall be shown on the plan. The trails shall be connected to a borough or region wide system.

(20) Disturbance of the development site should only include building footprints and 25 around them for access to the site and storage of materials. Top soil shall be removed, stored and re-used on the site. Any trees or other vegetation shall be replaced on the site at a ratio of two for every one removed. New trees shall be at least 3 inches dbh.

(21) Any land or water that is to be conserved must be protected and managed in perpetuity with covenants, easements and funding with an organization such as a land trust.

(22) Residential communities shall include units for all price ranges and age groups.

(23) Large non-residential developments (over 5 acres) shall include a transportation demand management program.

(24) All buildings shall meet the requirements for visitability by all age and ability groups.

(25) A landscaping plan shall show the use of native, non-invasive, drought resistant material.

(26) To avoid heat islands all paving materials shall have a solar reflectance index of at least 29.

(27) On-site renewable energy production is required unless the applicant can demonstrate infeasibility.

(28) The lighting plan shall show how light will not escape the site either vertically or horizontally.

(29) Alleys are required to provide access for vehicle storage, the location of utility wires and pipes and garbage storage and pick-up.

(30) Access to residential vehicle, boat or other storage is not permitted from the public street.

(31) Non-residential parking shall be located to the rear of the building(s) with access via an alley.

(32) Non-residential parking lots shall segregate large vehicles such as SUVs and pickup trucks from smaller vehicles to provide better sight lines for the latter when backing from a parking space.

(33) Non-residential parking lots shall provide pedestrian access to and from the buildings that are clear of conflict with vehicles.

(34) A planting strip of a minimum of two feet shall be provided between the sidewalk and curb.

- General; consider combining preliminary and final plan review if a pre-application conference is held.
- 229-3.12; the hardship should be physical, not monetary
- 229-4.3.B; consider requiring a grid system to provide multiple means of travel for residents and emergency vehicles
- Table 1; cartway paving widths are generous – cost savings for installation and maintenance/replacement could be reduced if the standards were reduced by several feet. This can be modified if on-street parking is permitted.
- 229-4.4.F; why are lots abutting easements not permitted?
- 229-4.8; sidewalks and street trees no greater than 35 feet on center should be required throughout.
- 229-4.9.C and D; words such as “as needed” and “adequate” are vague and should be specified in appropriate foot candles on the sidewalk/street.
- 229-4.11.E; the municipality should have the right to require a fee in lieu for the purpose of amassing enough funds to provide a substantial park or athletic facility.
- 229-4.11; The ownership and maintenance responsibility appear to be in conflict between E. 1.c. and E.2.c.
- 229-4.12; in a small development, 5% may not be useable
- 229-4.13; Infiltration using Best Management Practices should be required unless it can be proven that such techniques are not possible for geo-physical reasons.
- 229-4.13.E.1.a.2; again, vague wording needs to be clarified.
- 229-7.7.B.2; the word “township” should be replaced with the word “borough”.

Specific Plan for the Commercial Area of Wilkinsburg

The objective of a plan for the commercial area of Wilkinsburg should include provisions which:

- Are authorized by the Pennsylvania Municipalities Planning Code Section 1106
- Reflect the interests of those affected within the boundaries of the plan as defined below

- Provides a high density mix of residential and commercial uses that will attract residents and customer from the greater Wilkinsburg region
- Provide easy and attractive access to mass transit serving Wilkinsburg
- Enhance the pedestrian experience with attractive storefronts, outdoor eating opportunities, landscaping and street furniture such as benches and lighting
- Will be consistent with "Allegheny Places," the Allegheny County comprehensive plan
- Will be adopted by the Wilkinsburg governing body and will be binding on any development that takes place within its coverage area

The specific area to be included in the Specific Plan is to be determined.

Uses

- The area should be a lively and composed primarily of commercial establishments on the ground floor. Dwelling units on second and third floors will provide pedestrian activity at most hours. Benches, landscaping, lighting and public safety presence should encourage shoppers to use the area.

- Therefore all uses listed in Table 260.3.2 for C-1of the Wilkinsburg Zoning Ordinance are permitted except:
  - Automobile Repair Facility
  - Car Wash
  - Communication Towers
  - Funeral Homes/Mortuaries
  - Gas Stations
  - Green Houses
  - Drive through Restaurants

- The following should be added to permitted uses:
  - Single family dwelling
  - Two family dwelling
  - Townhouses
  - Multifamily dwelling
  - Transit stations and waiting areas

- Requirements for C-1 in Table 260.3.3 of the Wilkinsburg Zoning Ordinance will be observed except that the front yard and side yard setbacks will be zero. However, restaurants are encouraged to observe a fifteen foot front setback to accommodate tables for outdoor eating.

Commercial Facades

- Seventy-five percent of the commercial frontage at street level shall be transparent.
- Security screens are prohibited
- Window displays shall be lit by [TBD size] foot candles.
- Front yard parking is prohibited.
- A consistent façade treatment will be designed

Signs

To be determined by Wilkinsburg.

Street Furniture and Amenities

- Fifteen foot wide sidewalks shall be provided throughout.
- Low maintenance, weather resistant street trees shall be planted on the curb side of the sidewalk at 35 feet on center.
- Pedestrian scale decorative street lights yielding [TBD size] foot candles on the sidewalk will be installed.
- Municipal, county or state signs providing direction or public safety messages, mailboxes, newspaper vending machines, traffic signals and street lights shall be integrated into one pole installation.
- Benches with arm rests to prevent people sleeping on them at least five feet long shall be provided every fifty feet on the curb side of the sidewalk.
- Planters shall be provided every one hundred feet
- Bicycle racks shall be installed every one hundred feet
- Trash receptacle shall be provided every one hundred feet
- If space permits, a gazebo or green space shall be installed as a focal point of the commercial area.

Traffic, Parking and Loading/Unloading

- Traffic circles instead of traffic signals shall be used unless its physically impossible
- Metered on-street parking shall be provided
- Additional parking is not permitted
- Truck unloading/loading on the street is prohibited. Five (?) on-street spaces sufficient to accommodate trailer trucks shall be reserved for unloading/loading between the hours of 10:00 pm and 6:00 am. This applies to garbage/waste collection vehicles.

Special Requirements Applicable to the Wilkinsburg Train Station

To be determined by Wilkinsburg.

Management

The Wilkinsburg Community Development Corporation will be responsible for:

- Compliance with this Specific Plan plus sidewalk cleaning and enforcement of the façade, sign and loading/unloading requirements of this Plan.
- Being a liaison with the Borough of Wilkinsburg with respect to city services
- Creating and managing special events and decorations meant to create excitement and interest that will attract shoppers to the area. This will include publicity throughout the greater Wilkinsburg region.

Costs of implementation

Costs to the borough for making the suggested changes in this section include:

- Clerical support in preparing information packets for the planning commission and governing body
- Advertising and conducting a public hearing on the proposed changes
- Legal review throughout the process - $10,000 is a high end estimate
- Professional preparation of the material for publication in the Borough Code - $15,000 is a high estimate

Vacant Properties

There are significant costs associated with blighted and abandoned properties. Condemnations, fires, crime, maintenance associated with vacant properties drain Wilkinsburg Borough resources without any return on investments. Unproductive properties do not contribute to tax revenues. The blight and abandonment associated with vacant properties undermine quality of life and prosperity across social, economic and environmental essentials for communities.

Studies show blight remediation triggers positive economic impacts for adjacent and nearby viable properties. Targeted remediation is a win-win strategy that pays in stabilizing neighborhoods, increasing revenue, increasing property values and lowering crime. Targeted remediation buttresses public and private investments. Wilkinsburg Borough is well positioned to collect and map property data incrementally in order to systematically measure the problem, to develop neighborhood or cluster strategies, to target resources, to implement solutions and to evaluate outcomes.

Scope and Approach

The framework for this assessment is set forth in Sustainable Pittsburgh's Blighted and Abandoned Properties Solutions Project Report (http://www.sustainablepittsburgh.org/scdn/REDS2009.html). The focus is on the neighborhood level; in particular, focus is on residential parcels scattered throughout neighborhoods and small, commercial parcels in neighborhood business districts. These properties are chronically vacant. They are populated with structures and lots which are not being actively maintained, improved or marketed by their owners. The focus is not large tract, commercial sites, industrial sites, or brownfields.

A *Wilkinsburg Borough Liability to Viability Guide to Capacity Building* and a *Wilkinsburg Liability to Viability Model* are located in **Appendices K and L**, respectively. The solutions offered in this report are set out within the framework of the *Capacity Building Guide* and the *Model*.

Summary of Existing Conditions

Wilkinsburg has the benefit of a number of vacant property studies and initiatives. These documented efforts demonstrate significant capacity building already underway by Wilkinsburg to address abandoned and blighted properties:

- *Wilkinsburg Neighborhood Transformations Initiative* 2004 (PHLF)
- *Wilkinsburg: A Call for Sustainability* Heinz 2007 Systems Project
- *Making Wilkinsburg Sustainable Vacant Lot Strategies* inclusive of MVOC Jan 20, 2009 Strategic Demolition Strategy
- *LGA Wilkinsburg Initial Plan for Redevelopment* (Aug 2009; data about a year old)
- *Restoration Wilkinsburg* Heinz Fall 2009 Systems Synthesis Project commissioned by PHLF.

Review of Positive Advances

Wilkinsburg Borough and the Wilkinsburg School District are to be highly commended for starting discussions about four to five years ago on how the two real property taxing jurisdictions could work together to make acquiring vacant properties more attractive and easier, cheaper and faster for prospective purchasers. They created a Wilkinsburg Joint Tax Committee which is an ongoing forum for Wilkinsburg leadership to consider vacant property solutions. As a result of their efforts, two ordinances that streamline processes for prospective vacant property purchasers were passed last year. Ordinance 2802 adopted March 4, 2009 creates incentives for purchasers by offering property tax exemptions over a ten

year period. Ordinance 2817 adopted July 15, 2009 sets out a procedure for tax compromise by which taxing bodies agree to accept less than the total property tax bill due in full satisfaction of the tax debt. Given that every piece of real estate in Pennsylvania is subject to three taxing jurisdictions, this type of joint taxing bodies' deliberations and cooperation is an essential underpinning for any and all local procedures aimed at transitioning vacant unproductive properties to beneficial reuse. Wilkinsburg is ahead of the curve here.

The creation and staffing of the Wilkinsburg CDC that has a focus on the business district is a significant advance for addressing vacant commercial properties.

Review of Potential Solutions

Guide to Capacity Building: Education Phase

Land banking is gaining momentum in Pennsylvania. House Bill 712 is land bank enabling legislation that passed the House of Representative on June 29, 2010 and is now in the Senate Urban Affairs Committee. Education and engagement in the General Assembly's deliberative process is critical now and Wilkinsburg has high capacity for assuming leadership in the legislative process.

Land banks are single purpose entities created to acquire, manage and dispose of vacant, blighted and abandoned real estate. Land banking may be the most comprehensive and sustainable approach to managing vacant properties at scale. House Bill 712, if enacted, would provide state authorization for the creation of land banks by a municipality or municipalities. There are critical additional state legislative actions that must address homeowner protections, financing land bank operations, and property tax collection and foreclosure reform for land banks to be an effective tool, but if comprehensive legislative action is taken, there will be new opportunity to address vacant property problems. Wilkinsburg is well poised to jump into the legislative deliberations about land banking in Pennsylvania and to articulate to the Allegheny Delegation what Wilkinsburg needs to address vacant property.

There is no cost to this solution, just information, power and possibility as a result of participating in the process.

The Blighted and Abandoned Property Conservatorship Law (Act 2008-135) allows Wilkinsburg Borough or a nonprofit organization (including a Wilkinsburg's Redevelopment Authority) or neighbor or business owner near a troublesome vacant property to initiate a court action in the Allegheny County Court of Common Pleas to request a third party (a conservator) to be appointed to improve a vacant property when the owner refuses or is unavailable to take care of the property. A Philadelphia filing is being closely watched now and may provide guidance to Wilkinsburg. A neighborhood business district CDC filed for the appointment of a conservator on a commercial property that had sat vacant in the business district for about 20 years. The property owner hired counsel and filed an answer. The vacant property problem is now under the jurisdiction of a Common Pleas Judge and the parties are for the first time in decades negotiating the sale of the property. Conservatorship is a powerful tool for forcing property owners to deal with their blighted properties. In Pennsylvania and other jurisdictions, just the credible threat of conservatorship has been shown to compel action by otherwise nonresponsive property owners.

After giving due process notice to the owner and lien holders on a piece of real estate, a conservator may be appointed. A conservator's plan must be approved by the court. Upon appointment, a conservator is given the right to take possession of the building to bring it up to code, carry out a rehabilitation plan or, if rehab is not feasible, to demolish it. If financing is necessary to carry out the court approved conservator's plan, the court can approve a conservator's lien with priority over any other liens against

the property except governmental liens. The owner may regain possession after reimbursing the conservator for its costs. If the owner does not redeem the property from conservatorship, the court may approve the sale of the property free and clear of any debt. Conservatorship may be used in concert with Wilkinsburg's tax compromise ordinance as a method of clearing private liens that may be associated with vacant properties.

Costs associated with this solution includes up front due diligence (e.g. cost of a title report), court filing fees, and costs of service of process. Free legal representation may be available through Duquesne University School of Law Urban Redevelopment Clinic.

Guide to Capacity Building: Prevention Phase

Community asset management refers to strategy-driven code enforcement instead of the traditional complaint-driven code enforcement. A community asset management strategy should become the orientation for code enforcement in order to most effectively address blight and abandonment as a strategic part of local government's comprehensive plan. A community asset management plan that strategically addresses blight is, ideally, part of an overall economic development strategy spearheaded by local government leaders in partnership with neighborhood leaders and private business leaders which recognizes the negative economic impact of blight, and the reverse positive impact of blight remediation, upon adjacent and nearby viable real estate. A community asset management plan is best informed by neighborhood, cluster or even block level, planning and strategies. Targets for code enforcement arise from these plans and strategies.

There are no costs associated with this solution.

Code enforcement documentation systems are imperative to addressing vacant properties in a sustainable way. Enforcement actions must be tracked by Parcel ID (place in violation) and property owner name. The documentation system must tickle the enforcement action through the criminal process: Notice to Abate, issuing of a citation or complaint, court disposition, statutory appeal, and fine and cost collection. Code violations are summary criminal offenses. Incarceration may be imposed only after conviction and willful failure to pay fines. The prosecuting agent is often the Code Enforcement Officer although the Borough Solicitor may represent the prosecution but resources rarely allow for significant solicitor time on these summary code offenses. A code enforcement documentation system allows for code enforcement to proactively monitor, and, when necessary and timely, request the Magisterial District Judge (MDJ) to enforcement its fines and costs order. MDJ's imposition of fine and costs are worthless unless the court follows up by conducting a 'fine and cost hearing' to assure collection of fines, establish time payments and/or issue arrest warrants.

