

# CITY OF PHILADELPHIA PENNSYLVANIA

OFFICE OF THE CONTROLLER

## STREETS DEPARTMENT

### Follow-up Review of Bigbelly Operations

June 2017

City Controller  
**Alan Butkovitz**



*Promoting honest, efficient & fully accountable government*



# **Review of Streets Department Bigbelly Operations**

## **Executive Summary**

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### **Why the Controller's Office Conducted the Review**

In 2010 the Controller's Office conducted a review of the multi-million dollar purchase of Bigbelly solar powered rubbish bins by the Streets Department. During that review we raised many issues including: The legitimacy of the possible cost savings, responsibility for overall maintenance, life expectancy claims and lack of contract compliance.

As the Bigbelly units originally purchased are nearing their purported life expectancy, this review was undertaken to assess the program and progress made since our 2010 report.

### **What the Controller's Office Found**

The Controller's Office found that the Streets Department still does not have an effective or efficient system to manage the multi-million dollar Bigbelly rubbish collection system.

Significant issues included:

- The Streets Department has not conducted a comprehensive cost benefit analysis of the system even though the original bins purchased are reaching their life expectancy.
- There is no viable work order and maintenance tracking system and, as a result, repairs languish for months or sometimes years.
- While a refurbishment and parts recycling process has been developed, there is no formalized routine cleaning and maintenance program.
- On at least one occasion, the Streets Department circumvented contract bidding procedures by subcontracting cleaning, at a cost of \$88,000, through one of their professional services contractors.
- A software system purchased from Bigbelly, at an annual cost of \$130,000, has had a significant network outage since January 2017 and is continuing. As a result of the outage, up to 82 percent of the Bigbelly units have no communication ability, rendering the system practically useless.

### **What the Controller's Office Recommends**

- Before additional purchases are made, conduct a comprehensive and validated cost-benefit analysis including all costs associated with Bigbelly units and their maintenance.
- Pursue reimbursements from Bigbelly for the lost use of the purchased software platform.
- Develop a system to manage the Bigbelly program that includes robust and viable tracking of all Bigbelly work orders, overall costs of repairs and provides accountability for the work being completed.

# **Review of Streets Department Bigbelly Operations**

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## **Overview**

The Office of the Controller conducted a review in 2010 that examined a number of issues involving the costs and performance of solar powered Bigbelly trash containers purchased by the Streets Department (Department) in 2009.

The 2010 review found a number of concerns about the Bigbelly units involving the purchasing process, the misrepresentation of the unit's life and the lack of training surrounding the Bigbelly. This report follows up on our 2010 Bigbelly review to determine if concerns had been addressed and whether any new issues have since developed.

## **History**

In 2010, the Controller's Office reviewed significant expenditures on these sophisticated high-tech "green" trash containers. The compactor units cost \$3,700 each, or 37 times more than the wire baskets (\$100 each) that were then in use. The price included a four-year warranty plan, wireless hardware as well as communication and software license fees. The city also invested in partner recycling kiosks at a cost of \$776 each. The purchase was justified as cost effective because the new containers would result in reduction of manpower and fuel costs.

In addition, the units were purchased sole source and sole vendor, a process that excludes bidding procedures and therefore is susceptible to waste and abuse. Bigbelly had claimed to be the sole source of the units, but in reality another distributor had offered to sell Bigbellys to the Streets Department. The Department failed to verify the sole source claims. As a result of the apparent false sole source claim by Bigbelly, they were sued in Federal Court. The case was eventually settled but the details are unavailable as the agreement was sealed.

The Department purchased 500 Bigbelly trash compactors in early 2009 along with 210 single stream recycling kiosks, which were to replace 700 wire trash baskets in and around the Center City area. By April 2009, a lease/purchase agreement had been drawn up totaling \$2,175,978 for the units, wireless communication hardware, software, training/installation support, and a four-year warranty. The cost included \$157,828 in interest charges.

For this review, the Controller's Office looked at public documents, interviewed Department officials and employees, observed trash collection and Bigbelly maintenance, and visited the Department's warehouse in Southwest Philadelphia. As a result of the review, the Controller's Office found a number of areas of concern including a lack of complete calculations of costs and purported savings, which was also disclosed as a finding in our 2010 report.

When Bigbelly compactors and recycling units were introduced eight years ago in Philadelphia, the Department presented a cost-benefit analysis that showed, among a number of data points, \$13 million in cost savings over ten years and a decrease in the numbers of weekly trash collections.

The city claimed it would “save nearly the \$13 million in cumulative collection cost savings, net of equipment cost.” The collection frequency would decrease from 17 to five collections per week, or 71 percent, while the number of employees involved in trash collection would drop from 33 to 9 people, or 73 percent. The Department estimated its annual operating costs for the trash collections involving Bigbelly’s would decrease from \$2.3 million to \$720,000, a 67 percent savings.

	Before	After	Savings
Collection frequency	17/week	5/week	12/week (71%)
Number of workers	33	9	24 (73%)
Number of shifts	3	1	2 (67%)
Annual operating cost	\$2,300,000	\$720,000	\$1,580,000 (67%)
Cumulative 10-year cost	\$23 million	\$10 million*	\$13 million (70%)

\*Including the cost of the solar compactor and recycling equipment<sup>1</sup>

The Department calculated that with the elimination of wire baskets in Center City and installation of the Bigbellys, the agency would reduce trash pick up to once per day from two to three times daily, seven days per week. The presumption by the Department was that compaction reduces the number of times trash pick up would be required. Consequently, according to a Department primer on the Bigbelly Program, the elimination of two shifts would result in a reduction of eighteen positions, an approximate \$612,000 savings from the FY2009 target budget.

## Findings

### Total Costs

The Controller’s Office asked representatives of the Department to provide information (data, documents, records, etc.) to support its savings claims. The Department provided information indicating that a total of \$4,572,546 had been spent from FY 2009 to FY 2016 to purchase 1,079 Bigbelly solar compactors and 523 partner kiosks. In addition, the data provided by the Department (see chart) estimated annual maintenance costs of \$260,000.

