

**PURCHASE AND DEPLOYMENT
OF
BIGBELLY SOLAR COMPACTORS**

JULY 2010



CITY OF PHILADELPHIA

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ALAN BUTKOVITZ
City Controller

July 5, 2010

Clarena Tolson, Commissioner
Streets Department
1401 John F. Kennedy Blvd
Municipal Services Bldg., 7th Floor
Philadelphia, PA 19102

Hugh Ortman, Commissioner
Procurement Department
1401 John F. Kennedy Blvd
Municipal Services Bldg., 1st Floor
Philadelphia, PA 19102

Dear Commissioners Tolson and Ortman:

The Office of the City Controller Office has performed a review and assessment of the purchase and deployment of BigBelly solar compactors. This review was conducted pursuant to Section 6-400 (c) and (d) of the Home Rule Charter. A synopsis of the results of our work is provided in the executive summary to the report.

Along with our findings, we have included recommendations that, if implemented by management, would ensure the sole source purchasing process is followed, reliable savings calculations are accomplished as well as specific planning, procedure, training and evaluation actions by the Streets Department that would improve deployment and use of these trash compactors as well as any future improvement programs.

We would like to express our thanks to the management and staff of the Streets Department for the courtesy and cooperation displayed during the conduct of our work.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Alan Butkovitz".

Alan Butkovitz
City Controller

cc: Honorable Michael A. Nutter, Mayor
Honorable Anna C. Verna, President of City Council



REVIEW OF PURCHASE AND DEPLOYMENT OF BIGBELLY SOLAR COMPACTORS

EXECUTIVE SUMMARY

Why the Controller's Office Conducted the Review

At a time when budgets are tight and every expenditure should be carefully reviewed for necessity and value, the Controller's Office became aware of expenditures on sophisticated high-tech supposedly "green" trash containers. Even though these trash containers cost \$3,700 with warranty cost and communications system, or 37 times more expensive than the \$100 containers that were then in use, they were justified as cost effective due to anticipated reductions in manpower and fuel cost generated by the new containers. In addition, these containers, known by the trade name of BigBelly, were purchased sole source and sole vendor, a process that is susceptible to waste and abuse.

What the Controller's Office Found

The Controller's Office found four primary areas where observations indicated concerns. The four areas, fully discussed in the main body of the report were (1) the purchase process and agreement, (2) deployment issues, (3) calculation of savings and (4) other miscellaneous issues. Specifically we found:

- Anomalies in the purchasing process where the vendor provided false information and the City incurred interest charges on items before any units were delivered.
- Problems in the deployment, care, maintenance, and use of the compactors including lack of proper planning, training, an over reliance on the vendor and not fully utilizing some of the purchased options.
- Many items that were not considered or calculated when the justification and expected savings were determined.
- Other issues that impacted the decision to deploy these receptacles, including esthetics, placement, ease of use and health concerns.

What the Controller's Office Recommends

Specific recommendations are included at the end of the report. This includes the City being vigilant when conducting sole source purchases, proper planning needed when changing modes of operations, and specific planning, procedure, training, and evaluation actions by the Streets Department.

PURCHASE AND DEPLOYMENT OF BIGBELLY SOLAR COMPACTORS

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PURCHASE AND DEPLOYMENT OF BIGBELLY SOLAR COMPACTORS

OVERVIEW:

At a time when budgets are extremely tight and every expenditure should be carefully reviewed for necessity and value, the Controller's Office became aware of significant expenditures on sophisticated high-tech supposedly "green" trash containers. Even though these trash containers were \$3,700 per unit, or 37 times more expensive than the \$100 containers that were then in use, they were justified as cost effective due to resultant reductions in manpower and fuel cost that the new containers would generate. In addition, these containers, known by the trade name of BigBelly, were purchased sole source and sole vendor, a process that is susceptible to waste and abuse.

In light of the timing of the purchase, the purported savings and the procurement process used, the Controller's Office reviewed the purchase, deployment, and use to validate the purchase decision and trash container employment process.