"Housing code avoidance" is a state law that makes multiple code convictions a misdemeanor offense punishable by incarceration. 18 P.S. §7510; Act 70 of 1998. A 2nd degree misdemeanor may be charged where a code violation remains after four (4) summary convictions for the same violation at the same property. A 1st degree misdemeanor may be charged for five (5) or more summary convictions. Documentation is key to successful prosecution of misdemeanor charges.

Costs cannot be projected because effective documentation systems vary in sophistication between a simple spreadsheet to hand held computers that allow inputting by code enforcement agents in the field.

The Blighted and Abandoned Property Conservatorship Law (Act 2008-135) is being used by the Borough of St. Clair in Schuylkill County to more efficiently use its demolition budget. The borough identified interested purchasers of condemned properties (typically adjacent property owners), filed for the appointment of the borough as conservator and received approval for a plan to contract with the

prospective purchaser for the demolition, and upon completion of demolition, to transfer clear title to the prospective purchaser.

Costs associated with up front legal expenses are more than offset by savings in the borough's condemnation budget and ongoing costs associated with vacant lots that remain titled in the noncompliant property owner's name and continue to accrue property debt. Free legal representation may be available from Duquesne University School of Law Urban Redevelopment Clinic.

Homeowner support is a critical vacancy prevention strategy. Homeowners, or owner occupants, are the legal *or equitable* owners residing in the property. Equitable owners have a claim to title by but do not have a deed in their name often because of inability to afford a lawyer. Equitable interests typically include claims through inheritance and land sale contracts. Various components of homeowner support are noted in the Capacity Building Guide. There are county level programs in place to connect homeowners to these resources. The primary one currently is the Allegheny County Court of Common Pleas Mortgage Foreclosure Conciliation Program. This program kicks in after a resident defaults on making loan payments, has been serviced an Act 91 Notice of the intention of the lender to file a Complaint in Mortgage Foreclosure, and the filing of the Complaint.

Earlier identification of homeowners needing support is possible at the borough level. First year tax delinquencies (default in escrowed loans may not be identified at the borough level) and code violations are early warning indicators of homeowner stress that are part of the borough business operations and could be captured and mapped for targeted outreach to homeowners as part of block, cluster or neighborhood strategies that are the part of a plan for revitalization. This data is just one part of a comprehensive, well-organized, up-to-date property inventory which is discussed below.

Guide to Capacity Building: Planning Phase

See the components of the planning phase in the Guide to Capacity Building in **Appendix K**. The planning phase is supported by the data collection described in the Wilkinsburg Liability to Viability Model, Section (a) discussed next.

Wilkinsburg Liability to Viability Model, Section (a)

Given Wilkinsburg's Comp Plan and the LGA interns' work, it seems the greatest need for sustaining Wilkinsburg's efforts to address vacant property is the development of a property inventory. The LGA data is about a year old. Local capacity for data collection that meets uniform standards of a well-organized, up-to-date vacant property inventory for Wilkinsburg Borough is timely. A property inventory is the basis for mapping and planning by involved community residents working in partnership with the borough and the county. A property inventory also permits measurement and evaluation of impacts on nearby properties, on local markets.

As per Sustainable Pittsburgh's report, the team approached the University of Pittsburgh's University Center for Urban and Social Research (UCSUR) regarding Wilkinsburg's participation with the Pittsburgh Neighborhood and Community Information System (PNCIS). PNCIS already has the protocols and data sharing agreements in place for collection of county, state and federal data. PNCIS has developed expertise in approached municipal departments and school districts which would be necessary in Wilkinsburg. Finally, PNCIS' underlying philosophy is to allow municipal officials, elected representatives, community members, etc. to access and use the data via its online PNCIS web map, regular training sessions, annual conference and staff support.

Bob Gradeck of UCSUR did a cursory assessment of the availability and condition of several borough data sets and reported to the team leader that UCSUR would be interested in an invitation to propose to Wilkinsburg Borough that its property data be incorporated in the PNCIS. UCSUR would propose to fully assess the availability and condition of Wilkinsburg Borough's information. An initial assessment would determine information availability, assess data quality, identify use restrictions, and prioritize data collection targets. UCSUR would propose to collect available property data, enter it in a database and then, it would be processed, geo-referenced, and documented using conventional metadata standards. The proposal would also address cleanup protocols that would allow for continued incorporation of Wilkinsburg data in the PNCIS. Finally, PNCIS would propose that Wilkinsburg data and ongoing regular data updates, be incorporated into the online PNCIS Web map which is available to anyone who become trained users of the system.

Rough, initial cost expected to be projected in a PNCIS proposal is about $10,000 for a four (4) month project.

Wilkinsburg Liability to Viability Model, Section (b)

The Sustainable Pittsburgh Report recommends participation by the three taxing bodies and the water/sewer provider. Wilkinsburg Penn Joint Water Authority has traditionally cut water service upon non-payment so accumulation of property debt associated with unpaid water charges is not as much of an issue for Wilkinsburg Borough. The Wilkinsburg Joint Tax Committee described above is essentially a forum for the intergovernmental cooperation that section (b) describes, especially with respect to (b) 5. The Wilkinsburg Joint Tax Committee may provide the leadership for galvanizing the broader leadership in the borough to develop an imperative around the other items:

- Framing vacant property solutions within a community asset management strategy that is part of the Borough's economic development Model section b(1) and see Capacity Building, Prevention Phase, above)
- Creating data sharing agreements (Model b (2) and see section a above)
- Charging public officials, (i.e. code enforcement officers) to shift to strategy-driven business processes connected to neighborhood or cluster plans and strategies (Model b(3))
- Identifying leadership roles for private entities committed to supporting vacant property solutions (Model b(6))

Wilkinsburg Liability to Viability Model, Section (d)

Section (d) of the Model recommends engaging certain listed technical services. It was envisioned in the Sustainable Pittsburgh Report that such technical services be available through a new entity which would also acquire, hold, manage and transfer vacant properties. This vision will be modified if land banks become an effective solution in Pennsylvania. For the purposes of this assessment, and in lieu of the availability of a technical service entity or a land bank presently, this assessment considered Wilkinsburg's existing authorities, in particular, the Wilkinsburg Municipal Authority for its capacity to address Model Section (d) items.

The liabilities and the lack of resources currently constrain any entity anywhere in the Commonwealth from assuming the liability of acquiring and holding and managing vacant property. If resources were available the Wilkinsburg Municipal Authority, fully empowered under Pennsylvania's Municipal Authorities Act, is an appropriate entity to engage technical services to

- perform thorough real estate due diligence to identify liabilities associated with property
- advise as to the liabilities, acquisition options and costs of acquisition
- advise on evaluative standards and measures

- engage teams of service providers for planning, acquisition, remediation and transfer services
- acquire and hold property while remediation is performed
- transfer title for reuse; measure impact over time.

Taking a step back to the critical planning phase, Wilkinsburg Municipal Authority may be an appropriate entity to engage UCSUR and, perhaps with some grant funding, hire support staff to quarterback implementation of these recommendations and the development and mapping of neighborhood strategies and parcel-level targets.

Specific Findings and Recommendations

Education:
- Engage in legislative deliberations and influence the opportunity for land banking as a vacant property solution
- Learn to use the new Conservatorship Law to take control derelict vacant properties

Prevention:
- Shift from reactive, complaint-driven code enforcement business processes to strategy-driven, asset management business processes
- Implement a code enforcement documentation system
- Use the Conservatorship Law to maximize borough demolition budget
- Use Borough's delinquent tax data and code enforcement data to target outreach to homeowners under stress

Planning/Wilkinsburg Model:
- Create a comprehensive, sustainable property inventory
- Invite UCSUR to write proposal for Wilkinsburg Borough data be incorporated in the PNCIS
- Build upon the accomplishments of the Wilkinsburg Joint Tax Committee to galvanize borough leadership to coalesce around vacant property solutions
- Use the Wilkinsburg Municipal Authority for engaging technical services and some staff support

Tier 1 Recommendations
- Shift from reactive, complaint-driven business processes to strategy-driven, asset management business processes
- Implement a code enforcement documentation system
- Use the Conservatorship Law to effectively use borough demolition resources
- Invite UCSUR to write a proposal for Wilkinsburg Borough property data be incorporated in the PNCIS

Tier 2 Recommendations
- Engage in legislative deliberations and influence the opportunity for land banking as a vacant property solution
- Learn to use the new Conservatorship Law to take control derelict vacant properties
- Build upon the accomplishments of the Wilkinsburg Joint Tax Committee to galvanize borough leadership to coalesce around vacant property solutions
- Use the Wilkinsburg Municipal Authority for engaging technical services and some staff support

Tier 3 Recommendations
- Create a comprehensive, sustainable property inventory
- Map borough's delinquent tax data and code enforcement data to target outreach to homeowners under stress.

Systems Integration

The goal of pursuing a systems approach is to build upon various piecemeal initiatives from this assessment (i.e., energy efficiency, waste reduction, etc…) so that benefits in each of these areas can be leveraged to achieve even greater results in the entire operational system. A systems approach demonstrates how these components can be connected in a way that leads to innovation. It may be possible to optimize on one or two dimensions that may reduce environmental costs or to produce a short-term marketing campaign. Such piecemeal approaches tend to produce temporary changes, not sustainable ones, and certainly not changes that can be clearly communicated to stakeholders. Without a process that can initiate, maintain, and explain the alignment of various dimensions of analysis taking place among the team members, such initiatives would likely break down or produce marginal results with unclear benefits.

The systems integration process focuses on connect new ideas where possible from the separate dimensions of this assessment. The connections reflect natural points of synergy where the benefits are greater than the sum of individual parts. These connections have the double benefit of producing a more robust, embedded, operationalized, and practical application of sustainability because the connection points require cooperation of staff across roles and functional lines. Evidence of such cooperation convinces stakeholders that innovation is genuine. Sustainability becomes an observable culture of practice. The overall benefit of the systems approach is that synergies across and among the multiple components become multiplicative, not just additive, and these points of synergy reinforce sustainability opportunities more widely across the organization.

Recommendations

The following recommendations point to solutions that cut across multiple dimensions of sustainability. They offer opportunities for having synergistic impacts:

Findings related to the number of vacant properties have impacts related to curbside recycling and waste contracts. Why pay for service to abandoned properties? Some recommendations include:

- *Notify Waste Management that 32 of the 242 Borough buildings with 6 or more units (i.e. 13.2%) are vacant/abandoned*. This should reduce the total number of units in these buildings by the same percent (from 3,120 down to 2,708); and the current annual cost of waste hauling from these buildings by the same percent: $539,773 instead of $621, 858 (*an annual savings of $82,085*).

- *Consider notifying the City of Pittsburgh that 527 of the 5,196 buildings with 5 units or fewer (i.e. 10.1%) are vacant/abandoned*. This should reduce the total number of units in these buildings by the same percent (from 7,580 units down to 6,822 units); and the current annual cost of waste hauling from these units by the same percent: $59,676 instead of $66,306 (an annual savings of $6,631). However, as the current rate even with this reduced number of units is a significant bargain ($0.82 per unit per month); Wilkinsburg might leave well enough alone in this case.

- *Undertake a TRID or TRID-like study to pursue the goals of creating more transit oriented development in Wilkinsburg to improve transportation access, encourage increased activity in growing transit-oriented business districts, and to update land use policies*. Having a TOD overlay in the borough's land use provisions can facilitate and attract developers who are increasingly attracted to communities who have such guidelines, as it makes the development process easier because the community's goals are specified.

The comprehensive and illuminating information resulting from a TRID or TRID-like study would be invaluable to Wilkinsburg. The planning activities that are completed as part of this kind effort would reveal critical market information, development capacity, land use strategies, zoning changes, public infrastructure needs and costs, financial projections and a plan to achieve TOD at each Wilkinsburg station site. It is recommended that Wilkinsburg seek planning funds and undertake a study similar in scope to that required by TRID. An analysis of each busway station site (or TOD district identified in Wilkinsburg's plans) relative to the likely success of TOD would be completed and a subsequent development approach, budget and timeline would be accomplished for each site. Because a major component of the TRID study process is outreach, important alliances would be forged with residents, adjacent communities, local agencies, government officials, private investors and funding sources that are critical to achieving support for development initiatives like TOD.

As stated, the TRID study should also be used to update land use policies in the form of development overlays so that new development or redevelopment in transit corridors can be specified to adhere to the community's sustainable development interests.

- *Engage the borough in a process to create sustainability principles for Wilkinsburg.* This recommendation cuts across all dimensions of this report. Sustainability principles help guide future decision making. Implementing the recommendations in this report can go a long way towards making Wilkinsburg more sustainable; however, over time, the leadership and residents of Wilkinsburg will need to reinterpret these past actions and investigate future actions and decisions. Sustainability principles serve as reminders of Wilkinsburg's core values and interests include sustainability.

Grants

With growing recognition of the need to encourage innovation and strategic change in areas related to sustainability, government and foundations are increasingly offering funding opportunities to support organizations who have committed to sustainability-related programs. Funding opportunities are emerging especially in areas surrounding energy conservation and renewable energy technologies at both the state and federal levels. For example, funds for promoting weatherization are coming on-line for communities as part of the stimulus funding bill passed by congress in early 2009.

Pennsylvania also has a number of grant opportunities relating to energy savings. Specifically, on October 15, 2008, Governor Rendell signed HB 2200 into law as Act 129 of 2008, with an effective date of Nov. 14, 2008. The law imposes new requirements on electric distribution companies (EDCs), with the overall goal of reducing energy consumption and demand. The act provides opportunities for organizations to receive payments for reducing their energy consumption. These new programs benefit businesses and institutional customers that can either temporarily or permanently reduce their electric consumption. As part of the demand-response program, businesses and institutional users who are able to assume a minimum energy profile in times of peak demand can receive substantial payments from EDCs. 10 percent of the overall reduction must come from public and/or nonprofit sources, so there are special provisions for these entities. The program also provides incentives for entities who permanently achieve reductions in their baseline energy usage.

Granting opportunities can help offset transition costs associated with getting sustainability initiatives underway, can provide visibility in terms of leadership for executing cutting edge, sustainability-related programs, and can encourage innovation in terms of Wilkinsburg's practices.