Big Belly Annual Maintenance Costs	Annual Costs
BigBelly Labor costs for maintenance	\$ 45,000
BigBelly Parts Costs	\$ 60,000
CLEAN Licensing and Communications	\$ 130,000
Ongoing Investment in BigBelly Wraps	\$ 25,000
	\$ 260,000

After reviewing Bigbelly invoices and speaking with Department employees and managers, the Controller’s Office determined there were costs not taken into consideration in the Department’s analysis, which may have offset its estimated cost savings. For example:

- The Department estimated labor costs for maintenance to be \$45,000 per year. However, according to Streets Department individuals interviewed during a site visit to the Department’s storage yard, there are at least three laborers assigned full time to the maintenance function. These three workers’ annual salaries, including overtime for 2016, (not including other personnel costs), totaled \$152,141. In addition, there is an employee who orders, maintains, and issues parts for the Bigbelly units who noted that he spends about half of his time on Bigbelly parts alone. Half of this employee’s salary in 2016, including overtime, amounts to an additional \$19,552 not noted by the Department. Also, there were several other workers who completed 10% of the work orders not included in our analysis. We estimate annual salary costs for Bigbelly maintenance to be a minimum of \$171,693, significantly more than the Department’s \$45,000 estimate.

<sup>1</sup> Chart from “City of Philadelphia Case Study: Cost-Savings from Solar-Powered Compactors for Trash and Recycling, June 2009

- The maintenance personnel also have vehicles assigned to conduct maintenance, move or relocate the equipment, install security devices during special events, etc. These costs are also not included in the Department's cost summary.
- In literature promoting Bigbellys from 2009, the Controller's Office could find no mention of maintenance costs needed to connect Philadelphia's fleet of trash units to the Bigbelly software monitoring system (see Clean System below), a cost of \$130,000 annually.
- The city also did not state the costs of door parts (\$75,000), batteries (\$75,000), skin wraps (\$46,000) and solar panels and kits (\$53,000), which represent only a partial list of the parts needed to keep a Bigbelly compactor in operation.
- The city did not appear to be aware of the frequency that a Bigbelly breaks down or is uncommunicative when it needs to be emptied of trash.

The city has spent nearly \$6.5 million on the Bigbelly enterprise, not including personnel costs, between FY2009 and FY2017, according to Controller's review of city invoices. Bigbelly and the city claimed the units would have a 10-year lifespan and would, therefore, save money because they would be durable and not need to be replaced for a long period of time. But, as we have observed, parts need to be replaced, many units are dysfunctional, units are often damaged beyond repair and, as indicated by our review of the CLEAN System, see below, the claim did not hold up.

### CLEAN System

The CLEAN system is an on-line platform developed by Bigbelly Solar that monitors the compactors installed throughout Philadelphia. Until recently, only compactor units communicated with the system through a 2G wireless network. (Newer recycling units have the ability to be connected also.) The compactors alert CLEAN about its fullness level and some possible defects such as low batteries and open doors. The system is monitored by the Streets Department and Bigbelly from its Massachusetts headquarters. Since the first unit was purchased in 2009 until Spring 2017, the Department has paid approximately \$1.16 million to Bigbelly in order to establish and maintain a connection between Philadelphia's units and the CLEAN System. While the system does have a "notes" module, where work or maintenance can be noted, it does not include an operational maintenance or work order tracking system. In addition, about half of the total amount -- \$526,000 paid since 2013 -- has gone towards the purchase of software license renewals and fees required to remain connected to the CLEAN System.

On Jan. 3, 2017, the system's 2G network stopped operating, leaving up to 75 percent of the Bigbelly fleet (nearly 1,000) located in Philadelphia County without the ability to communicate. The disruption affected trash collection and repairs. The outage should have been anticipated because, according to Department personnel, sometime in 2016, the network provider for the CLEAN System informed Bigbelly that it would cease providing the system's 2G network. Department employees also informed us that the communications company did not offer Bigbelly an approximate date when the service would cease operations.

Bigbelly, in turn, told the Department that the service would be cut off, but the company could not provide Department representatives the expected termination date. When the Controller's Office spoke to Department officials about the outage, they said they were trying to remedy the situation with Bigbelly



and that the solution would require installation of new sim card modules for a new network. The costs of fixing the problem and who would bear such expenses remain unknown.

The situation has improved somewhat since the start of the outage. As of June 10, 2017, approximately 446 units were not communicating out of 951 compactors, or 47 percent of the fleet, according to the CLEAN System. The number of incommunicative units that continue five months after the fact remains a concern, especially in the context of the system's substantial cost.

The CLEAN System is limited in what it can detect from the Bigbelly unit. It cannot, for example, alert the Department on esthetic issues such as a missing or broken handle, cracks in the solar bubble or broken hopper. A missing handle or broken hopper would likely make it difficult for a user to dispose of trash and, in some cases documented by the Controller's Office, may cause people to create makeshift refuse bins such as cardboard boxes, hang plastic bags on nearby honor boxes and dispose trash in the recycler. Such an action would thus negate the utility of the Bigbelly.

Additionally, a member of the public can sometimes open a door if the front door lock is broken. Also, on occasion, a door is not shut properly. CLEAN counts an open door as a collection for the unit, thus this defect could misrepresent the number of actual collections a compactor unit has had.

There is also potential for a unit to go without collection for some time. A Bigbelly on the southwest corner of 4<sup>th</sup> and Market streets, for example, was missing a handle for at least three months in 2016. During that time, the frequency of pickups was low because members of the public could not open the compactor's hopper door and thus no trash could get into the unit. Members of the public cannot throw trash into Bigbelly compactors without handles. This causes another unforeseen problem with the system, that is, skewed data. In this case, the compactor's network status remains green, which generally means the unit does not need to be collected and its systems are fine. But, as its missing handle goes undetected by CLEAN, the lack of collections for such units are misread by the city as increased efficiency. In reality, it represents a failure of a system limited in the defects it can detect that, in turn, misinterprets the data from the system.