BACKGROUND:

During the first few months of 2009, the Philadelphia Streets Department formally pursued purchase of 500 BigBelly trash compactors along with 210 single stream recycling kiosks. This was to replace 700 wire trash baskets in and around the Center City area. The following timeline shows the correspondence and actions between the City and BigBelly Solar:

- February 2, 2009 – BigBelly Solar¹ sent a letter to the Streets Department Deputy Commissioner certifying that they were the sole manufacturer of solar-powered compacting receptacles.
- March 2, 2009 - BigBelly Solar sent another letter to the Streets Deputy Commissioner indicating that they are a sole vendor because their agreements with distributors "specifically state that the City of Philadelphia is a 'Key' account for BigBelly Solar, and will be worked directly by BigBelly Solar".
- March 5, 2009 - Streets Department personnel along with a representative from the City Solicitors Office met with the Procurement Department to discuss preparation of a Sole Source Contract with BigBelly Solar.
- March 12, 2009 – A Sole Source Requisition was submitted and hand carried by the Streets Department to the Procurement Department. The requisition was approved by the Procurement Commissioner on that same date.
- April 21, 2009 - A Lease/Purchase Agreement, totaling \$2,175,978, became effective between the City of Philadelphia and BigBelly Solar. This included a lease/purchase for 500 BigBelly Solar Compactors, 210 Single Stream Recycling Kiosks along with wireless communication hardware, software, training/installation support, a four year warranty and \$157,828 in interest charges. The contract was for a one year initial term

¹ Seahorse Power Company is the original company name and registration as Seahorse Power Company does business as BigBelly Solar.

with an option to renew for up to three additional one year periods. The payments for the contract were spread out over a three year period. The initial payment was made out of Act 101 Recycling Performance Grant funding, which allowed the City to expend the funds “on any expense as determined in the discretion of the municipality” provided the City had met the performance requirements of the grant, which they did.

- April 30, 2009 - Mayor Nutter announced the BigBelly Solar contract and unveiled the trash compactors in a public ceremony in Center City.

DISCUSSION:

The Controller’s Office’s review of the purchase and deployment of BigBelly Solar Compactors included: examining public documents, conducting interviews with Streets Department personnel and BigBelly management, conducting a survey of all BigBelly compactor deployments, observing trash collection crews, ad hoc “cleaning” crews and interviewing some users of the trash compactors. As a result of the review, the Controller’s Office found four primary areas where observations indicated concerns.

The four areas, fully discussed below were (1) the purchase process and agreement, (2) deployment issues, (3) calculation of savings and (4) other miscellaneous issues.

PURCHASE PROCESS AND AGREEMENT

Issue: The City failed to verify sole source claims of the manufacturer.

The agreement was pursued as a sole source contract based on information provided by the company, BigBelly Solar. In a letter to the Streets Department, the company claimed that agreements with their distributors “specifically state that the City of Philadelphia is a ‘Key’ account for BigBelly Solar, and will be worked directly by BigBelly Solar”. A “key account” designation prohibits a distributor from selling directly to that account. The Streets Department reportedly contacted only one BigBelly distributor, the one currently working for BigBelly Solar as a subcontractor, to verify the BigBelly sole source claims.

In contrast to BigBelly’s claims that they were the only ones authorized to sell the compactors to the City, the Controller’s Office located an email from a distributor addressed to the Property Commissioner offering to sell BigBelly compactors to the City. The distributor who sent this email offering to sell BigBelly compactors to the City indicated to the Controller’s staff that they had been offering the compactors to the City for some time and anticipated bidding on the BigBelly contract. When interviewed by the Controller’s staff, Streets Department personnel could not provide an explanation as to why this vendor was not contacted to verify BigBelly Solar’s sole source claim. Relying solely on the claims of a vendor without verification is a highly suspect business practice.

Issue: The manufacturer, BigBelly Solar, provided false information to the City concerning its agreements with its distributors.

The letter sent to the City claiming that BigBelly Solar was the only source able to sell the product to the City was signed by William M. Eddy, Director of Sales, BigBelly Solar. During an interview with the Controller's Office, Mr. Eddy, stated that his letter was correct as written. He provided copies of agreements with distributors authorized to sell in the Philadelphia area. A review of these agreements revealed that one did not prohibit the distributor from selling directly to the City of Philadelphia as the City was not listed as a "key account".

During an interview with the CEO of BigBelly Solar, he admitted that the letter provided by Mr. Eddy was not correct in that the BigBelly agreement with one of its distributors did not list the City of Philadelphia as a "key account", prohibiting the distributor from selling to the City. However, he denied that the letter was a material misrepresentation as he believed that the distributor was aware that BigBelly Solar was pursuing sales to the City of Philadelphia.