Scope and Approach

For this project the team researched and inventoried potential sources of grant support for implementing the various recommendations presented in the sustainability assessment.

Review of Positive Advances

Over the course of the summer of 2010, Sustainable Pittsburgh brought Wilkinsburg into the Summer Youth Philanthropy Program of The Heinz Endowments whereby our team of interns focused their philanthropic work on integrating sustainable projects and bringing $25,000 to Wilkinsburg.

Wilkinsburg joined as a participant Allegheny County's weatherization program, which brings funding for conducting energy audits and upgrades based on federal ARRA funding and in coordination with Duquesne Light's Act 129 program.

Recommendations

<u>Energy</u>

During the course of this assessment, Wilkinsburg

- Explore opportunities to join with Allegheny County to participate in the PJM Interconnection's Demand Response Program. The goal of the program is to temporarily reduce electricity consumption during times of peak energy demand to ensure system reliability and to decrease the environmental impacts and economic costs of building new power plants to meet infrequent peak demand. As a PJM Demand Response Program participant, Wilkinsburg will receive event

notifications up to a day in advance, and it will initiate pre-determined measures to reduce energy consumption throughout its buildings. Event days are triggered by power system capacity constraints caused by (but not limited to) a localized system capacity emergency declared by PJM or forecasted high temperatures. For more information, visit: http://www.clearchoice-energy.com/index.php?option=com_content&view=article&id=47&Itemid=79

- Consider installing a project that generates energy from an alternative energy source. The Pennsylvania Energy Development Authority (PEDA) provides grant funds for projects up to $250,000 that demonstrate innovative potential. PEDA will consider projects such as the manufacturing of alternative energy or energy efficiency equipment or materials; the development of innovative new alternative energy or energy efficiency technologies; the generation of alternative energy or the production of alternative fuels; the implementation of energy efficiency/demand side projects; or for energy education projects. For the purposes of this grant, alternative energy projects means projects involving any of the following: solar energy; wind; low-impact hydropower; geothermal; biologically derived methane gas, including landfill gas; biomass; fuel cells; coal-mine methane; waste coal; integrated gasification combined cycle; demand management measures, including recycled energy and energy recovery, energy efficiency, load management; and energy education. Nonprofits are eligible for this program; however, there are some restrictions on the solar installations (must be over 200kW). 2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available.

  For more information, please visit:
  http://www.portal.state.pa.us/portal/server.pt/community/peda-move_to_grants/10496

- Another opportunity to obtain funds to support the installation of solar energy projects, whether in the form of loans or in the form of a grant, is from the PA DCED Solar Energy Program. The Solar Energy Program provides financial assistance in the forms of grants and loan funds to promote the use of alternative energy in the Commonwealth. The program is administered jointly by the Department of Community and Economic Development (DCED) and the Department of Environmental Protection (DEP). The program supports activities that promote the generation and use of solar energy and the manufacture or assembly of solar equipment. Grants for solar energy generation or distribution projects, solar research and development facilities, and solar thermal projects shall not exceed $1 million or $2.25 per watt, whichever is less. Grants for planning and feasibility studies shall not exceed 50% of the total cost of the planning project or $175,000, whichever is less. There is a matching investment requirement of at least $1 for every $1 of program funds awarded. This program is currently open for solicitations. 2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available.

  For more information, visit:
  http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/funding-detail/index.aspx?progId=197

- Another source for funding for clean energy projects, such as for the improvement of the performance of buildings, is the Alternative and Clean Energy Program. This program provides financial assistance in the form of grant and loan funds for the utilization, development and construction of alternative and clean energy projects in the Commonwealth. The Program is administered jointly by the Department of Community and Economic Development (DCED) and the Department of Environmental Protection (DEP), under the direction of the Commonwealth

Financing Authority. The program is currently open and was just posted in November 2009. Some eligible projects under this program include:

- Costs associated with the construction or renovation of a High Performance Building including: building construction costs; the acquisition of land and buildings, rights-of-way, and easements; the clearing and preparation of the land; planning, designing, and modeling work.
- Installation of equipment for use by an eligible applicant to facilitate or improve energy conservation or energy efficiency (including but not limited to heating, lighting, and cooling equipment).
- Installation of an alternative energy system.
- Replacement or enhancement of an existing energy system that utilizes nonrenewable energy with an energy system that utilizes alternative energy.

2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available.

For more information, visit:
http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/funding-detail/index.aspx?progId=212

- Consider installing geothermal and/or wind projects. These projects can be supported through the Renewable Energy Program -- Geothermal and Wind Projects Program. This program provides financial assistance in the forms of grants and loan funds to promote the use of these types of alternative energy. The program is administered jointly by the Department of Community and Economic Development (DCED) and the Department of Environmental Protection (DEP). 2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available.

  For more information, visit:
  http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/funding-detail/index.aspx?progId=191
  or contact PA DCED Small Business Financing Division at 717-783-5046.

- Consider retrofitting or obtaining Wilkinsburg fleet vehicles so that they run on biofuels. The cost of this action can be offset with a grant through the Alternative Fuels Incentive Grant. The goal of this program is to create new markets for biofuels in Pennsylvania. The grant investment is not only in alternative fuels, but the deployment of fuel saving vehicles, fleets and technologies. Projects advanced through the program include funds in order to:
  - Retrofit vehicles to operate on alternative fuels.
  - Offsetting the cost of the purchase of alternative fuel vehicle.
  - Offsetting the cost to install fleet refueling equipment for alternative fuel vehicles,

- 2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available.
  For more information, visit:

  http://www.portal.state.pa.us/portal/server.pt/community/alternative_fuels_incentive_grant-move_to_grants/10492

- Consider requesting a grant from the Three Rivers Rain Garden Alliance in order to fund the installation of a rain garden to mitigate stormwater runoff. For details and resources, visit http://www.raingardenalliance.org/. Email the rain garden alliance for information about grants for installing rain gardens at info@raingardenalliance.org.

- Submit a proposal to the League of Women Voters for their Water Resources Education Projects program. This program provides funding for water resources education projects sponsored by community based partnerships that educate, build awareness, and promote water-sustaining public policies and/or behavior change. Projects should be designed to encourage individual or collective action that will protect and improve local water resources. Funding will be awarded for Watershed Protection projects which educate about how to protect, improve or remediate the watershed from the impacts of nonpoint source (NPS) pollution. For more information, visit: http://palwv.org/wren/grants/local.html.

- Consider applying to the PA Growing Greener Plus program:

    - Support the establishment and/or sustainability of riparian forested buffers.
    - Develop innovative technologies to improve water quality or promote water conservation. Examples include demand reduction, leakage and loss control and water reuse.
    - Projects designed to provide data necessary to establish nutrient reduction BMP efficiencies.
    - Projects that support the development of new and innovative technologies in the control of aquatic invasive species consistent with Pennsylvania's recently approved aquatic invasive species management plan and projects that address the control of invasive plants in Pennsylvania's flood protection projects.
    - Projects that enhance implementation of a statewide or regional priority identified in the State Water Plan, particularly focusing on enhanced data collection or indicators of improved water quality management.

    2010-2011 is likely to be a transition year for such funding; however, preparing for a similar project now can prepare Wilkinsburg for when such finding becomes available:

    http://www.depweb.state.pa.us/growinggreener/cwp/view.asp?a=3&q=481344&growinggreenerNav=|

    http://www.depweb.state.pa.us/growinggreener/site/default.asp

Waste Minimization, Recycling, Composting

- Funding opportunities for the expansion/implementation of recycling, composting and other waste minimization efforts are severely limited. Most foundations both do not find waste minimization interesting enough or consider it as operational expenses and are not willing to fund them. To make this more appealing to potential funders, it is recommended the waste reduction activities be incorporated into larger, more inclusive proposals. A proposal for the development and implementation of a master facilities operations plan, including waste, energy, land use, water, etc., might stand a better chance of being funded.

- Recycling and Waste Management Grants
    - Recycling programs are financed by a $2-per-ton recycling fee on all waste (except ash) disposed of in landfills or processed by resource recovery facilities in Pennsylvania. Besides grants for local recycling, funding subsidizes state programs for recycling market development, public education and technical assistance.

    - Act 101, Section 902, Recycling Program Development and Implementation Grants - The grants reimburse counties and municipalities 90 percent of eligible recycling program development and implementation expenses. Pre-application conferences with Regional Recycling Program Contacts are required.
        - Applications are available from the Regional Recycling Program Contacts

Transportation Grant

- Pennsylvania Community Transportation Initiative (PCTI). The Pennsylvania Department of Transportation set aside $24 million in the first two years of the draft 2011-2014 Transportation Improvement Program (TIP) to support potential projects that exhibit Smart Transportation principles. This summer, the Department will be soliciting project applications from communities to participate in the second round of the Pennsylvania Community Transportation Initiative (PCTI), which will be funded through the draft 2011-2014 TIP. Each eligible project may receive up to $1.5 million for the pre-construction and construction phases. Requests for planning proposals may not exceed $300,000. Projects will be selected on the degree to which the project supports Smart Transportation principles and the ability to implement local land use actions in support of the transportation investments within the first two years of the TIP.

  For more information, visit:

  http://www.smart-transportation.com/pcti.html

APPENDICES

Appendix A: Sustainable Solutions Team

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Appendix B: Information on Duquesne Light's Street Lighting Tariff (SE) for Entities Who Own Their Street Lamps

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 10
TO ELECTRIC – PA. P.U.C. NO. 24
SECOND REVISED PAGE NO.64
CANCELLING FIRST REVISED PAGE NO. 64
RATE SE - STREET LIGHTING ENERGY
AVAILABILITY
Available for the entire electric energy requirements of municipal street lighting systems where the municipality has not less than 15,000 street lamp installations and provides for the ownership, operation, and maintenance of its own street lamp installations and takes its entire energy requirements for street lighting under this rate.
MONTHLY RATE
DISTRIBUTION CHARGE
Monthly charge per lamp **$3.17**
SUPPLY CHARGE (C)
All kilowatt-hours **5.9230 cents per** kWh
ELECTRIC CHARGES

Customers who elect to purchase their electric supply requirements from the Company will be charged according to the above charges.
The Company will provide and charge for transmission service consistent with the PJM Open Access Transmission Tariff approved or accepted by the Federal Energy Regulatory Commission for customers who receive Default Service from the Company. The Transmission Service Charges are included, for informational purposes, in Appendix A of this Tariff.
Customers who elect to purchase their electric energy requirements from an EGS will be charged the Distribution Charge by the Company and must purchase their transmission and supply requirements from their selected EGS. Customers may change suppliers or return to the Company for electric supply requirements as defined in Rule No. 45.
For customers who elect to purchase their supply from an EGS, the customer is responsible for any other charges from the EGS. Any month in which the supplier becomes unavailable or during which the customer has not chosen a supplier, the Company will supply electricity at the above Distribution and Supply Charges.
Customers who choose an EGS may select Consolidated Billing or Separate Billing as defined in Rule No. 20.1.
(C)–Indicates Change (I) – Indicates Increase
ISSUED: JULY 12, 2007 EFFECTIVE: JANUARY 1,2008

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 2

TO ELECTRIC – PA. P.U.C. NO. 24 FIRST REVISED PAGE NO.65
CANCELLING ORIGINAL PAGE NO.65
RATE SE - STREET LIGHTING ENERGY - (Continued)
MONTHLY RATE - (Continued)
DETERMINATION OF ENERGY FOR BILLING PURPOSES
Series Street Lights
Applicable to the supply of series street lighting energy delivered to the street lighting fixtures at 7.5 amperes unless otherwise agreed upon.
The energy delivered or delivered and supplied each month shall be the product of the connected load in kilowatts as of the fifteenth day of the month for which billed and 350 hours per month, which is the monthly average of the annual burning hours. The connected load on the primary side of the substation or pole-type constant current transformers will be the sum of the rated wattages of all lamps connected, including the rated wattages of their

individual transformers and ballasts, if any, and subject to values of circuit efficiency of 85 percent.

Multiple Street Lights

Applicable to the supply of multiple street lighting energy delivered to the street lighting fixtures at 120/240 volts unless otherwise agreed upon.

(a) For Standard Dusk to Dawn Operation Where the Customer Supplies Controls Approved by the Company. The energy delivered each month shall be the product of the connected load in kilowatts as of the fifteenth day of the month for which billed and 350 hours per month, which is the monthly average of the annual burning hours. The connected load shall be the sum of the rated wattages of all lamps connected, including the rated wattages of their individual ballasts, subject to power factor correction, if any.

(b) For Other than Standard Dusk to Dawn Operation. The energy delivered or delivered and supplied each month shall be the product of the connected load in kilowatts as of the fifteenth day of the month for which billed and 730 hours per month or less as may be agreed upon. The connected load shall be the sum of the rated wattages of all lamps connected, including the rated wattages of their individual ballasts, subject to power factor correction, if any.

CREDIT FOR OUTAGE

Company will use reasonable diligence to provide a continuous, regular and uninterrupted supply of service and the customer will use reasonable diligence to protect the lighting system. In lieu of determination of the actual lamp-hour outages resulting from a failure of any light to burn for any reason, a deduction of 0.2% of the delivery charges or delivery and energy charges will be made on the monthly bill.

RIDERS

Bills rendered under this schedule are subject to the charges stated in any applicable rider.

ISSUED: DECEMBER 22, 2006

EFFECTIVE: JANUARY 6, 2007

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 2
TO ELECTRIC – PA. P.U.C. NO. 24
FIRST REVISED PAGE NO.66
CANCELLING ORIGINAL PAGE NO.66
RATE SE - STREET LIGHTING ENERGY - (Continued)
MONTHLY RATE - (Continued)

LATE PAYMENT CHARGE

Bills will be calculated on the rates stated herein, and are due and payable on or before thirty days from the date of mailing of the bill to the ratepayer. The bill is overdue when not paid on or before the due date indicated on the bill. An overdue bill is subject to a Late Payment Charge of 1.25% interest per month on the full unpaid and overdue balance of the Company charges on the bill. The Charge shall be calculated on the overdue portions of the Company charges on the bill and shall not be charged against any sum that falls due during a current billing period.
(C)

SPECIAL PROVISIONS

1. Ballasts for multiple mercury vapor streetlights, when installed by the customer, shall be power factor corrected, having a power factor of not less than 90 percent. For ballasts not so corrected, the wattage of each lamp plus ballasts shall be increased by the following ratio: 90% divided by the actual power factor, expressed in percent, of the lamp plus the ballast.
2. Series street lighting circuits will be energized and de-energized in accordance with an agreed upon schedule of burning hours, except where such circuits are controlled by photo electric cells. During other hours, circuits will not be energized except upon sufficient notice to the customer.
3. On all poles, except ornamental poles used exclusively for street lighting purposes, the Company will terminate its facilities at the bracket to which the lighting fixture is attached. On ornamental poles, used exclusively for street lighting purposes, the Company will terminate its facilities at the top of the pole if served from overhead circuits or at the bottom of the pole if served from the underground system.
4. The Company, to protect continuity of service, the general public, and the safety of men engaged in work on poles, reserves the right to install insulating transformers between the Company's circuit and the wiring of the customer's installation. Where insulating transformers are installed, charges will be made therefore as herein before specified.