Another example of unreliability within the CLEAN System concerns a unit that has escaped the system's detection. The Controller's Office has observed a two-unit station on Market Street, east of City Hall. The Bigbelly is flashing a red light and missing its handle. The Controller's Office could not determine the last time trash was collected from this unit because its identifying serial number, which links to past collections and other information, does not appear on CLEAN. The red alert is on but no one monitoring the CLEAN System can see it or the unit. This missing Bigbelly begs the question, how many other units are not recorded on the system? CLEAN appears to be unreliable in providing thorough and accurate information.

In our interviews with Department users of the CLEAN System, many expressed views that it was of little help to them in accomplishing their duties. Some said they used it rarely, and many expressed the need for it to be significantly improved.

## Maintenance, Accountability and Warranty

The Streets Department did not systematically document warranty service requests or maintain records of repairs and other unit issues until 2014 when an employee attempted to establish such a system. There was no clarity to the warranty coverage, and it is unclear how many times the Department submitted service requests to Bigbelly because no such records appear to exist prior to 2015. This employee negotiated with the company to develop language for the warranty. The employee also developed a number of forms regarding warranty requests and repair orders for the office.

The Controller's Office also found that the Department does not maintain a system of tracking work order repairs. Once a repair issue is addressed at the warehouse or on the street, Department employees document the work completed. In other words, the system is set up only to document a problem after the repairs are made. It does not give an overview of what repairs are needed, what repairs are pending, the frequency of repairs and other related information to properly account for costs and performance. Accordingly, the Department will most likely be unaware of the frequency a unit breaks down and is repaired. This inevitably will lead to an inefficient use of time as well as labor and financial resources.

The specifics of warranty coverage were left undefined in the first Bigbelly contract in 2009. It wasn't until 2014 and 2015 that the Department and Bigbelly clarified the warranty language to cover "all defects in material and workmanship for the duration of the warranty agreement."<sup>2</sup> When a repair or modification was required, Bigbelly would send a representative or contract a service vendor to perform the aforementioned repairs. At times, Bigbelly would reimburse the Department for repairs the Streets Department workers would perform. This warranty language was honored from November 2014 to February 2016. One year later, the agreement was changed and now only malfunctioning parts are covered by the warranty.

As a result, the Bigbelly compactors purchased between 2009 and 2014 were associated with warranties that were not clearly defined for its caretakers at the Streets Department. The City purchased 500 compactors with four-year warranties in FY2009 and FY2010 and paid \$84,000 in warranty protection at a cost of \$168 per warranty. However, there is no documented warranty service during this timeframe.

The Controller's Office asked the Department for warranty request and repair records prior to 2014. An employee responded that such records "do not exist." The number of times the Streets Department used the warranties before 2014 is unknown and therefore the reliability of a Bigbelly cannot be fully determined.. It is concerning that there was no urgency to develop clear, precise warranty coverage until the end of 2014, leaving five years of a questionable warranty purchase.

In January 2017, for instance, a Streets Department manager emailed a list of 105 units "that had active warranty agreements," to Bigbelly. Most of the units were listed as "not communicating" with the CLEAN System while a smaller number needed a new battery. Bigbelly representative's response to the employee's service requests was "these communication items are not covered, the warranty covers manufacturer defects only not external events such as an AT&T shut down." The representative also apologized for having reviewed these terms with a supervisor without carbon copying the employee.

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<sup>2</sup> Warranty Processing Procedure, City of Philadelphia / Bigbelly, Jan. 28, 2015

Bigbelly sold the Department units that were incapable of communicating with the purchased add-on CLEAN System and then, during the warranty period, apparently changed the terms of the warranty to disallow coverage of this purportedly critical capability. Unfortunately, it appears that Department senior personnel readily accepted this questionable business practice. This issue alone raised concerns as to who is actually making Bigbelly-related decisions. The Controller's Office could not determine when the Department, Bigbelly, or possibly other outside influences made Bigbelly related decisions.

### Routine Cleaning

There doesn't appear to be a comprehensive strategy for cleaning the Bigbelly units. According to the Department, employees on light duty on occasion will clean a group of Bigbellys. However, in 2016, the Streets Department took further steps by engaging one of its professional services contractors to clean 697 units over eight weeks at a cost of \$88,000, or \$126 each. Bigbelly's cleaning services are slightly less costly at \$105 per unit.<sup>3</sup> The city would have saved \$14,637 if it had engaged Bigbelly to clean the units. The city likely would have seen the most savings by contracting with local vendors through an open bid process.

Professional services contracts are not subject to the lowest, responsible bidder requirements of Section 8-200 of the Home Rule Charter.<sup>4</sup> They do not have to be granted to vendors based on the lowest price, but can be awarded based on criteria that includes cost. The Office of the Director of Finance oversees professional services contracts awarded by city departments. The cleanup of Bigbelly units does not qualify as a professional services contract because it is not a professional service. The work done by the Bigbelly cleanup crew would have qualified under a commodities contract, which "are bid and awarded by the Procurement Department, for supplies, equipment, non-professional services, and public works."<sup>5</sup> The Department bypassed standard contract procedures for this service that would involve bids and lowest cost.

The Controller's Office requested work order histories about specific Bigbellys for this review. The Office determined the document provided was compiled after repair work had been completed. The manner in which the document was assembled demonstrates that the Streets Department does not have real time accounting for each repair.

Additionally, Bigbelly work order documentation reviewed by the Controller's Office was not filled out correctly: either supervisors did not sign the document or employees wrote in their names where the supervisor's signature was required. In doing so, the forms lacked accountability for the work performed.

When Streets crews pick up garbage during their shifts, one of the members is supposed to note problems or repairs with the Bigbelly observed on the street. They are then required to send the information to their crew supervisor. Those notations develop into the "Bigbelly Defect Report," which is compiled by the supervisor and emailed to the Maintenance Supervisor. Consequently, a maintenance worker is dispatched to the damaged Bigbelly to address the issue. The Controller's Office found a number of instances of when a Bigbelly had a defect that went unrepaired for several weeks and months.