Issue: The City agreed to submit payments for items it had not yet received.

The contract terms called for the City to make an initial payment of \$725,326 on May 27, 2009, yet the delivery schedule indicated that the company would not deliver a quantity of compactors valued at that amount or greater until three weeks later. Paying for items not yet delivered, particularly since little was known about the company, has the potential to put City funds at increased risk if the company failed to perform as agreed. However, as a result of the inquiry, the Controller's Office delayed the initial payment until sufficient quantities of compactors had been delivered to cover the City payment.

Issue: The City paid interest for items that it had not yet received.

The contract terms called for the City to pay \$2,175,978 in three installments over a 28 month period (in three separate fiscal years) which included 6% interest on the unpaid balance. However, the interest on the entire purchase was calculated from the beginning of the contract period yet the first delivery of some of the compactors was not until two weeks after the contract start date. The entire order was not scheduled to be completed until 16 weeks after contract start date.

We could not determine why the City agreed to this unusual business arrangement of paying interest on items it had not yet received. The interest costs incurred for items not received was originally \$27,513. However, due to a delay in the initial payment and an accelerated delivery schedule by the company, the City paid an estimated total of \$18,901 in interest for items that had not yet been delivered.

Issue: Cost savings from buying direct from the manufacturer may not have been realized.

During discussions with Streets Department personnel concerning the sole source nature of the purchase, they commented that in buying direct from the manufacturer, they anticipated the City would realize additional savings versus buying from a distributor and the additional markups involved. They surmised that by cutting out the middle man, i.e. a distributor, they anticipated the manufacturer would provide the City with additional savings.

The Controller's Office found that the City failed to realize any savings as a result of buying direct from the manufacturer and may have paid more than buying from a distributor. The manufacturer's price to the City was 15% above the price provided to their distributors for purchase of 99 compactors; the City purchased 500. According to one distributor², his markup for this quantity of compactors would be approximately 5% over the manufacturer's price.

If this is true, the City could have paid approximately \$300 less per compactor and saved more than \$200,000 for the 720 purchased compactors. As there were no other similar large sales in proximity to the City's agreement, the Controller's Office could not verify the claims of the distributor.

Issue: Contract terms unclear.

The Purchase Requisition submitted by the Streets Department included a line item for "On-Site Training and Installation". However, the contract itself did not include this as a "service requirement" but did include a pricing quote request to include "Training and Installation Service". The quote submitted by BigBelly listed "NA" on the unit price with an annotation to "See Exhibit A". Exhibit A listed "Training/Installation Support" as part of a unit price item.

According to both the Streets Department and the BigBelly CEO, the contractor sent one individual to the Streets Department for one week to provide training and assistance on installation of the compactors. However, since the City failed to specifically define the scope of these services in the contract, it is impossible to determine if contract terms were fulfilled. Failure to specifically delineate specifications and services can result in necessary items not being accomplished with little or no recourse to the City.

Issue: City paid for certain items that were not provided.

The contract required the vendor to "provide route analysis for deployment of BigBelly Units, with bi-annual assessments". The Streets Department was not able to provide the "route analysis" provided by the vendor nor could they provide any of the bi-annual assessments, even though the contract had been in place for over one year.

² It should be noted that this distributor has filed a federal law suit against BigBelly Solar in connection with the sales to the City.

Issue: Contract compactor specifications on expected life of product vague and not supported by data.

The contract included compactor specifications that included an expected life of 10 years. When questioned about data or research to support this expected life, the BigBelly Solar CEO stated the life expectancy was an estimate based on the type of products and materials used in the compactors. He further stated that the compactor had a life expectancy that was estimated similar to an automobile; in that some repairs and parts may need to be made during the normal life cycle, but full replacement may not need to be made for the 10 years. When asked if there was any testing data to support the 10 year life expectancy, he indicated that he was not aware of any specific data.

Issue: Lack of specific accountability of delivery and items not entered into the City property accountability system.

During the delivery process of the compactors and recyclers to the City, the items were shipped by quantity only without any description. The bills of lading did not distinguish between a \$3,050 compactor and a \$776 recycling unit. The City accepted delivery of the units without verifying the actual items received. In addition, no record could be found on the City property management system accounting for these units.