5. The customer upon request shall supply the Company periodically, but not more often than at six month intervals, with certified tests made by the Electrical Testing Laboratories, Inc. of New York, or a similar accredited organization, showing the mean life input in watts for each size and type of lamp, and the wattage and power factor for each size and type of mercury vapor ballast used by the customer in street lamp installations served under this rate.
6. Energy will normally be supplied under this rate by overhead circuits, but if the Company is required to supply or the customer requests delivery service from underground facilities, the specified unit charges for underground facilities will apply.
(C) – **Indicates Change**
ISSUED: DECEMBER 22, 2006 EFFECTIVE: JANUARY 6, 2007

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 2
TO ELECTRIC – PA. P.U.C. NO. 24
FIRST REVISED PAGE NO.67
CANCELLING ORIGINAL PAGE NO.67
RATE SE - STREET LIGHTING ENERGY - (Continued)
SPECIAL PROVISIONS – (Continued)
7. All installations, on and after July 1, 1969, of standard junction boxes used for street lighting service and of conduit and multiple service cable used exclusively for street lighting service will be installed, owned and maintained by the customer.
TERM OF CONTRACT
Contracts under this rate shall be for a term of not less than ten years.
ISSUED: DECEMBER 22, 2006 EFFECTIVE: JANUARY 6, 2007

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 10
TO ELECTRIC – PA. P.U.C. NO. 24
SECOND REVISED PAGE NO.68
CANCELLING FIRST REVISED PAGE NO. 68
RATE SM - STREET LIGHTING MUNICIPAL
AVAILABILITY
Available for mercury vapor and high pressure sodium lighting of public streets, highways, bridges, parks and similar public places, for normal dusk to dawn operation of approximately 4,200 hours per year.
(Available for mercury vapor street lighting only where served prior to January 30, 1983, and continuously thereafter at the same location.)
MONTHLY RATE
Bills shall be rendered monthly according to the following rates:

Monthly Rate Per Unit

Mercury Vapor

Nominal Lamp Wattage	Nominal kWh Energy Usage per Unit per Month	Distribution Charge per Unit	Supply Charge per Unit
100	44	$12.52	$2.61
175	74	$12.78	$4.38
250	102	$13.03	$6.04
400	161	$13.54	$9.54
1,000	386	$15.59	$22.86

Sodium Vapor

Nominal Lamp Wattage	Nominal kWh Energy Usage per Unit per Month	Distribution Charge per Unit	Supply Charge per Unit
70	29	$12.94	$1.72
100	50	$13.04	$2.96
150	71	$13.22	$4.21
250	110	$13.57	$6.52
400	170	$14.11	$10.07
1,000	387	$16.23	$22.92

ELECTRIC CHARGES
Customers who elect to purchase their electric supply requirements from the Company will be charged according (C) to the above charges.
(C) – Indicates Change (I) – Indicates Increase
ISSUED: JULY 12, 2007 EFFECTIVE: XJANUARY 1,2008

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 10
TO ELECTRIC – PA. P.U.C. NO. 24
SECOND REVISED PAGE NO.69
CANCELLING FIRST REVISED PAGE NO. 69
RATE SM - STREET LIGHTING MUNICIPAL - (Continued)
MONTHLY RATE – (Continued)
ELECTRIC CHARGES – (Continued)
The Company will provide and charge for transmission service consistent with the PJM Open Access (C) Transmission Tariff approved or accepted by the Federal Energy Regulatory Commission for customers who receive Default Service from the Company. The Transmission Service Charges are included, for informational purposes, in Appendix A of this Tariff.
Customers who elect to purchase their electric energy requirements from an EGS will be charged the Distribution (C)
Charges by the Company, and must purchase their transmission and supply requirements from their selected EGS. Customers may change suppliers or return to the Company for electric supply requirements as defined in Rule No. 45.
For customers who elect to purchase their supply from an EGS, the customer is responsible for any other charges (C) from the EGS. Any month in which the supplier becomes unavailable or during which the customer has not chosen a supplier, the Company will supply electricity at the above Distribution and Supply Charges.
Customers who choose an EGS may select Consolidated Billing or Separate Billing as defined in Rule No. 20.1.
RIDERS
Bills rendered under this schedule are subject to the charges stated in any applicable rider.
LATE PAYMENT CHARGE
Bills will be calculated on the rates stated herein, and are due and payable on or before thirty days from the date of mailing of the bill to the ratepayer. The bill is overdue when not paid on or before the due date indicated on the bill. An overdue bill is subject to a Late Payment Charge of 1.25% interest per month on the full unpaid and overdue balance of the Company charges on the bill. The Charge shall be calculated on the overdue portions of the Company charges on the bill and shall not be charged against any sum that falls due during a current billing period.
POLES
No charge is made for wood poles used jointly for street lighting and the support of the Company's general distribution system or for tubular steel poles, trolley type, used jointly for street lighting and the support of trolley span wires.
Where the installation of one (1) or more wood poles is required to serve the customer, the customer has the option to install the pole(s) at his own expense in accordance with SPECIAL TERM AND CONDITION NO. 2 or the Company will install, own and maintain the pole(s) and bill the customer at the monthly rate of $10.26 for each pole

required.
(C) – Indicates Change
ISSUED: JULY 12, 2007 EFFECTIVE: JANUARY 1,2008

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 2
TO ELECTRIC – PA. P.U.C. NO. 24
FIRST REVISED PAGE NO.70
CANCELLING ORIGINAL PAGE NO.70
RATE SM – STREET LIGHT MUNICIPAL – (Continued)
SPECIAL TERMS AND CONDITIONS
The above charges include installation of standard Company facilities including lamps, fixtures or luminaries, brackets and ballasts, all when installed on the overhead distribution system. The above charges include normal operation and maintenance. Normal operation and maintenance does not include periodic tree trimming around the fixture or luminaire.
2. Where it is necessary to install wood, metal, or ornamental poles, or other special facilities or services not in conformance with the Company's standard overhead practice, the additional cost shall be borne by the customer. Title to all facilities, except as noted below, shall vest in the Company.
3. All facilities used in providing street lighting service shall be and remain the property of the Company and may be removed upon termination of service, except that poles, ducts, conduits, manholes and junction boxes shall be the property of and maintained by the customer if they are an integral part of bridges, viaducts or similar structures, or highway project constructed by the joint participation of the customer and other governmental agencies.
4. The customer agrees that the facilities installed under this rate shall not be removed or converted, or the use thereof discontinued by the customer, except upon payment to the Company of the original investment in such facilities, less depreciation to the date of discontinuance of such facilities, less salvage, plus the cost of removal.
ISSUED: DECEMBER 22, 2006 EFFECTIVE: JANUARY 6, 2007

DUQUESNE LIGHT COMPANY SUPPLEMENT NO. 10
TO ELECTRIC – PA. P.U.C. NO. 24
SECOND REVISED PAGE NO.71
CANCELLING FIRST REVISED PAGE NO. 71
RATE SH – STREET LIGHTING HIGHWAY
AVAILABILITY
Available for high intensity discharge lighting of state highways for normal dusk to dawn operation of approximately 4,200 hours per year where the highway lighting system acceptable to Duquesne Light Company is installed by the State and ownership of the entire highway lighting system has been transferred to the Company for a nominal consideration.
MONTHLY RATE
Bills shall be rendered monthly according to the following rates:

Monthly Rate Per Unit

Sodium Vapor Nominal Lamp Wattage	Nominal kWh Energy Usage per Unit per Month	Distribution Charge per Unit	Supply Charge per Unit	(C)
100	50	$13.04	$2.96	(D)
150	71	$13.22	$4.21	(D)
200	95	$13.40	$5.63	(D)
400	170	$14.11	$10.07	(D)

ELECTRIC CHARGES
Customers who elect to purchase their electric supply requirements from the Company will be charged according (C) to the above charges.
The Company will provide and charge for transmission service consistent with the PJM Open Access (C)

Transmission Tariff approved or accepted by the Federal Energy Regulatory Commission for customers who receive Default Service from the Company. The Transmission Service Charges are included, for informational purposes, in Appendix A of this Tariff.
Customers who elect to purchase their electric energy requirements from an EGS will be charged the Distribution (C)
Charge by the Company and must purchase their transmission and supply requirements from their selected EGS. Customers may change suppliers or return to the Company for electric supply requirements as defined in Rule No. 45.
For customers who elect to purchase their supply from an EGS, the customer is responsible for any other charges (C) from the EGS. Any month in which the supplier becomes unavailable or during which the customer has not chosen a supplier, the Company will supply electricity at the above Distribution and Supply Charges.
(C) – Indicates Change (D) – Indicates Decrease
ISSUED: JULY 12, 2007 EFFECTIVE: JANUARY 1,2008

Appendix C: Energy Conservation Investment Table

Energy Conservation Investment Table
(Page 1 of 4)

Tier	Recommendation	Annual Savings ($)	Investm't ($)	Life Exp. (years)	Simple Payback (years)	Return On Investment	Interest Rate (bond or discount)	Net Present Value	Benefit/Cost Ratio
I	Turn things off	see note 1							
I	Increase employee awareness	see note 1							
I	Provide Facilities Manager with a copy of every monthly utility bill.	see note 1							
I	Read your own natural gas meter	see note 1							
I	Organize drawings	see note 1							
I	Reduce DHW water temperature	see note 1							
I	Control computers	$389	$1	20	0.0	38895%	3.00%	$5,786	5,787.34
I	Eliminate dorm style refrigerators	$140	$1	20	0.0	13995%	3.00%	$2,082	2,082.85
I	Eliminate or control bottled water coolers	$386	$1	30	0.0	38597%	3.00%	$7,565	7,565.77
I	Clean lamp lenses	see note 1							
I	Clean unit ventilators	see note 1							
I	Remove window air-conditioners in winter	see note 1							
I	Fix all water leaks	$315	$300	20	1.0	100%	3.00%	$4,386	15.62
I	Determine the DHW needs of the building; install new water heater in the borough building.	$722	$3,000	15	4.2	17%	3.00%	$5,619	2.87
I	Control drinking fountains	see note 1	$1						

Energy Conservation Investment Table

(Page 2 of 4)

Tier	Recommendation	Annual Savings ($)	Investm't ($)	Life Exp. (years)	Simple Payback (years)	Return On Investment	Interest Rate (bond or discount)	Net Present Value	Benefit/Cost Ratio
I	Control air conditioning (as is), install programmable thermostats and adopt aggressive setback strategies	$426	$800	20	1.9	48%	3.00%	$5,538	7.92
I	Install low-flow aerators	see note 1							
I	Control cold drink vending machines	$251	$530	10	2.1	37%	3.00%	$1,611	4.04
I	Check steam traps and repair	$185	$600	7	3.2	17%	3.00%	$553	1.92
II	Isolate hose drying tower from the conditioned building	$361	$200	30	0.6	177%	3.00%	$6,876	35.38
II	Reduce temperatures in emergency stairwells and isolate from the rest of the building	see note 1							
II	Evaluate water meter sizes	see note 1							
II	Control building temperatures. Install temperature controls on the Unit Ventilators	$2,024	$7,000	20	3.5	24%	3.00%	$23,112	4.30
II	Upgrade lighting at borough building	$10,150	$31,327	10	3.1	22%	3.00%	$55,255	2.76
II	Upgrade lighting at Department of Public Works garage	$1,200	$5,210						
II	Install occupancy sensing lighting in emergency stairwells	$449	$3,750	20	8.4	7%	3.00%	$2,930	1.78
II	Upgrade outside lighting controls	see note 1		20					
II	Install occupancy controls in rest rooms and other areas	$172	$800	20	4.7	17%	3.00%	$1,759	3.20
II	Upgrade lighting at Eastridge Library	$632	$2,975	10	4.7	11%	3.00%	$2,416	1.81
II	Blank-off all abandoned ducts	see note 1							

Energy Conservation Investment Table

(Page 3 of 4)

Tier	Recommendation	Annual Savings ($)	Investm't ($)	Life Exp. (years)	Simple Payback (years)	Return On Investment	Interest Rate (bond or discount)	Net Present Value	Benefit/Cost Ratio
II	Install control on garage heaters and garage doors at DPW	see note 1	$300						
II	Air seal and insulate DPW Fire Fighter Dormitory	see note 1	$3,000						
II	Upgrade clothes washer	$272	$1,200	15					
II	Replace refrigerators	$191	$2,808	15	14.7	0%	3.00%	-$528	0.81
II	Seal duct work in borough building attic	see note 1		30					
III	Air seal and insulate borough building attic floor	$3,326	$13,000	40	3.9	23%	3.00%	$63,880	5.91
III	Upgrade window air conditioners	$605	$6,000	15	9.9	3%	3.00%	$1,222	1.20
III	Install radiant pipe heat system in garage	$2,974	$10,000	20	3.4	25%	3.00%	$34,246	4.42
III	Consider installing a boiler controller	$1,980	$3,500	20	1.8	52%	3.00%	$25,957	8.42
III	Finish window replacements	$2,895	$151,750	30	52.4	-1%	3.00%	-$95,007	0.37
III	Fix lantern lights	see note 1							
III	Replace flex duct on Eastridge library HVAC and other units	see note 1							
III	Install new HVAC system in borough building	see note 1							
III	Install new HVAC system in DPW Fire Fighter apartment	$704	$14,000	20	19.9	0%	3.00%	-$3,526	0.75
III	Install low-flush toilets	$600	$5,500	30	9.2	8%	3.00%	$6,260	2.14

Energy Conservation Investment Table (Page 4 of 4)									
III	Install skylights in garage	$584	$22,500	40	38.5	0%	3.00%	$9,001	0.60
III	Install solar PV electric system at borough building	$931	$60,000	30	64.4	-2%	3.00%	-$41,752	0.30
III	Install solar PV electric system at DPW	$3,353	$216,000	30	64.4	-2%	3.00%	$150,280	0.30
III	Install solar hot water system at DPW garage	$114	$10,000	30	87.7	-2%	3.00%	$7,766	0.22