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<sup>3</sup> According to a New York City Bigbelly project document.

<sup>4</sup> <http://cityofphiladelphia.github.io/contracts/>

<sup>5</sup> <http://cityofphiladelphia.github.io/contracts/>



In addition, the Department could provide no historical contemporaneous information concerning pending repair requests or issues. The Department has a useful system in the Transportation Division to monitor street repairs, including the source of the complaint. We believe this same tracking process could be applied to Bigbelly.

There have been times when a Bigbelly needed to be removed from its location due to contractor work in the city. Typically, there should be coordination between the vendor and the Streets Department about the removal of a compactor and recycler. In one case, a two-unit Bigbelly was removed from the northeast corner of 7<sup>th</sup> and Arch streets because it was in the way of a contractor working in the area to construct ramp access from the curb to the street. The removal left some materials protruding from the ground, resulting in a public safety hazard and clearly damaged the unit. When asked about what contingencies were discussed with the contractor, Streets officials said they did not have an answer and would respond at a later time. To date, the Department has not answered the Controller's Office query.

To its credit, the Streets Department has established a Bigbelly repair shop at its Botanic Avenue location in Southwest Philadelphia. The supervisors and technicians repair and/or refurbish units and parts in poor condition. The five-person team also salvages parts from damaged Bigbellys to install in working units. Functioning batteries can be recharged for future use. Hoppers and compactors are refurbished with deep cleanings and paint. This crew tries to repair as many Bigbellys as possible, thus saving the cost of additional purchases.

## **Conclusions**

It is clear that the Department tried to implement a cost-saving, multi-million dollar project from the perspective of managing light trash disposal within Center City. Unfortunately, they failed to adequately manage the transition of replacing \$100 wire baskets with \$4,000 systems that required much more in depth planning, monitoring, and a realistic cost analysis.

While the Department has made some improvements since our first review, notably the in-house maintenance and repair facility and the attempts at public education, for the system to be effective and efficient, better oversight and management are needed.

## **Recommendations**

We recommend the Department conduct a detailed cost-benefit analysis, including citizen input on the utility and esthetics, to determine if continuing this project is economically sound and sufficiently beneficial to the city and its citizens. If it is determined that the system is to be retained, we recommend:

- Develop an office with appropriate management or supervision to oversee the program.
- Ensure that all relevant costs and terms, including warranty details, are fully negotiated for the best interest of the City
- Determine if the CLEAN system is a necessary component given the previously noted lack of use and utility.
- Develop a work order system that allows cradle to grave management of all work issues, including routine maintenance, cleaning and unit movement, which captures all associated costs.

## APPENDICES

Appendix A – Detailed Specific Issues

Appendix B – Installation Issues

Appendix C – Open Door Examples

Appendix D – Other Maintenance Issues

Appendix E – A Missing Bigbelly

Appendix F – Bigbelly Boneyard

# APPENDIX A – DETAILED ISSUES

## Background on Bigbellys

The compactors are self-powered, require no wiring or external electrical connection, and automatically compact waste when the trash inside reaches a certain level. The solar panel converts sunlight into electricity, which is stored in a small battery inside the unit. This battery provides energy for the unit to run at night and during prolonged periods of cloudy weather. When the level of trash rises above the top of the inner bin, the trash interrupts an electric eye beam that then triggers the motor to compact the trash, making room for more trash.<sup>1</sup>

The process repeats automatically as needed until the Bigbelly, which can typically hold about 160 gallons of non-compacted trash, is ready to be collected. When it's ready, the LED light indicator on the front panel turns from green to yellow and the unit sends a wireless message to the CLEAN System, notifying the Streets Department staff that the Bigbelly is ready for collection. A red LED light indicates that the unit is no longer able to compact any more trash and collection is required.<sup>2</sup>

## Bigbelly Reports

**10<sup>th</sup> and Race streets** – The Controller's Office on March 28 observed a Streets Department collection crew attend to a disheveled Bigbelly installed on the northwest corner. Next to the unit, in a planter, was a small plastic bag filled with trash. The handle on the hopper was partially detached and stuck in a door slot below. The unit's hopper was stuffed with garbage. The hopper was stuck in an open position and people threw trash inside the open hopper. The Bigbelly door was also stuck partly open. Once the door was completely open, the overflowing trash fell to the ground as well as some liquid. Needless to say, this should not have occurred.

As early as February 6, 2017, the Controller's Office had noted the defective handle (Pictured at right).



<sup>1</sup> City of Philadelphia Case Study: Cost-Savings From Solar-Powered Compactors for Trash and Recycling

<sup>2</sup> City of Philadelphia Case Study: Cost-Savings From Solar-Powered Compactors for Trash and Recycling



And as of May 31, 2017, this compactor still has an unattached handle. These defects make it difficult for the public to properly utilize the unit.

The crew supervisor said workers who collect trash during their shift are supposed to report defects and problems. Information is then compiled (location of units and their corresponding defects) in an Excel sheet. This information is known as the Bigbelly Defect Report and is allegedly forwarded at least three times a week to a number of Department managers, depending if there are any defects to report.

In May, the Controller's Office requested a copy of the March 28 report from the crew supervisor and her manager. Neither had a copy of the report.

**4<sup>th</sup> and Market streets** – The Controller's Office observed a double-station unit on July 21, 2016 that was located on the southeast corner. The compactor was missing a handle that made it difficult to use the unit. This was not reported by the CLEAN System because many of a unit's problems, such as a missing handle or a crack in the solar bubble, do not prompt alerts. The Streets Department hired a crew, through a third party vendor, to clean up Bigbellys across the city. The crew mistakenly noted in their records on Sept. 15, 2016 that the unit was on the southwest corner of the intersection, but it did note that the handle on the unit was missing.