According to the Procurement Department Inventory Procedures, revised April 2007, all items over \$500 in value are to be entered into the City property management system. The Streets Department is relying on a proprietary computer system belonging to the vendor, BigBelly Solar, to account for the location of these accountable property items.

Issue: The City failed to ensure BigBelly Solar, Inc. had a Business Privilege License to conduct business in Philadelphia.

Even though BigBelly Solar had been soliciting the City regularly prior to entering into the lease/purchase contract with the City, they did not possess a Business Privilege License (BPL), as required. On April 21, 2009, the City entered into a contractual agreement with BigBelly Solar to provide lease/purchase, delivery, installation and training support, as well as warranty service for trash compactors. Business Privilege Tax Regulations, Section 103, D.1. lists Contracting as an example of activities which requires a BPL. During the course of the review, the Controller's Office discovered the lack of BPL by BigBelly and advised them of the requirement.

Upon bringing the above licensing requirement to the attention of BigBelly, the company applied for and paid the BPL fee in March 2010, which was eleven months after the City entered into a contractual agreement with the company.

Issue: The City did not conduct a financial due diligence review of BigBelly Solar.

The City entered into a multi-year, \$2 million contract to lease/purchase 500 high-tech, high-value trash compactors without conducting any financial due diligence on the

company to determine if they could be expected to fulfill the contract terms. A financial review was warranted since the purchase by the City was the largest ever placed with BigBelly Solar. They were a private company with very little information available, and the contract called for continuing service (warranty, communication, monitoring, etc.).

The Streets Department reportedly did contact at least one city that had purchased approximately 200 units to inquire about their experience with the company and the product. Failure to conduct adequate financial due diligence opens the City to a greater risk of a company defaulting on the agreement with a resultant loss of use of the products and/or services purchased. However, some of the risk may have been ameliorated by the lease/purchase and multi-year payment schedule of the agreement.

Information regarding deployment, use and planning located on the following page.

DEPLOYMENT, USE AND PLANNING

Issue: No training for crews.

According to interviews of personnel assigned to trash collection, crews assigned to BigBelly routes were not given any training on the system, its operation, care, use, or maintenance. This compactor unit, comprised of electronics, communication system, gears, chain drives, etc., valued at \$3,075 (\$25 for shipping) replaced a metal wire basket that cost approximately \$100. Purchasing high tech, high value trash compactors and expecting crews to service and maintain them without any training was not realistic and problematic.

Issue: Utility and cost effectiveness of communication system.

The compactor unit includes wireless hardware, software and communications capability to report the unit status on a real time basis. In addition to service problems that require attention, the unit reports when it needs to be collected and when it is full and has stopped compacting. This capability was touted as allowing collection only when needed, which should result in additional savings. The cost of this add-on option was approximately \$457 per unit.

Controller's Staff observed the night crews who routinely service the compactors and they did not use nor did they have access to the reporting system. These crews serviced all compactors on their route each night, regardless of the status reported.

We also observed the day time "complaint" crew who does receive a listing, at the start of their shift, of machines that need to be serviced. This



(1) Unkempt devices can cause more maintenance

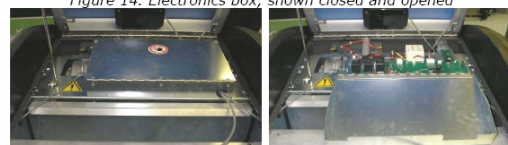
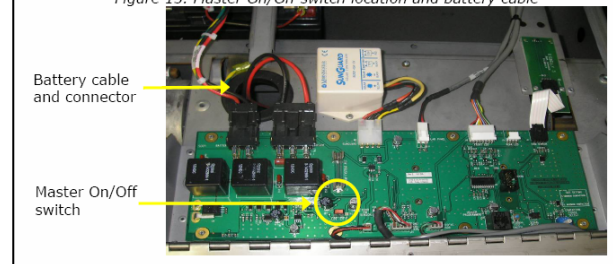


Figure 14. Electronics box, shown closed and opened



(2) High-tech devices comprised of many electronics



(3) The \$100 wire basket

crew replaces the trash bags of all those listed as needing service, regardless of the actual amount of trash in the unit. The crews don't have direct access to the monitoring system, if used, the listings are often hours old, are sometimes ignored with the crews complaining that the list is often wrong.