Appendix D: Lighting Upgrade Summary Table - Borough Building, Borough of Wilkinsburg, PA

G.A. Wozniak & Associates, Energy Management and Consulting, 1773 Barr Avenue, Pittsburgh PA 15205 (412) 919-0909

Borough Building

Location	Annual Oper. Hrs.	Existing Lighting System					Proposed Lighting System				Energy Savings		Annual Energy Cost Savings
		Qty	Description	W / per Fixture	Total kW	kWh	Qty	Description	W / per Fixture	Total kW	kW	kWh	
1st Flr Truck Bays/Hose Hang	8760	34	4L 1x4 T12 Industrial	144.00	4.90	42,889	34	4L Industrial QHE-ISN FO28	86.24	2.93	1.96	17,203	$ 1,409.21
2nd Flr Truck Bays/Hose Hang	8760	1	1L 75W A-Lamp Wall Mount	75.00	0.08	657	1	Replace with 19W CFL	19.00	0.02	0.06	491	$ 40.18
3rd Flr Truck Bays/Hose Hang	8760	1	4L 2x4 T12 Surface Wrap	144.00	0.14	1,261	1	3L Wrap QHE-ISH FO28	86.24	0.09	0.06	506	$ 41.45
1st Flr Fire Dept Captain	2500	4	2L 1x4 T12 Surface Wrap	72.00	0.29	720	4	2L Wrap QHE-ISL FO28	43.12	0.17	0.12	289	$ 26.60
1st Flr Center Hall	8760	14	2L 1x4 T12 Pendant Mount Wrap	72.00	1.01	8,830	14	2L Wrap QHE-ISL FO28	43.12	0.60	0.40	3,542	$ 290.13
1st Flr Center Hall	8760	4	4L 2x4 T12 Surface Wrap	144.00	0.58	5,046	4	3L Wrap QHE-ISH FO28	86.24	0.34	0.23	2,024	$ 165.79
1st Flr Center Hall	8760	2	LED exit	6.00	0.01	105	2	Leave as is	6.00	0.01	-	-	$ -
1st Flr Borough Mgr	2500	1	4L 2x4 T12 Layin	144.00	0.14	360	1	3L QHE-ISH Layin FO28	96.00	0.10	0.05	120	$ 11.05
1st Flr Borough Mgr Conf Room	2500	1	4L 2x4 T12 Layin	144.00	0.14	360	1	3L QHE-ISH Layin FO28	96.00	0.10	0.05	120	$ 11.05
1st Flr Asst Manager	2500	1	4L 2x4 T12 Layin	144.00	0.14	360	1	3L QHE-ISH Layin FO28	96.00	0.10	0.05	120	$ 11.05
1st Flr Mgr Receptions	2500	1	4L 2x4 T12 Layin	144.00	0.14	360	1	3L QHE-ISH Layin FO28	96.00	0.10	0.05	120	$ 11.05
1st Flr Fire Chief	2500	2	2L 1x4 T12 Surface Wrap	72.00	0.14	360	2	2L Wrap QHE-ISL FO28	43.12	0.09	0.06	144	$ 13.30
1st Flr Fire Chief	2500	5	4L 2x4 T12 Surface Wrap	144.00	0.72	1,800	5	3L Wrap QHE-ISH FO28	86.24	0.43	0.29	722	$ 66.51
1st Flr Old Mayor's Office	2500	2	4L 2x4 T12 Surface Wrap	144.00	0.29	720	2	3L Wrap QHE-ISH FO28	86.24	0.17	0.12	289	$ 26.60
1st Flr Reports Room	2500	5	2L 2x4 T12 Layin	72.00	0.36	900	5	2L Wrap QHE-ISL FO28	43.12	0.22	0.14	361	$ 33.26
1st Flr Room 1 Hall	2500	2	2L 1x4 T12 Pendant Mount Wrap	72.00	0.14	360	2	2L Wrap QHE-ISL FO28	43.12	0.09	0.06	144	$ 13.30
1st Flr Meter Maid	2500	2	4L 1x4 T12 Surface Wrap	144.00	0.29	720	2	3L Wrap QHE-ISH FO28	86.24	0.17	0.12	289	$ 26.60
1st Flr Records Room	2500	9	4L 1x4 T12 Surface Wrap	144.00	1.30	3,240	9	3L Wrap QHE-ISH FO28	86.24	0.78	0.52	1,300	$ 119.72
1st Flr Storage Pens	600	2	2L 1x4 T12 Surface Wrap	72.00	0.14	86	2	2L Wrap QHE-ISL FO28	43.12	0.09	0.06	35	$ 4.76
1st Flr Storage Pens	600	1	4L 2x4 T12 Surface Wrap	144.00	0.14	86	1	3L Wrap QHE-ISH FO28	86.24	0.09	0.06	35	$ 4.76
1st Flr Police Chief	2500	1	4L 2x4 T12 Surface Wrap	144.00	0.14	360	1	3L Wrap QHE-ISH FO28	86.24	0.09	0.06	144	$ 13.30
1st Flr Police Chief	2500	4	4L 2x4 T12 Surface Wrap	144.00	0.58	1,440	4	3L Wrap QHE-ISH FO28	86.24	0.34	0.23	578	$ 53.21
1st Flr Back Door Entry @ Buliton Board	8760	1	1L 1x4 T12 Strip	38.00	0.04	333	1	1L Strip QHE-ISN FO28	21.56	0.02	0.02	144	$ 11.80
1st Flr Back Door Entry	8760	5	2L 1x4 T12 Pendant Mount Wrap	72.00	0.36	3,154	5	2L Wrap QHE-ISL FO28	43.12	0.22	0.14	1,265	$ 103.62
1st Flr Back Door Entry Hall	8760	1	LED exit	6.00	0.01	53	1	Leave as is	6.00	0.01	-	-	$ -
1st Flr Detective Adams	2500	1	2L 1x4 T12 Surface Wrap	72.00	0.07	180	1	2L Wrap QHE-ISL FO28	43.12	0.04	0.03	72	$ 6.65
1st Flr Booking & Holding	2500	5	4L 2x4 T12 Surface Wrap	144.00	0.72	1,800	5	3L Wrap QHE-ISH FO28	86.24	0.43	0.29	722	$ 66.51
1st Flr LT. Krempasky,	2500	4	4L 2x4 T12 Surface Wrap	144.00	0.58	1,440	4	3L Wrap QHE-ISH FO28	86.24	0.34	0.23	578	$ 53.21
1st Flr Police Restroom	1000	1	2L 1x4 T12 Surface Wrap	72.00	0.07	72	1	2L Wrap QHE-ISL FO28	43.12	0.04	0.03	29	$ 3.28
1st Flr Hall	8760	6	2L 1x4 T12 Surface Wrap	72.00	0.43	3,784	6	2L Wrap QHE-ISL FO28	43.12	0.26	0.17	1,518	$ 124.34
1st Flr Hall	8760	1	LED exit	6.00	0.01	53	1	Leave as is	6.00	0.01	-	-	$ -
1st Flr Women's Restroom	1000	3	2L 1x4 T12 Surface Wrap	72.00	0.22	216	3	2L Wrap QHE-ISL FO28	43.12	0.13	0.09	87	$ 9.84
1st Flr Female Cell	600	2	2L 1x4 T12 Vandal/Institutional Wrap	72.00	0.14	86	2	Lamps/Ballast QHE-ISN FO28	43.12	0.09	0.06	35	$ 4.76
2nd Floor Council Chambers	1000	10	1L 75W A-Lamp Recessed 1x1 Fixture	75.00	0.75	750	10	Install 19W CFL Lamp	19.00	0.19	0.56	560	$ 63.58
2nd Floor Council Chambers	8760	2	LED exit	6.00	0.01	105	2	Leave as Is	-	-	0.01	105	$ 8.61
2nd Floor Council Chambers	1000	7	6L T12 2x4 Lay-in 3-Ballasts	216.00	1.51	1,512	7	4L 2x4 Prismatic FO28 ISH	129.00	0.90	0.61	609	$ 69.15
2nd Floor Council Chambers	1000	12	1L 75W A-Lamp Recessed 1x1 Fixture	75.00	0.90	900	12	Install 19W CFL Lamp	19.00	0.23	0.67	672	$ 76.30
2nd Floor Council Chambers	1000	4	1L 75W A-Lamp Recessed 1x1 Fixture	75.00	0.30	300	4	Install 19W CFL Lamp	19.00	0.08	0.22	224	$ 25.43
2nd Floor Hall	8760	7	2L T12 1x4 Lay-in Troffer	72.00	0.50	4,415	7	2L 1x4 Layin QHE-ISL FO28	43.12	0.30	0.20	1,771	$ 145.07
2nd Floor Hall	8760	2	LED exit	6.00	0.01	105	2	Leave as Is	6.00	0.01	-	-	$ -
2nd Floor Library	3000	10	1L 75W A-Lamp Recessed 1x1 Fixture	75.00	0.75	2,250	10	Install 19W CFL Lamp	19.00	0.19	0.56	1,680	$ 150.76
2nd Floor Library	3000	1	LED exit	6.00	0.01	18	1	Leave as is	6.00	0.01	-	-	$ -
2nd Floor Library	3000	12	2LT12F96SS Strip Fixtures	138.00	1.66	4,968	12	4L 1x8 Strip QHE-ISN FO28	98.56	1.18	0.47	1,420	$ 127.42
2nd Floor Library	3000	29	2LT12F40SS Strip Fixtures	72.00	2.09	6,264	29	2L 1x4 Strip QHE-ISL FO28	43.12	1.25	0.84	2,513	$ 225.48
2nd Floor Library	3000	6	Linear Pendant Uplts (24-F40T12HO per fixture)	1,740.00	10.44	31,320	6	Replace Fixture T5 Linear	648.00	3.89	6.55	19,656	$ 1,763.93
2nd Floor Men's Room	1000	2	2L T12 1x4 Wrap	72.00	0.14	144	2	2L 1x4 Wrap QHE-ISL FO28	43.00	0.09	0.06	58	$ 6.59
2nd Floor Women's Room	1000	2	2L T12 1x4 Wrap	72.00	0.14	144	2	2L 1x4 Wrap QHE-ISL FO28	43.00	0.09	0.06	58	$ 6.59
2nd Floor Library	3000	10	2L T12 1x4 Wrap	72.00	0.72	2,160	10	2L 1x4 Wrap QHE-ISL FO28	43.00	0.43	0.29	870	$ 78.07
2nd Floor Library	3000	1	LED exit	6.00	0.01	18	1	Leave as Is	6.00	0.01	-	-	$ -
2nd Floor Library	3000	6	1L 75W A-Lamp Recessed 1x1 Fixture	75.00	0.45	1,350	6	Install 19W CFL Lamp	19.00	0.11	0.34	1,008	$ 90.46
2nd Floor Library	3000	1	2L 75W A-Lamp Recessed 2x2 Fixture	150.00	0.15	450	1	Install 19W CFL Lamp	38.00	0.04	0.11	336	$ 30.15
2nd Floor Assoc Librarian & Rest Room	2500	1	2L T12 1x4 Wrap	72.00	0.07	180	1	2L 1x4 Wrap QHE-ISL FO28	43.00	0.04	0.03	73	$ 6.68
2nd Floor Assoc Librarian & Rest Room	2500	2	4L T12 2x4 Wrap	144.00	0.29	720	2	3L 2x4 Wrap QHE-ISL FO28	64.68	0.13	0.16	397	$ 36.53
2nd Floor Librarian	2500	1	2L T12 1x4 Wrap	72.00	0.07	180	1	2L 1x4 Wrap QHE-ISL FO28	43.00	0.04	0.03	73	$ 6.68
2nd Floor Librarian	2500	2	4L T12 2x4 Wrap	144.00	0.29	720	2	3L 2x4 Wrap QHE-ISL FO28	65.00	0.13	0.16	395	$ 36.39
2nd Floor Narrow Storage	600	1	2L T12 1x8 Wrap	72.00	0.07	43	1	2L 1x4 Wrap QHE-ISL FO28	43.00	0.04	0.03	17	$ 2.39
2nd Floor Magazine Room	3000	3	2L T12 1x4 Wrap	72.00	0.22	648	3	2L 1x4 Wrap QHE-ISL FO28	43.00	0.13	0.09	261	$ 23.42
2nd Floor Fire Dept. Kitchen	3500	7	4L T12 2x4 Lay-In	144.00	1.01	3,528	7	3L 2x4 Layin QHE-ISH FO28	97.00	0.68	0.33	1,152	$ 101.38
2nd Floor Fire Dept. Rest Room	1000	1	4L T12 2x4 Wrap	72.00	0.07	72	1	3L 2x4 Wrap QHE-ISH FO28	43.00	0.04	0.03	29	$ 3.29
2nd Floor Fire Dept. Rest Room	1000	1	4L T12 2x4 Wrap	144.00	0.14	144	1	3L 2x4 Wrap QHE-ISH FO28	97.00	0.10	0.05	47	$ 5.34
2nd Floor Locker Room	3500	4	2L T12 1x4 Industrial	72.00	0.29	1,008	4	2L 1x4 Indus. QHE-ISL FO28	43.00	0.17	0.12	406	$ 35.74
2nd Floor Laundry	3500	1	2L T12 1x4 Wrap	72.00	0.07	252	1	2L 1x4 Wrap QHE-ISL FO28	43.00	0.04	0.03	102	$ 8.94
2nd Floor Dormitory	3000	5	2L T12 1x4 Wrap	72.00	0.36	1,080	5	2L 1x4 Wrap QHE-ISL FO28	43.00	0.22	0.15	435	$ 39.04
3rd Floor Center Hall	8760	8	2L T12 1x4 Layin	72.00	0.58	5,046	8	2L 1x4 Layin QHE-ISL FO28	43.00	0.34	0.23	2,032	$ 166.48
3rd Floor Center Hall	8760	2	LED exit	6.00	0.01	105	2	Leave as is	6.00	0.01	-	-	$ -
3rd Floor Auditorium	3000	3	2L T12 1x4 Wrap	72.00	0.22	648	3	2L 1x4 Wrap QHE-ISL FO28	43.00	0.13	0.09	261	$ 23.42
3rd Floor Auditorium	3000	20	4L T12 2x4 Layin	144.00	2.88	8,640	20	3L 2x4 Layin QHE-ISH FO28	97.00	1.94	0.94	2,820	$ 253.07
3rd Floor Auditorium	3000	5	LED exit	6.00	0.03	90	5	Leave as is	6.00	0.03	-	-	$ -
3rd Floor Room 304	2500	2	4L T12 2x4 Wrap	144.00	0.29	720	2	3L 2x4 Layin QHE-ISH FO28	97.00	0.19	0.09	235	$ 21.65
3rd Floor Room 303	2500	12	2L T12 F96 Wrap	72.00	0.86	2,160	12	2L 1x4 Wrap QHE-ISL FO28	43.00	0.52	0.35	870	$ 80.14
3rd Floor Supervisor 303	2500	4	4L T12 2x4 Layin	144.00	0.58	1,440	4	3L 2x4 Layin QHE-ISH FO28	97.00	0.39	0.19	470	$ 43.30
3rd Floor Finance 303	2500	2	4L T12 2x4 Layin	144.00	0.29	720	2	3L 2x4 Layin QHE-ISH FO28	97.00	0.19	0.09	235	$ 21.65
3rd Floor Finance 303	2500	1	1L 100W A-Lamp Table Lamp	100.00	0.10	250	1	CF19ELMini-Twist	19.00	0.02	0.08	203	$ 18.65
3rd Floor Code Enforcement	2500	4	2L T12 1x4 Wrap	72.00	0.29	720	4	2L 1x4 Wrap QHE-ISL FO28	43.00	0.17	0.12	290	$ 26.71
3rd Floor Code Enforcement	2500	4	4L T12 2x4 Layin	144.00	0.58	1,440	4	3L 2x4 Layin QHE-ISH FO28	97.00	0.39	0.19	470	$ 43.30
3rd Floor Children's Library	3000	5	Linear Pendant Uplts (24-F40T12HO per fixture)	1,740.00	8.70	26,100	5	Replace with 12 Lamp T5 Fix	648.00	3.24	5.46	16,380	$ 1,469.94
3rd Floor Children's Library	3000	3	Linear Pendant Uplts (24-F40T12HO per fixture)	1,740.00	5.22	15,660	3	Replace with 12 Lamp T5 Fix	648.00	1.94	3.28	9,828	$ 881.96
3rd Floor Children's Library	3000	2	LED exit	6.00	0.01	36	2	Leave as is	6.00	0.01	-	-	$ -
3rd Floor Children's Library	3000	4	4L T12 2x4 Layin	144.00	0.58	1,728	4	3L 2x4 Layin QHE-ISH FO28	97.00	0.39	0.19	564	$ 50.61
3rd Floor Children's Library	3000	2	4L T12 2x4 Layin	144.00	0.29	864	2	3L 2x4 Layin QHE-ISH FO28	97.00	0.19	0.09	282	$ 25.31
3rd Floor Women's Rest Room	1000	2	2L T12 1x4 Wrap	72.00	0.14	144	2	2L 1x4 Wrap QHE-ISL FO28	43.00	0.09	0.06	58	$ 6.59
Stairs - Center	8760	6	2L T12 1x4 Wrap	72.00	0.43	3,784	6	2L Wrap QHE-ISL FO28	43.00	0.26	0.17	1,524	$ 124.86
Stairs - #2	8760	10	2L T12 1x4 Wrap	72.00	0.72	6,307	10	2L Wrap QHE-ISL FO28	43.00	0.43	0.29	2,540	$ 208.10
Stairs - #2	8760	1	LED exit	6.00	0.01	53	1	Leave As Is	-	-	0.01	53	$ 4.31
Stairs - #3	8760	4	2L T12 1x4 Wrap	72.00	0.29	2,523	4	2L Wrap QHE-ISL FO28	43.00	0.17	0.12	1,016	$ 83.24
Stairs - #3	8760	1	2L T12 1x4 Wrap	72.00	0.07	631	1	2L Wrap QHE-ISL FO28	43.00	0.04	0.03	254	$ 20.81
Stairs - #3	8760	1	LED exit	6.00	0.01	53	1	Leave As Is	-	-	0.01	53	$ 4.31
Exterior (East)	4380	1	Single lamp, 400 watt, metal halide	446.00	0.45	1,953	1	320 Pulse Start Flood	349.00	0.35	0.10	425	$ 36.53
Exterior (East)	4380	2	Single lamp, 250 watt, metal halide	291.00	0.58	2,549	2	175 Pulse Start Flood	208.00	0.42	0.17	727	$ 62.52
Exterior (East)	4380	2	Single lamp, 100 watt, metal halide	128.00	0.26	1,121	2	LED Wall Pack RAB	20.00	0.04	0.22	946	$ 81.35
Exterior (South)	4380	1	Single lamp, 75 watt, incandescent	75.00	0.08	329	1	LED Wall Pack RAB	20.00	0.02	0.06	241	$ 20.72
Exterior (South)	4380	2	Single lamp, 250 watt, metal halide	291.00	0.58	2,549	2	175 Pulse Start Flood	208.00	0.42	0.17	727	$ 62.52
Exterior (West)	4380	1	Single lamp, 75 watt, incandescent	75.00	0.08	329	1	LED Wall Pack RAB	20.00	0.02	0.06	241	$ 20.72
Exterior (West)	4380	2	Single lamp, 23 watt, CFL	23.00	0.05	201	2	Leave As Is	-	-	0.05	201	$ 17.33
Exterior (North)	4380	1	Single lamp, 100 watt, incandescent	100.00	0.10	438	1	LED Wall Pack RAB	20.00	0.02	0.08	350	$ 30.13
Exterior (North)	4380	2	Single lamp, 23 watt, CFL	23.00	0.05	201	2	Leave As Is	-	-	0.05	201	$ 17.33
Manager's Vault	600	3	4L T12 2x4 Wrap	144.00	0.43	259	3	3L Wrap QHE-ISH FO28 Wrap	97.00	0.29	0.14	85	$ 11.62
Weed & Seed	2500	12	4L T12 2x4 Layin	144.00	1.73	4,320	12	3L Wrap QHE-ISH FO28 Wrap	97.00	1.16	0.56	1,410	$ 129.89
Mayor's Office	2500	4	4L T12 2x4 Layin	144.00	0.58	1,440	4	3L Wrap QHE-ISH FO28 Wrap	97.00	0.39	0.19	470	$ 43.30
Firing Range	600	0	No Access	-	-	-	0	No Access	-	-	-	-	$ -
Exidence Room	600	6	2L T12 1x4 Wrap	72.00	0.43	259	6	2L Wrap QHE-ISL FO28	43.00	0.26	0.17	104	$ 14.34
Meter Room	600	0	No Access	-	-	-	0	No Access	-	-	-	-	$ -
Detective Grande	2500	4	4L T12 2x4 Wrap	144.00	0.58	1,440	4	3L Wrap QHE-ISH FO28 Wrap	97.00	0.39	0.19	470	$ 43.30
TOTAL		433			67.07	245,191				34.30	32.77	114,985	$ 10,120.29