The Controller's Office returned to the location on Sept. 21 and Oct. 27 and both times, the handle was still missing. The Department eventually replaced the handle, but the unit remained without one for at least three months and six days.

**Broad and Vine streets** – On July 14, 2016, the Controller’s Office observed a double unit on the northeast corner of the intersection with a significant hole in the hopper. The cleaning crew worked on this Bigbelly just one week later, on July 21. According to the report, the crew indicated it assessed the unit, but did not note the hole in the hopper. The crew rated the unit’s condition an “F” for fair. This unit did not appear on the CLEAN System map as of May 23, 2017. While the other units at the intersection are accounted for, one unit is identified in the wrong location.



**Broad and Race streets** – This unit on the northeast corner is an example of a Bigbelly with consistent defects that have been documented almost since the day it was installed, May 22, 2009. Five days later, the compactor alerted the system of a “bin full sensor problem.” CLEAN was alerted to the sensor issue approximately 46 times from 2009 until 2011. It is unclear if the Streets Department had this issue fixed under its warranty because the Department told the Controller’s Office that it did not track warranty service requests until 2014, five years after Bigbellys were installed in Philadelphia. There is also no documentation on the CLEAN system’s notes section that indicates the sensor problem was addressed. The problem could have been addressed after Dec. 13, 2011, the last time the issue was recorded. If so, it still took the Department over two years to address the issue in that scenario. Meanwhile, the Department had paid out \$168 per unit for a four-year warranty. It is unclear whether those warranties were ever used.



In addition, this Bigbelly has had a consistent issue of not communicating with the CLEAN System since Oct. 8, 2012. As of May 24, 2017, this unit has been unable to communicate with the CLEAN System for 831 days, despite an investment by the Streets Department. Each year, the agency renews the software license for each compactor allowing for CLEAN System access. It also pays for annual communication and wireless fees. In this case, the city, despite being alerted to the communication failure of this unit, continued to pay for services that could not be rendered.

**Broad Street and Ridge Avenue** – A member of the Controller’s Office took photos July 14, 2016 of this unit on the southeast corner at about 6 p.m. The cleaning crew contracted by the Department said it cleaned the unit on the same day, July 14. The images taken by the Controller’s Office do not reflect a thorough cleaning of the unit. The photo taken by the Controller’s Office show a Bigbelly that did not appear to be recently cleaned.



**Broad and Arch streets** – A member of the Controller’s Office took photos on August 5, 2016 of the Bigbelly station on the northwest corner that showed: a number of cracks in the solar bubble, a missing handle, the hopper wouldn’t close, and dark markings on the chassis. Nine days earlier, a crew had cleaned this Bigbelly, their records show. The crew did not note the missing handle in their report and rated the defective solar bubble as “F” or fair. The crew also did not mention the broken hopper in the comments section.



**10<sup>th</sup> and Cherry streets** – A Controller’s Office representative observed in the summer of 2015 that part of a unit, located on the northeast corner, was ripped open, exposing a gauging hole. Photos were taken in July 2016, Sept. 2016, December 2016 and March 2017 showing the ripped plastic adjacent to the solar bubble. Sometime between March 24, 2017 and April 18, 2017, the compactor was repaired by the Streets Department.



After nearly two years and a Controller’s Office request for a work order history on this particular unit, the unit was finally repaired.

In addition, this Bigbelly was affected by the CLEAN System communication outage. The unit has not communicated in 148 days.

The Bigbelly’s failure to communication occurred while the unit was under warranty. According to e-mail documents provided by the Streets Department, the city agency in January sent a list of 122 service issues to Bigbelly in January requesting that the company repair the defects – including the deficiencies noted for the 10<sup>th</sup> and Cherry Bigbelly. It does not appear that the Massachusetts-based company repaired this particular Bigbelly whose warranty expired in April 2017.



The unit continues to be incommunicative; an issue eligible to be serviced under the warranty agreement. The Bigbelly Warranty Policy indicates that it covers all defects in material and workmanship for the duration of the warranty agreement.

The implementation of the Bigbelly warranty is also problematic for the Streets Department. The so-called “clock” of the warranty life begins when the City pays for the agreement, usually when the unit is purchased. The Controller’s Office has found a number of cases when the unit has not been installed and the clock ticks while it’s in a Department warehouse. As a result, the City pays for a warranty while the Bigbelly is locked up in a room, not on the streets of Philadelphia. In this case, the unit was installed in August 21, 2013, but its four-year warranty ended four months early on April 21, 2017. The Streets Department was not able to take full advantage of the warrant.



### Frankford Avenue and Pratt Street –

This Bigbelly is believed to have been used in a promotional “Pick It Up, Philly” campaign. Trash piled up against the fence is pictured in the foreground while the Bigbelly is in the background, presumably waiting to be used.



In actuality, this unit on the northeast corner did not communicate with the Clean System from March 2010 until June 2016, about five years or 1,915 days. The unit was rebooted and still communicates



today, as of this writing. Since the Streets Department did not keep records of its warranty service requests before 2014, it is unknown whether Department personnel requested repairs of Bigbelly for this compactor. Its warranty expired in July 2014.

However, when the Controller’s Office visited this site on April 21, 2017, the unit was not functioning and the door was open.

**7<sup>th</sup> and Arch** – Contractors working in the area during the summer moved the Bigbelly station from the northeast corner to a planter barrier a few feet away. The Bigbelly was pressed up to the barrier so that the hopper door would not open, thus making the compactor useless to any citizen wishing to dispose of trash. Furthermore, when the contractors pulled the Bigbelly out of the concrete sidewalk, they failed to pull out the bolts securing the unit to the ground and consequently, left a protruding bolt in the ground. This, in turn, was a potential hazard for anyone walking in the area and not observing a bolt sticking out of the ground. It also appears that the unit was damaged as immediately after it was moved the internal ram completed over 400 compactions in the following 48 hours and then displayed “Red” even though the hopper door was not accessible.



The Controller’s Office alerted Streets Department officials of what had occurred at 7<sup>th</sup> and Arch streets during a meeting in January 2017. The Office asked Department personnel if there was a stipulation in the City agreement with contractors requiring them to notify the agency that a unit needed to be removed. The Controller’s Office also asked to see the contract between the vendor and the City regarding the

contract work at this location. Streets officials could not answer the question and told the Controller's Office that it would get back with an answer. As of this writing in June 2017, Streets Department management did not respond to either request.

Shortly after the Controller's Office disclosed up the issue, the Department removed the unit and to this day, according to the CLEAN System and observations by the Controller's Office, there is no Bigbelly stationed on the northeast corner of 7<sup>th</sup> and Arch streets.



The CLEAN System did note on December 2014 that a unit on the west side of 7<sup>th</sup> and Arch was not physically at this location and thus changed the unit's identification to "7<sup>th</sup> & Arch, W (Not at Location-Unknown)".

**15<sup>th</sup> and Arch** – This Bigbelly is located just north of the Municipal Services Building. In September of 2016, the Controller's Office noted that the door was inoperative and wouldn't close properly or lock. When the hopper handle was pulled, the entire door would open and this issue continued until at least October 28, 2016. On that date, the unit was reportedly serviced for "Door Left Open/Door Lock", by two separate workers with two separate log entries, as noted on a spreadsheet prepared by the Dept at our request for work order history on this unit. However, the spreadsheet did not indicate what actual service was accomplished, except for "*Checked for station ID/ Proper Location, Checked the station floor for rust and painted (if necessary) Checked the battery for signs of corrosion.*" Also, the CLEAN system Notes section noted on October 14, 2016 indicated "A service visit occurred at this station" but that visit was not listed on the work order history provided by the Department.



Eventually, in November of 2016, we noted the door had been closed but that the hopper was jammed and wouldn't function. It is unknown if the "service" reportedly performed on October 28<sup>th</sup> was instrumental in this "new" issue. However, we did note that the CLEAN system on November 29, 2016 issued a "Not Compacting: Check Drive Train" alert, which was unresolved in the system as of June 15, 2017.

We also noted that a blue plastic bag started to appear on a news stand next to the Bigbelly unit and further inquiry determined this was being placed by a member of the Center City District clean team to collect trash that couldn't be placed in the Bigbelly. This "augmentation" by the Center City District was noted by the Controller's Office on November 10 and 16, 2016, January 19 and 30, February 1 and 15, 2017. It should also be noted that the CLEAN alert history for this unit noted "Not Compacting: Check Drive Train" on November 29, 2016 and remains unresolved as of June 15, 2017

During the course of the “augmentation” by the Center City District of placing plastic trash bags outside the unit for trash collection, the Department reportedly made another service call to the unit on February 11, 2017 for “*Unstable Unit*” and “*Routine maintenance performed*”, as well as “*Checked for station ID/ Proper Location, Checked the station floor for rust and painted if necessary, Checked the battery for signs of corrosion and sprayed terminals.*”. However, four days later the hopper was noted again not closing and Center City District personnel were still using plastic bags for trash collection. This continued until at least April 19, 2017, a total of 212 days even though the unit was “collected” 105 times during this period until the communication system outage on January 3, 2017 when most of the Bigbellys quit communicating.





## APPENDIX B – INSTALLATION ISSUES

Inproperly installed or maintained units on Race Street. Doors do not close automatically which results in the upper hopper becoming full, not depositing trash in bin to be compacted. The result is that the unit becomes a very small receptacle (upper hopper only) and overflow litters city streets.



We noted numerous examples of unit that were not closing properly.



On the following pages are examples of many units that didn't close properly. These pictures were taken in and around Center City and Old City during other routine activities and are not a statistical sampling of units but are within high traffic, high tourist areas.



800 Block of N Broad  
July 14, 2016



Broad & Callowhill, July 14, 2016



Broad & Cherry, July 14, 2016



Broad & Girard, July 14, 2016





Broad & Ridge, July 14, 2016



Broad & Arch, August 8, 2016



Broad & Chestnut, August 8, 2016



4<sup>th</sup> & Market, August 12, 2016





4<sup>th</sup> & Arch, August 15, 2016



S Broad & S Penn Sq, August 22, 2016



1100 Block Race, September 9, 2016



1300 Block Race, September 9, 2016



13<sup>th</sup> & Arch, September 20, 2016 (Convention Ctr)



Broad & Locust, October 4, 2016

A view of the inside of the hopper of the unit outside the Convention Center.







15<sup>th</sup> & Arch, November 10, 2016



15<sup>th</sup> & Arch, February 15, 2017



3<sup>rd</sup> & New, January 29, 2017



3<sup>rd</sup> & New, March 25, 2017

This unit had a door issue and wouldn't lock. According to personnel in the Streets Dept, the Mayor's Office requested service on this unit, which corrected the door, but not the hopper issues (above right) or the cleanliness (see below).





3<sup>rd</sup> and New, March 25, 2017, after the Major's Office had reportedly requested service and service was allegedly completed.



Broad & Race, March 26, 2017



15<sup>th</sup> & Arch, April 19, 2017



Broad & Locust, April 25, 2017



And a view inside the Hopper

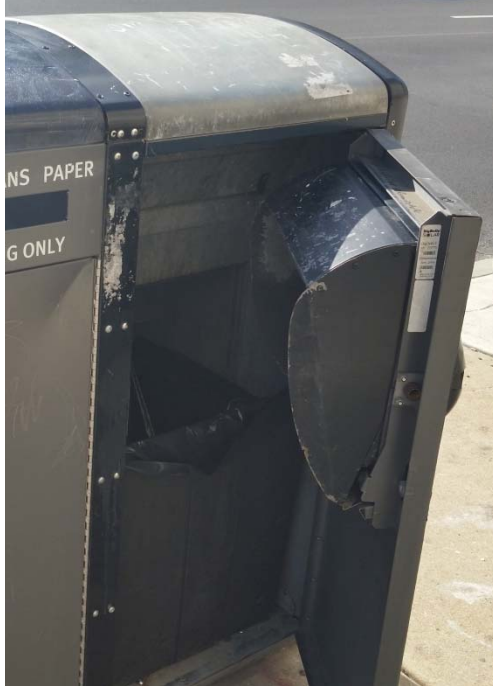
Contrary to the “Disrespect” campaign of the Streets Department, citizens sometimes place alternate trash collection methods when Bigbelly’s are improperly installed and not functioning, as noted on February 14, 2017 at Broad & Locust.