NOTES:

[1]Annual Energy Cost Savings is based on utility charges of $5.95/kW (demand) and $0.0778 kWh (energy and surcharges). A 50% Demand diversity is applied.

[2]All savings and costs are strictly estimates and are not guaranteed. Actual savings may differ.

[3]Lighing control savings are not considered in this table.

[4]Lighting material list, fixture power and material costs provided by Jim Phelan of the Hite Company. Estimated material cost - $31,327. Installation cost not included, consult with your electrical contractor.

Appendix E: Lighting Upgrade Summary Table - Department of Pubic Works Garage, Wilkinsburg Borough, PA

G.A. Wozniak & Associates, Energy Management and Consulting, 1773 Barr Avenue, Pittsburgh PA 15205 (412) 919-0909

Department of Public Works Garage													
Location	Annual Oper, Hrs.	Existing Lighting System					Proposed Lighting System				Energy Savings		Annual Energy Cost Savings[1]
		Qty	Description	W / per Fixture	Total kW	kWh	Qty	Description	W / per Fixture	Total kW	kW	kWh	
Garage - Left	4160	9	2LF96T12 Industrial Strips	138.00	1.24	5,167	9	1x8 4L Ind. Strip FO28 ISN	99.00	0.89	0.35	1,460	$ 126.19
Garage - Left 2nd Floor Gym	4160	1	2LF96T12 Industrial Strips	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Garage - Left 2nd Floor Gym	4160	3	2LF96T12 Industrial Strips	138.00	0.41	1,722	3	1x8 4L Ind. Strip FO28 ISN	99.00	0.30	0.12	487	$ 42.06
Garage - Center	4160	32	2LF96T12 Industrial Strips	138.00	4.42	18,371	32	1x8 4L Ind. Strip FO28 ISN	99.00	3.17	1.25	5,192	$ 448.67
Maintenance Closet	4160	1	4LF40T12 Surface Wrap	144.00	0.14	599	1	2x4 3L Wrap FO28 QHE-ISH	96.60	0.10	0.05	197	$ 17.04
Supply Room	4160	4	2LF96T12 Industrial Strips	138.00	0.55	2,296	4	1x8 4L Ind. Strip FO28 ISN	99.00	0.40	0.16	649	$ 56.08
Supply Room	4160	1	2LF40T12 Industrial Strip	138.00	0.14	574	1	1x4 2L Ind. Strip FO28 ISN	49.28	0.05	0.09	369	$ 31.90
Supply Room	4160	1	2LF96T12 Industrial Strips	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Office	4160	3	2LF96T12 Industrial Strips	138.00	0.41	1,722	3	1x8 4L Ind. Strip FO28 ISN	99.00	0.30	0.12	487	$ 42.06
Office	4160	1	2LF40T12 Wrap	72.00	0.07	300	1	1x4 2L Wrap FO28 QHE-ISN	49.28	0.05	0.02	95	$ 8.17
Bathroom	4160	2	2LF96T12 Industrial Strips	138.00	0.28	1,148	2	1x8 4L Ind. Strip FO28 ISN	99.00	0.20	0.08	324	$ 28.04
Uniform Storage	4160	1	2LF96T12 Industrial Strips	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Tire Room	4160	1	2LF96T12 Industrial Strips	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Tire Room	4160	1	2LF96T12 Strip	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Sign Room	4160	1	2LF96T12 Industrial Strips	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Sign Room	4160	1	2LF96T12 Strip	138.00	0.14	574	1	1x8 4L Ind. Strip FO28 ISN	99.00	0.10	0.04	162	$ 14.02
Apartment 2nd Floor	4160	1	4LF40T12 Surface Wrap	144.00	0.14	599	1	2x4 3L Wrap FO28 QHE-ISH	96.60	0.10	0.05	197	$ 17.04
Apartment 2nd Floor Kitchen	4160	1	2LF40T12 Wrap	72.00	0.07	300	1	1x4 2L Wrap FO28 QHE-ISN	49.28	0.05	0.02	95	$ 8.17
Building Exterior	4368	2	400W High Pressure Sodium Floods	465.00	0.93	4,062	2	320W Pulse Start Flood	219.00	0.44	0.49	2,149	$ 184.85
Parking	4368	1	400W High Pressure Sodium Floods	465.00	0.47	2,031	1	320W Pulse Start Flood	219.00	0.22	0.25	1,075	$ 92.42
TOTAL		68			10.25	42,909				6.94	3.31	13,910	$ 1,200.85

NOTES:

[1]Annual Energy Cost Savings is based on utility charges of $5.95/kW (demand) and $0.0778 kWh (energy and surcharges). A 50% Demand diversity is applied.

[2]All savings and costs are strictly estimates and are not guaranteed. Actual savings may differ.

[3]Lighing control savings are not considered in this table.

[4]Lighting material list, fixture power and material costs provided by Jim Phelan of the Hite Company. Estimated material cost - $5,209. Installation cost not included, consult with your electrical contractor.

Appendix F: Lighting Upgrade Summary Table - Eastridge Library, Wilkinsburg Borough, PA

G.A. Wozniak & Associates, Energy Management and Consulting, 1773 Barr Avenue, Pittsburgh PA 15205 (412) 919-0909

Eastridge Library													
Location	Annual Oper, Hrs.	Existing Lighting System					Proposed Lighting System				Energy Savings		Annual Energy Cost Savings[1]
		Qty	Description	W / per Fixture	Total kW	kWh	Qty	Description	W / per Fixture	Total kW	kW	kWh	
Entry Stairs	3120	2	2L 1x4 T12 Wrap	72.00	0.14	449	2	2L 1x4 T8 Wrap FO28 QHE-ISN	49.28	0.10	0.05	142	$ 12.66
Reception	3120	7	4L 2x4 Prismatic Layins	144.00	1.01	3,145	7	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	0.68	0.33	1,035	$ 92.43
Library	3120	26	4L 2x4 Prismatic Layins	144.00	3.74	11,681	26	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	2.51	1.23	3,845	$ 343.30
Office 1	3120	2	4L 2x4 Prismatic Layins	144.00	0.29	899	2	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	0.19	0.09	296	$ 26.41
Restroom	3120	1	4L 2x4 Prismatic Layins	144.00	0.14	449	1	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	0.10	0.05	148	$ 13.20
Kitchen	3120	2	4L 2x4 Prismatic Layins	144.00	0.29	899	2	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	0.19	0.09	296	$ 26.41
Restroom Staff	3120	1	4L 2x4 Prismatic Layins	144.00	0.14	449	1	3L 2x4 T8 Layin FO28 QHE-ISH	96.60	0.10	0.05	148	$ 13.20
Boiler Room Hall	3120	1	2L 1x8 T12 F96 Industrial	138.00	0.14	431	1	2L 1x4 T8 Wrap FO28 QHE-ISN	49.28	0.05	0.09	277	$ 24.71
Exterior	3120	3	150W HPS Floods	188.00	0.56	1,760	3	100W Pulse Start Flood	119.00	0.36	0.21	646	$ 57.66
Exterior	3120	1	100W Man Door Jelly-Jar Light	100.00	0.10	312	1	20W LED Man Door Light	20.00	0.02	0.08	250	$ 22.28
TOTAL		46			6.56	20,473				4.29	2.27	7,082	$ 632.27

NOTES:

[1]Annual Energy Cost Savings is based on utility charges of $5.95/kW (demand) and $0.0778 kWh (energy and surcharges). A 50% Demand diversity is applied.