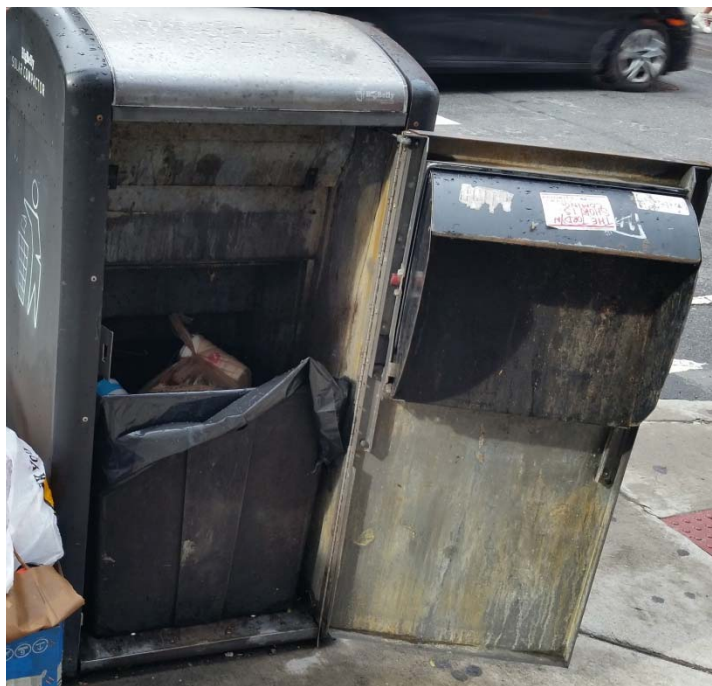


## APPENDIX C – OPEN DOORS

On June 12, 2017, according to the Clean System, of the 955 components in the city wide baseline tracked by the system, 454 had an alert status of which 32 had a “Door Left Open” alert. When a door is left open, the system won’t compact and it becomes a rather dangerous and a very expensive but small trash receptacle.



Broad & Vine, July 14, 2016



12<sup>th</sup> & Locust, July 18, 2016



City Hall Courtyard, August 1, 2016



5<sup>th</sup> & Market, August 12, 2016





7<sup>th</sup> & Arch, September 20, 2016



15<sup>th</sup> & Arch, September 20, 2016  
And September 21, 2016, September 22, 2016, and September 23, 2016



Broad & Locust, October 4, 2016



3<sup>rd</sup> and New, October 30, 2016



11<sup>th</sup> & Market, December 9, 2016



3<sup>rd</sup> & New, January 29, 2017



11<sup>th</sup> & Market, February 15, 2017



11<sup>th</sup> & Arch, March 24, 2017



11<sup>th</sup> & Arch, March 29, 2017



15<sup>th</sup> & Arch (Again), April 3, 2017



## APPENDIX D – Other Maintenance Issues



July 13, 2016, 10<sup>th</sup> & Cherry. Ragged edges noted.



March 24, 1017, still broken and not fixed.



April 18, 2017 – Item repaired, after Controller's Office request for maintenance history.



Broad & Girard, July 14, 2016. This same damage was noted on a Google Street View from June 2015



Many units had cracked solar bubbles and rusted rivets, as noted here at Broad & Callowhill on July 14, 2016



Broken Hopper, Broad & Vine, July 14, 2006



Door Handle Missing, 12<sup>th</sup> & Locust, July 18, 2016



Door Handle Missing, 4<sup>th</sup> & Market, July 21, 2016  
Noted still missing on August 12, September 7, 21  
and October 27, 2016



Door Handle broken, 4<sup>th</sup> & Arch, August 8, 2016  
Noted again on August 12, 15 and September 7,  
2016





Solar Bubble cracked in four places, Broad & Arch, August 5, 2016



And has door handle missing



Side Panel Broken, 1100 Block Race, noted August 5 and September 16, 2016



Solar Bubble cracked in numerous places, 7<sup>th</sup> & Arch, August 8, 2016



Solar Bubble severely weathered, 4<sup>th</sup> & Market NW, August 12, 2016



Solar Bubble cracked, 4<sup>th</sup> & Market SE, August 12, 2016



Additional cracks in Solar Bubble and on side of container. 7<sup>th</sup> & Arch, August 8, 2016



Side Panel broken and jagged, 1100 Block Arch  
September 16, 2016



Handle broken, 10<sup>th</sup> & Race, February 6, 2017  
Also noted on March 24, April 18 and May 31, 2017  
This item was also noted by Streets Dept crew and  
supervisor on April 21, 2017 but, as of May 31, had  
not been repaired.





7<sup>th</sup> & Arch NW, Cracked Solar Bubble and missing screws and rear panel damaged, September 20, 2016



Broad & Chestnut, Solar Bubble cracked and handle missing, February 10, 2017. Noted again on March 1, 2017



11<sup>th</sup> & Market, Hopper handle missing and door lock broken, February 15, 2017



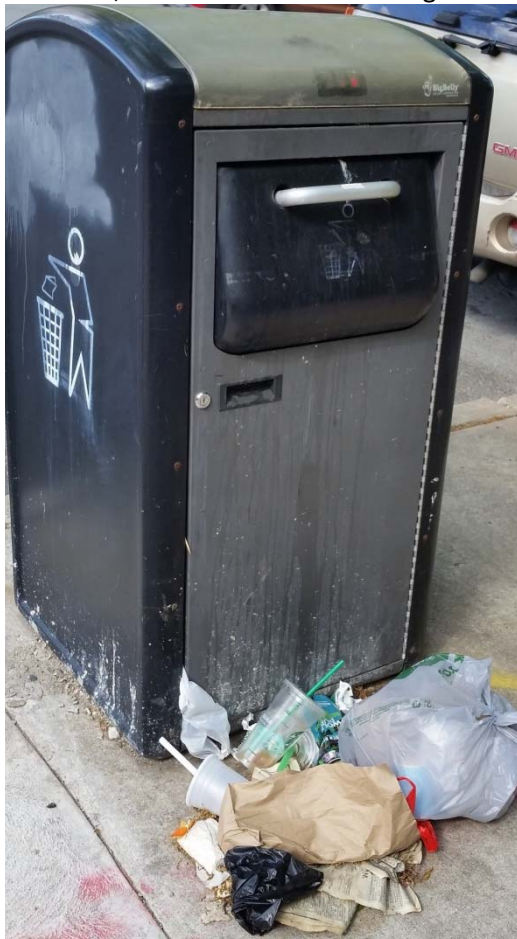
Severe damage, door not properly aligned, 12<sup>th</sup> & Chestnut, February 15, 2017



Handle missing, unit not functioning, Juniper & Market  
March 16, 2017. Handle still missing as of June 7, 2017.



Handle broken, Broad & Walnut  
April 25, 2017



Unit not functioning, Hopper won't open  
8<sup>th</sup> & Race St, May 2, 2017



## APPENDIX E – MISSING BIGBELLY

During the course of our review, the Controller's Office noted a Bigbelly bin on the East side of Juniper, near Market, across from City Hall. This unit was missing a handle and not functional.



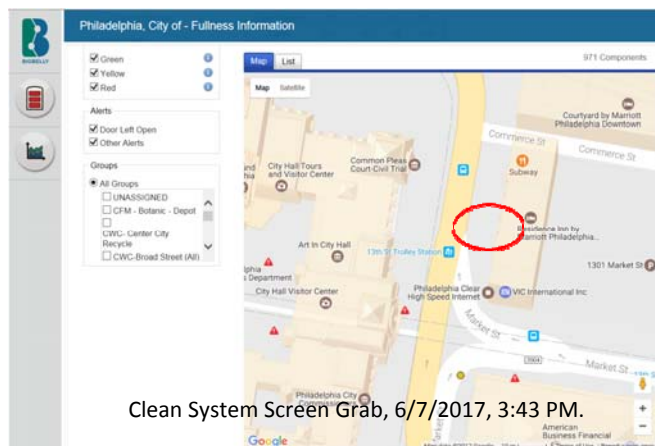
Approximately three months later we noted that the handle was still missing.

After discovering the lack of maintenance, we queried the CLEAN System in an attempt to get a history of this unit. Unfortunately, you must know the unique unit ID number to locate it within CLEAN. One way to obtain that number, if you know the location, is to use the CLEAN System mapping facility.



2017-06-07 8:39 AM

We accessed CLEAN and no Bigbelly was noted in the location where we observed this unit (circle in graphic below). An indication of flaws in the accountability system for these units.



Clean System Screen Grab, 6/7/2017, 3:43 PM.

Five other Bigbelly units are noted in this picture, 2 in the City Hall Courtyard, 1 on the east side of City Hall and 2 on the South side of Market St (4 of the 5 are in "Alert Status" ! triangle).

## APPENDIX F – BIGBELLY “BONEYARD”

The Streets Department has a storage yard in Southwest Philadelphia where it maintains Bigbelly parts, spare and damaged units and a maintenance facility. Inserted below are pictures taken at this yard during a Controller’s Office visit in January of 2017. It should be noted that none of these units have yet reached the Bigbelly claimed 10 year life expectancy.

### STORAGE YARD







Hundreds of broken and damaged Solar Bubbles and other parts noted.









Two units that were damaged by fire.



INSIDE THE MAINTENANCE FACILITY

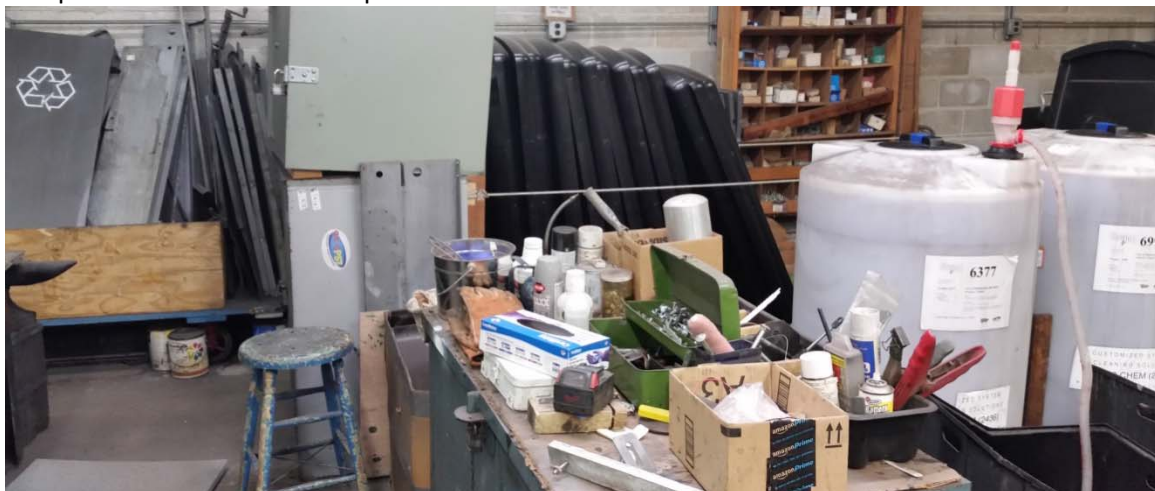




Hoppers are refurbished for replacement parts



Side panels are cleaned and repainted





Some Solar bubbles can be refurbished for replacement parts



Other units stored in the maintenance facility. Some for refurbishment.



And some awaiting redeployment, pending completion of various construction projects.