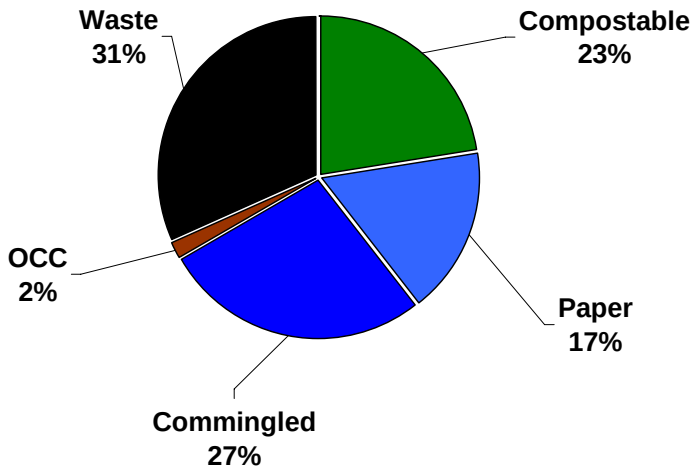
[2]All savings are strictly estimates and are not guaranteed. Actual savings may differ.

[3]Lighing control savings are not considered in this table.

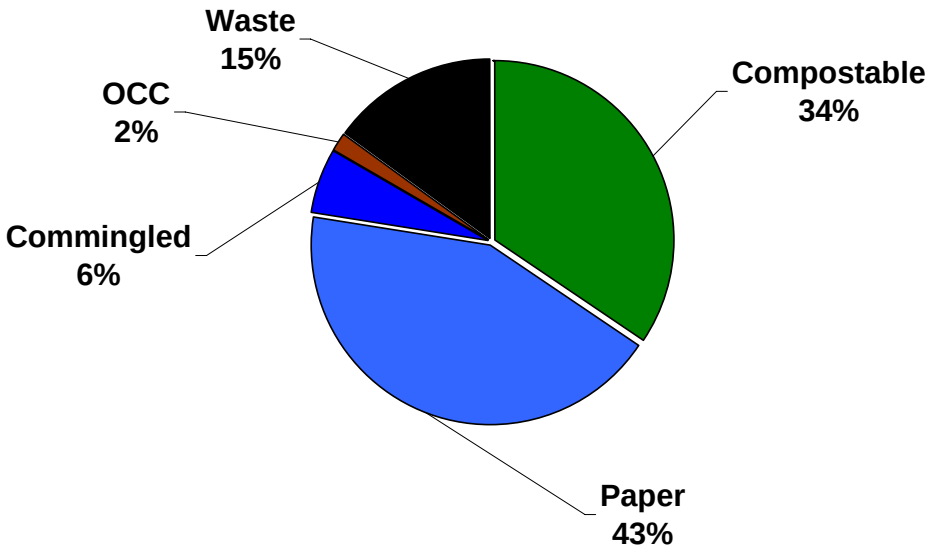
[4]Lighting material list, fixture power and material costs provided by Jim Phelan of the Hite Company. Estimated material cost - $2,975. Installation cost not included, consult with your electrical contractor.

Appendix G: Waste Composition and Solution Resources

Percent Composition of Borough Building Waste by Volume



Percent Composition of Borough Building Waste by Weight



Indoor Recycling Containers

Fig G1. Example of container similar to size of existing paper recycling at Borough building (14.5" x 14.5" x 18"H).
http://www.buschsystems.com/upright-series-indoor-recycling-bins.html

Fig. G2. Example of three "slim" container recycling station
http://www.buschsystems.com/waste-watcher.html

Indoor Recycling Stations- One Piece

Fig. G3. WasteWise Fiberglass Indoor Recycling Container- http://www.wastewiseproducts.com/products/fiberglass/

Fig. G4. A 4 Compartment (22 gallons each) Recycling Station with Casters- http://www.wastewiseproducts.com/products/recycledlumber/frontloading/.

Recycling Signage:

http://www.bayareanaturists.org/signs/

http://www.recyclereminders.com/

Appendix H: Governmental Environmentally Preferable Purchasing Programs

Environmental Preferable Purchasing from the U.S. EPA (http://www.epa.gov/epp/): This site helps green vendors, businesses large and small, municipalities, and consumers to:

- Find and evaluate information about green products and services
- Identify federal green buying requirements
- Calculate the costs and benefits of purchasing choices
- Manage green purchasing processes.

The sections most helpful for a fledgling program include:

- Finding and evaluating green products and services
- Hands on tools for green purchasing, publications, and related links

Comprehensive Procurement Guidelines Product Resource Guides
(http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm): Outlines Federal standards for 39 recycled products in 8 categories: construction products, landscaping products, non-paper office products, paper and paper products, park and recreation products, transportation products, vehicular products, and miscellaneous products. A series of product resource guides summarizing information on the CPG program; EPA's recovered materials content recommendations; case studies from around the country; and key resources, associations, and websites.

2007 Buy Recycled Series: Construction Products
(http://www.epa.gov/epawaste/conserve/tools/cpg/products/index.htm#construct)

2007 Buy Recycled Series: Landscaping Products
(http://www.epa.gov/epawaste/conserve/tools/cpg/products/index.htm#land)

2007 Buy Recycled Series: Miscellaneous Products
(http://www.epa.gov/epawaste/conserve/tools/cpg/products/index.htm#misc)

2007 Buy Recycled Series: Non-paper Office Products
(http://www.epa.gov/epawaste/conserve/tools/cpg/products/index.htm#non)

King County, WA, Purchasing Department
(http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing/Annual_Reports.aspx): This site explicitly outlines an EPP program implemented by a county in the state of Washington. Their environmental purchasing annual reports can be found on the above web site. The reports detail their challenges, opportunities, purchase detail, saving summary, and supporting program elements.

Alameda County, CA, EPP (http://www.stopwaste.org/home/index.asp?page=372): This is a web site designed to inform the public of Alameda County in California how to reduce their waste stream residents, businesses, and schools. Available on their website are environmentally preferable purchasing facts sheets for products ranging from janitorial products to transportation by country officials.

Massachusetts Environmental Preferable Purchasing
http://www.mass.gov/?pageID=afsubtopic&L=5&L0=Home&L1=Budget%2c+Taxes+%26+Procurement&L2=Procurement+Information+%26+Resources&L3=Procurement+Programs+and+Services&L4=Environmentally+Preferable+Products+(EPP)+Procurement+Program&sid=Eoaf):

A comprehensive description of an EPP program implemented by the state of Massachusetts. From their site, one can obtain information about the benefits of EPPs, guides, tools, events and more.

Federal Programs & Guidance:

Federal ENERGY STAR® Programs (http://www.energystar.gov/): A voluntary partnership between the U.S. Environmental Protection Agency and the private sector, to promote the manufacture and use of energy efficient equipment (e.g., computers, printers, copiers, fax machines, exit signs etc.)

National Initiatives:

ICLEI - Local Governments for Sustainability (http://www.iclei.org/index.php?id=983): Is an international association of local governments and national and regional local government organizations that have made a commitment to sustainable development. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable cost-effective development at the local level.

Responsible Purchasing Network (http://www.responsiblepurchasing.org/) The Responsible Purchasing Network is a diverse network of stakeholders that promotes and practices responsible purchasing by identifying best practices, developing effective purchasing tools, educating the market and utilizing its collective purchasing power to maximize environmental stewardship, protect human health and support local and global sustainability.

National & Local Nonprofit Organizations:

NWF Great Lakes (http://www.glrppr.org/docs/NWF-EPP-Report-Feb-07.pdf) An excellent overview of EPP policies, what to include, what to look for (generally), and a sample EPP policy:

Green Seal (http://greenseal.org/): is an independent non-profit organization that promotes the manufacturing, purchasing, and use of environmentally responsible products and services. They set standards and perform third-party certification of products and services that cause less toxic pollution and waste, conserve resources and habitats, and minimize global warming and ozone depletion.

Northeast Recycling Council (http://www.nerc.org/): Established in 1987 by the Eastern Regional Conference of the Council of State Governments to ensure the long-term viability of recycling in the Northeast while maximizing its full

Conserve a Tree (http://www.conservatree.com/): This web site provides interested parties expert advice and leadership on environmentally friendly paper choices. The site is beneficial for experienced or large-volume purchasers and new and small-scale purchasers.

The U.S. Green Building Council (http://www.usgbc.org/): A nonprofit consensus coalition promoting the understanding, development and accelerated implementation of "Green Building" policies, programs, technologies, standards and design practices.

National Associates of Counties (NACo) (http://www.naco.org/Pages/default.aspx): Information on county EPP programs and to order the Local Government Environmental Purchasing Starter Kit, a useful resource for governments trying to implement EPP programs.

Appendix I: Transportation Access Survey Data from Site Visits

PENN AVENUE BUSINESS DISTRICT

Location	Sidewalks	Curb Cuts	Traffic Signals	Ped Xing Signals	Street Lights	Bus Service	Bike Amenities	Parking	Comments
Penn at Braddock	YES	All 4 corners	YES	Yes, with crosswalk	YES	67 A, C, E, F, J	NO	NO	New bus shelter at intersection and also handicapped accessible pedestrian crossing button
Penn at Trenton	YES	All 4 corners	YES	Yes, with crosswalk	YES		NO	NO	
Penn at West	YES	At 3 corners with 4th at Rite Aid entrance	YES	Yes, with crosswalk	YES		NO	NO	On West there are signs directing pedestrians to cross at the designated crosswalk on Penn Avenue
Penn at Pitt	YES	All 4 corners	NO	NO	No, but there are lights at Busway		NO		Heading west on Penn Avenue there is no signage relative to Busway and station location
Penn at Hay	YES	All 4 corners	YES	YES	YES	86A	NO	NO	Pay phone at intersection is broken; no bus stop (signs) at this intersection
Penn at Wood	YES	All 4 corners	YES	YES	YES	71D	NO	NO	About a half dozen jitneys parked on Wood at Penn
Penn at Center	YES	All 4 corners	YES	YES	YES	71D, 86A, 88A, LP	NO	Metered parking	Lots of vacant buildings located between Center and Mill
Penn at Mill	YES	All 4 corners	NO	NO	YES	71D	NO	Metered parking	Presence of vacant, boarded up buildings
Penn at Coal	YES	All 4 corners	NO	Crosswalk only	YES	71D	NO	Parking on cross street	
Penn at Swissvale	YES	All 4 corners	YES	YES	YES	No bus stop signs @ this location	NO	Metered parking	

Field views were conducted on July 12, 2010 and again on July 19, 2010 to document current conditions in study area.

OFF OF PENN AVENUE (Between Hay Street and Swissvale Avenue)

Location	Sidewalks	Curb Cuts	Traffic Signals	Ped Xing Signals	Street Lights	Bus Service	Bike Amenities	Parking	Comments
Ross Avenue	YES	YES	at the intersection w/Wood and at the intersection w/Swissvale	NONE	YES	67A, C, E, F, J; 68A, B; 79 A, B @ Coal Street	NONE	In Farmers' Market lot about half of the lot is metered for public parking and other half is leased by an entity	Ross between Center and Swissvle avenues feels like an unsafe area w/vacant buildings and overgrown lots
Wallace Avenue	YES	YES	at the intersection w/Center and at the intersection w/Wood	NONE	YES	67 C, E, J; 68A, B; 81D; 86A; 88A	NONE	There is parking on-street but mostly residential; lot across from high school has parking half metered and half permit parking; big lot at Mulberry has parking half metered and half permit parking	Hosanna House event - Week of Hope - cleaning up the area

Field views were conducted on July 12, 2010 and again on July 19, 2010 to document current conditions in study area.

EAST BUSWAY STATION SITES

Location	Visibility from Penn Avene	Pedestrian Access	Signage	Bus Routes	Available Spaces / Total Spaces	Bike Amenities	Description of Adjacent Properties	Comments
Wilkinsburg Station (off of Pitt Street)	No visibility from Penn but some visibility from Wallace	Yes	At entrance to park-n-ride only, otherwise none		About 30 to 50 spaces available in rear lot	Yes - 1 rack w/slots for 5 bikes	Gas company	Handicapped parking spaces do not have signs; there are no signs at entrance to transit facility at Rosedale/Hill
Hamnett Station (Penn to right Center to Woodworth/Sewer Way)	No visibility	Yes	At the lot, otherwise none		2 spaces available including one standard and one handicapped	Yes - 1 rack w/slots for 5 bikes next to an overgrown tree	Vacant lots, a boarded-up building, and about 9 or 10 boarded up houses along Whitney	Whitney tunnell access from Pennwood was well marked and maintained and had a pedestrian crossing sign; saw lots of needles along Woodworth Alley and on the trail at Whitney
Train Station (Hay at Ross behind Penn Ave CVS)	Visible only if you look up from under the overpass	Access by stairs and ramp	Signs located in middle of train trestle			None	PNC Bank, Popeye Chicken, back of CVS and Fire Station on Hay	While on-site, a senior citizen remarked, "that's a lot of steps for an older person."

Field views were conducted on July 12, 2010 and again on July 19, 2010 to document current conditions in study area.

Appendix J: Green Neighborhood Development Leadership in Energy and Environmental Design (LEED – ND) 2009 Edition

Introduction

The United States Green Building Council (USGBC) in Cooperation with the Congress for the New Urbanism and the Natural Resources Defense Council created this guidebook based on their rating systems. This document contains three major sections:

- Smart Location and Linkages
- Neighborhood Pattern and Design
- Green Infrastructure and Buildings

Note that LEED guidelines have been developed for several applications including general buildings and schools. No doubt there is some overlap between the various guidebooks. However, the LEED-ND guidelines are probably most applicable for municipalities seeking to retain or develop compact, vibrant, green, pedestrian friendly, mixed use communities.

USGBC awards ratings for buildings or projects that indicate degrees of "greenness". Credits toward these ratings are earned by adhering to the specific recommendations contained in the appropriate guide. One benefit of achieving a high rating of a building or a project is that it may translate into greater marketability.

Clearly the best way to ensure that the policy recommendations contained in LEED-ND are followed is to incorporate them in land use control ordinances such as zoning and subdivision/land development.

The following lists are merely highpoints from the guidance elements in the LEED-ND guidebook. However, substantially more detail can be found in the guidebook itself. The following is contained in each guidance element:

- Intent
- Requirements
- Benefits and Issues to Consider
- Related Credits
- Summary of Referenced Standards
- Implementation
- Timeline and Team
- Calculations
- Documentation Guidance
- Examples
- Exemplary Performance
- Regional Variations
- Resources
- Definitions

It is recognized that some of the guidance elements overlap. It appears that the intent of the authors was to promote sustainable development from a number of angles and that any redundancies are intentional.

Section I. Smart Location and Linkage (Site Selection to strengthen existing places and reduce auto use).

1. Smart Location; encourage development within and near existing communities and public transit.

2. Imperiled Species and Ecological Communities Conservation; conserve imperiled species and ecological communities.
3. Wetland and Water Body Conservation; to preserve water quality, natural hydrology, habitat and biodiversity.
    - Put these assets off limits to development.
    - Depending on the slope and vegetation do not permit land within 50-100 feet of these assets to be disturbed. They should be reserved as buffers.
4. Agricultural Land Conservation; preserve irreplaceable agricultural resources by protecting prime and unique soils and farmland and forests from development.
5. Floodplain Avoidance; promote open space and habitat conservation, enhance water quality and natural hydrological systems. (Note that there is Pennsylvania law on this.)
6. Preferred Locations; reduce negative environmental and public health effects associated with sprawl by developing within existing cities and towns.
7. Brownfield Redevelopment; take advantage of existing sites and infrastructure as well as job seekers living nearby.
8. Reduced Automobile Dependence; encourage new development in locations with multimodal transportation choices thereby reducing greenhouse gases and air pollution associated with automobiles.
9. Bicycle Network and Storage; promote bicycle use to reduce auto use and promote public health. (Note that Pennsylvania law recognizes bicycles as vehicles with the same rights and responsibilities as motorized vehicles.)
10. Housing and Jobs Proximity; to promote balanced communities with diverse uses and employment opportunities.
11. Steep Slope Protection; to minimize erosion, protect habitat and protect natural water systems. Limit development on slopes over 15% and require substantial restoration.
12. Site Design for Habitat or Wetland and Water Body Conservation. Use the resources available from the state's Natural Heritage Program and the Natural Heritage Inventory applicable for Allegheny County.
13. Restoration of Habitat or Wetlands and Water Bodies; use native, non-invasive plants, re-create wetland and water bodies as necessary and buffer them from future encroachment.
14. Long Term Conservation Management of Habitat or Wetlands and Water Bodies; active, adequately funded management is necessary to ensure that these assets are retained in a natural state. Land Trusts are valuable allies in this effort.

<u>Section II. Neighborhood Pattern and Design</u>

1. Walkable Streets; promote walking to reduce auto use and promote public health. Consider the relationship of building heights and street widths as well as attractive street furniture and planting. Maintain a vital commercial district – no blank walls. Promote retail on the firs floor with offices and/or residences above.
2. Compact Development; promote walkability and reduce auto dependence. Locate uses within ¼ miles walking distance of transit stops. Promote density of residential development and intensity of commercial development.
3. Connected and Open Community; to encourage community and ease of travel within the development. Mixed Use Neighborhood Centers; cluster diverse commercial and civic uses to promote walking, biking and transit use. (Consider especially dense and intense uses around transit stops.)
4. Mixed- Income Diverse Communities; promote equity and community by ensuring that people of all income groups, household sizes and age groups can live in the municipality. (Consider requirements that a certain percentage of dwelling units can be affordable. Perhaps provide incentives such as increased density if this goal is met or exceeded.)

5. Reduced Parking Footprint; promote pedestrian orientation of the development and promote walking and biking. (Require secure back racks or lockers and showers and personal lockers).
6. Street Network; Consider a grid pattern of streets and do not permit culs-de-sac.
7. Transit Facilities; require safe, convenient and comfortable transit waiting areas and signs indicating what routes are available each stop and the timetable for transit vehicles.
8. Transportation Demand Management; reduce energy use and pollution associated with single occupancy autos. (Consider car pooling and preferential parking spots, transit passes instead of parking spaces, reduced number of parking spaces, guaranteed ride home in case of necessity among other techniques.)
9. Access to Civic and Public Space; require the clustering of civic buildings and require open spaces within ¼ mile of all residences. In addition provide major active and passive recreation areas and parks.
10. Access of Recreation Facilities; provide multimodal links and ensure that facilities are close to homes. Ensure that facilities are available to the handicapped and all age groups.
11. Visitability and Universal Design; ensure that all buildings and civic spaces can be accessed by all age and ability groups. (Consider door widths, ramps and floor coverings.)
12. Community Outreach and Involvement; make aggressive attempts to engage the community during the planning process and periodic review of progress toward the community's goals.
13. Local Food Production; to promote nutrition, food safety and freshness and to reduce the negative environmental impacts of long-haul transportation of food. (Consider promoting individual gardening, even in the front yard, community gardens plus the keeping of chickens.)
14. Tree Lined and Shaded Streets; to encourage walking and biking, reduce heat islands, reduce auto speeds, improve air quality and reduce cooling loads in buildings. Studies document the positive impact on property values of tree lined streets.
15. Neighborhood Schools; to promote community interaction and encourage walking and biking. (Consider opening the athletic facilities at schools to community use.)

Section III. Green Infrastructure and Buildings

As noted in the introduction, above, USGBC has published guidelines for buildings some of which such as green building certification and building energy and water efficiency is repeated in this section of LEED-ND. Therefore the following deals only with the infrastructure guidelines.

1. Construction Activity Pollution Prevention; to reduce or eliminate soil erosion, waterway sedimentation and dust generation. Much of this is required under Pennsylvania law dealing the erosion and sedimentation.
2. Water Efficient Landscaping; to reduce the use of potable water considerations include plant species, use of rainwater and recycled wastewater.
3. Existing Building Reuse; clearly, reusing existing buildings conserves resources, reduces waste and the adverse environmental impacts of new building related to materials manufacturing and transport.
4. Historic Resource Preservation and Adaptive Use; there are several laws and procedures regarding designation of historic buildings and districts and the treatment of such assets. In the Pittsburgh region the Pittsburgh History and Landmarks Foundation (412/471-5805) is the best source of professional advice regarding designation and dealing with designated assets.
5. Minimized Site Disturbance in Design and Construction; basically this guideline calls for the preservation of soils and vegetation except for the building footprint. Also, legal covenants, conditions and restrictions should be use to preserve non-buildable land.
6. Stormwater Management; again, Pennsylvania law provide guidance in this area. Otherwise, the basic rule is to require that stormwater be dealt with on site through infiltration and re-use such as landscape irrigation.

7. Heat Island Reduction; use paving materials with a solar reflectance index (SRI) of at least 29 and a pervious paving system plus a requirement for generous use of shade trees in paved areas and along streets.
8. Solar Orientation; require that buildings be oriented to take advantage of sun energy which can be captured through passive and active solar strategies.
9. On-Site Renewable Energy Sources; promote the use of techniques including solar, wind, geothermal, hydroelectric and biomass energy production.
10. District Heating and Cooling; especially in new multi-building projects promote the use of techniques such as those listed immediately above to supply heat and cooling to all buildings in the project.
11. Infrastructure Energy Efficiency; conduct energy audits and retrofit infrastructure such as traffic signals and street lights with low energy bulbs.
12. Wastewater Management; treat wastewater on site for reuse in, for example, irrigation.
13. Recycled Content in Infrastructure; in municipal bidding and development reviews require a high (at least 50%) recycled content in materials.
14. Solid Waste Management; require recycling and appropriate disposal of hazardous waste. In the Pittsburgh region the Pennsylvania Resource Council is the source for specific advice on solid waste management.
15. Light Pollution Reduction; the basic idea is that lighting of a site not escape the site by the use of appropriate height and design of luminaries.

Appendix K: Wilkinsburg Borough Liability to Viability Guide to Capacity Building

From *Liability to Viability: A Technical Resource Guide for Action*, The Housing Alliance of Pennsylvania, 2004.

Addressing blight and abandonment at scale for Wilkinsburg Borough s requires capacity building to achieve a broad constituency that has at least a working knowledge of the slow, tedious process of transforming blight and abandonment into opportunity or 'liability to viability' (HA report CITE}. This Guide to Capacity Building lays out necessary steps of moving from liability to viability by way of abandoned property acquisition, remediation and transfer of clear title to new ownership.

The Guide in the table on the following pages lays out the phases of Education, Prevention, Planning, Due Diligence, Acquisition Strategy, Solution Implementation, and Post-Transfer Services. Components of each phase are identified as Educational or Service. For educational components, deployment methods are suggested; for service components, the types of services offered by public, private and non profit providers are noted. Finally, the scale, or level of system (neighborhood, municipal, county or regional) to deploy those components are noted.

Components:

E=Educational

S=Service

Suggested Deployment
Methods of Education deployment suggested.

Types of Public, Private & Non-Profit Service Providers noted.

Level of Scale:
N= Neighborhood
M= Municipal
C= County
R= Regional

Liability to Viability Phases	Components	Level of Scale	Suggested Deployment
EDUCATION			
The Traditional Framework	E	R	Webinars……
…….Property Tax Foreclosure	E	M, C	Workshop…..
…….Eminent Domain Powers	E	M, C, R	Workshops….
…….Due Process	E	R	Webinars……
…….Clear Title	E	R	Webinars……
New Tools like Conservatorship and Land Banks	E	R	Webinar…
State and Local Legislative and Policy Reform	E	R	Website, Informational Email Alerts, Events
From 'Highest, Best Use' to Sustainable Reuse	E	R	Webinars, Events
PREVENTION			
Local Government's Asset Management System	S	M,C	Assessments, TA Teams
Code Enforcement			
PA's Property Maintenance Code	E, S	N, M	Workshops, TA
Rental Property Registries	E, S	N, M	Workshops, TA
Vacant Property Registries	E	N, M	Workshops, TA

Liability to Viability Phases	Components	Level of Scale	Suggested Deployment
MERS	E	N, M	Workshops, TA
Home Owner Support			
Housing Counseling	S	N	HUD approved agencies
Delinquency Prevention and Mitigation	S	N	HUD approved agencies
Home Maintenance	S	N, M, C	Various programs/providers
Tangled Title	S	N	Legal
Estate Planning	S	N	Legal
Conservatorship (Act 2008-135)	E,S	N, M	Webinars, Workshops, Training Materials, TA; Legal
PLANNING			
Planning and Neighborhood Strategies	E, S	N, M	Workshops, Training Materials, TA; Planners
Determining Property Ownership	E, S	N, M	Workshops,

Liability to Viability Phases	Components	Level of Scale	Suggested Deployment
			Training Materials, TA; Planners
Informal Property Investigations	E	N, M	Workshops, Training Materials, TA
Reuse Options/Preliminary Market Assessments/Costs	E	N, M	Workshops, Training Materials, TA, GIS services
Managing Property Data: Google docs to GIS	E	N, M, C	Workshops, Training Materials, TA, GIS services
DUE DILIGENCE			
Property Searches	S	N, M, C, R	Title Searchers
Owner, Lien and Judgment Investigations	S	N, M, C, R	Title Examiners
Market Assessments for Possible Reuses	S	N, M, C, R	Professional, Planner; Real Estate, Developer
Acquisition Options and Costs	S	N	Realtor, Legal
Remediation Cost Estimates	S	N	Site dependent

Liability to Viability Phases	Components	Level of Scale	Suggested Deployment
Future Maintenance Cost Projections	S	N	Site dependent
ACQUISITION STRATEGIES			
Direct Purchase	S	N	Realtors, PAHRA
Property Donation	S	N, M	Professional
Housing Authority Scattered Site Programs	S	N, M, C, R	PAHRA, CDCs
HUD, PHFA Housing Programs	S	N, M, C, R	
REO acquisition programs	S	N, M, C, R	
Tax Foreclosure related options:			
Direct Purchase from taxing body	S	N, M, C, R	Legal
Pittsburgh Treasurer Sale & Land Reserve	S	M	Pittsburgh Treasurer, CDCs
Side Yard & Interested Purchaser Program	S	M, C	Treasurer, Tax Claim Bureau
Lien Assignments	S	M, C	Treasurer, Tax Claim Bureau, Legal

Liability to Viability Phases	Components	Level of Scale	Suggested Deployment
Tax Claim Bureau Option Agreement	S	C	Tax Claim Bureau, Legal
PA Redevelopment Law related options:	S	M, C	
Eminent Domain	S	N, M, C	PAHRA
Blighted Property Review Process	S	N, M	PAHRA
Redevelopment Authority Letters of Administration	S	N, M, C (certain)	PAHRA
Conservatorship Title Transfers	S	N	Legal, Process Services
SOLUTION IMPLEMENTATION			
Project Consulting	S	N	Professional
Project Management	S	N	Contractors, Professional
POST-TRANSFER SERVICES			
Quite Title Actions	S	N, M, C, R	Legal, Process Services
Property Assessment Appeals	S	N, M, C, R	Legal
Compromise of Tax Petitions	S	N, M, C, R	Legal

Appendix L: Wilkinsburg Borough Liability to Viability Model

Vacant property solutions in Wilkinsburg Borough are best driven by neighborhood or cluster strategy and technical implementation support aided by technical services. The following four elements are essential to planning and implementing solutions to address vacant properties:

- Local capacity building for data collection
- Taxing bodies cooperation
- Committees of local government officials, residents and business representatives
- Technical services.

Build local capacity for data collection that meets uniform standards of a well-organized, up to date blighted and abandoned property inventory for the area. The inventory is the basis for mapping and planning to create neighborhood or cluster plans and evaluative aspects to measure the impacts on nearby properties, local markets and quality of life.

The participation of taxing bodies (Allegheny County, Wilkinsburg Borough and Wilkinsburg School District) is critical. They participate by adopting intergovernmental cooperation agreements that create:

- a commitment to framing blighted and abandoned property solutions within a community asset management strategy that is part of the area's economic development;
- data sharing agreements (these often require governmental departments to review internal business processes to meet data collection standards for developing property inventories and maps that allow for neighborhood planning and measuring results);
- a charge to appropriate public officials, (i.e. code officials and planners) to be a part of committees with residents and business people (section c) to develop neighborhood strategy to address community blight and abandonment;
- engagement with an entity like, perhaps, the Wilkinsburg Municipal Authority, for acquisition, remediation and reuse of vacant properties;
- agreement to cooperate with reducing costs associated with blighted and abandoned property acquisition, remediation and transfer;
- a leadership role for private entities committed to supporting efforts to address community blight and abandonment.

Committees: The actual work of developing neighborhood or cluster strategy would be done by committees of residents, business representatives and government officials. The committees would be tasked to research property characteristics, manage property data, explore beneficial re-uses of abandoned property, map, plan, prioritize and develop neighborhood strategy.

Technical Services: For properties identified for acquisition in the neighborhood strategy, it is recommended that technical services be engaged to support implementation of neighborhood strategies by providing technical assistance to:

- perform thorough real estate due diligence to identify liabilities associated with property
- advise as to the liabilities, acquisition options and costs of acquisition
- advise on evaluative standards and measures
- engage teams of service providers for planning, acquisition, remediation and transfer services
- acquire and hold property while remediation is performed
- transfer title for reuse; measure impact over time