During March and April 2010, the Controller's Office monitored the Streets Department collection schedule. This monitoring showed that BigBelly compactors were emptied, on average 61% of the time, even though the communication system status indicated they "do not need to be collected".

Issue: Moving equipment and leaving sidewalk protrusions.

During the course of our review, some cans were moved to different locations. However, at times we noted that the screws used to secure the cans in place were not always removed, as illustrated in picture (4) located at a corner bus stop in Old City. Failure to remove these fastening screws is a hazard to the pedestrian traffic in the area. The Streets Department should ensure that all fastening mechanisms are properly removed.

Issue: Care and routine maintenance.

While observing BigBelly pickup crews, the Controller's staff found that none of these crews had seen or had a copy of the BigBelly Users Manual. In addition we found no one was performing the manufacturer recommended periodic maintenance, had any training in maintenance, and did not have the recommended tools or supplies to clean and maintain the compactors.



(4) Fastening screws left behind are a hazard to pedestrian traffic



(5) Trash compactor that has been damaged

Interviews of Streets Department management confirmed that cleaning and maintenance was a problem but they claimed they were pursuing possible solutions including permanent staff. These high tech compactors, at a cost of \$3,700 (includes warranty cost and communications system) per unit compared to \$100 for the wire baskets need the proper servicing and maintenance to protect the City's investment.

Issue: No system for reporting and monitoring warranty service and repairs.

The Controller's Office could not determine the system in place for reporting, monitoring, and follow up for warranty service. Members of the Streets Department stated that BigBelly Solar was monitoring the computer system while the BigBelly Solar CEO stated that the company initially assisted with the monitoring activity but that system monitoring was a City function. The night crew was reporting compactor problems but there was no formalized system noted of reporting that information for warranty service or non-warranty maintenance. Streets Department management confirmed there was no formal reporting or tracking system.

For example, during the survey of deployed compactors, the Controller's staff noted many compactor units with clouded or opaque plastic solar bubbles, like the one pictured in (8). When shown to the BigBelly Solar CEO, he commented that they did have reports of problem with one manufacturing run of plastic panels which may have caused the problem shown. He stated this clearly was a warranty issue and should have been reported to BigBelly Solar.



(6) Proper service and maintenance is needed to protect the City's investment



(7) Regular cleaning is needed



(8) Clouded plastic solar bubble

Immediately following the meeting with the BigBelly Solar CEO, a BigBelly Solar employee was observed surveying the plastic bubbles on compactors throughout the City and as a result, there were reportedly 90 such units replaced or are in the process of being replaced.

Issue: City personnel are not properly trained to perform non-warranty service, maintenance and repairs.

Streets Department management stated that the responsibility for non-warranty service, maintenance and repairs had been assigned to a specific unit within the Streets Department but admitted that the only “training” they had been provided was that BigBelly had sent them some video tapes and manuals. However, he did admit that this area needed additional attention.

The unit in picture (10) was discovered by Controller’s staff following a visit by the daytime “complaint” crew. Note that the internal bin was left sitting outside the compactor unit.

Further examination revealed that the unit’s compaction ram was stuck in the down position, trash was left inside and the unit was not level, leaning considerably to the right (11).

Interestingly, when the door to the unit was closed, the LED indicator lights flashed green, indicating a “system normal” status (12).

During the observations of both night and day crews, many crew members commented that the monitoring system was not reliable.



(9) Stacks of plastic replacement solar bubbles in Streets Department warehouse



(10) Internal bin left sitting outside of compactor unit



(11) Compaction ram stuck in down position, unit not stable and leaning to the right

Many times they noted green lights when the system was full and red and/or yellow lights when the system was nearly empty.



(12) Compactor unit is not working yet green light is on indicating "system normal"

Information regarding savings issues located on the following page.

SAVINGS

Issue: Total projected reduction in number of trips may not have been realized.

According to information published by BigBelly Solar and the City, using these compactors would significantly reduce operating costs. The units are supposed to pay for themselves with cumulative savings over 10 years of approximately \$13 million, as shown in the below excerpt from the executive summary of the June 2009 Case Study: *Cost Savings from Using Solar Powered Trash Compactors in the City of Philadelphia*.

Highlights of the program include:

- Immediate savings: By entering into a 3-year financing arrangement, the City has no up-front capital cost and will realize collection cost savings in the first year of approximately \$850,000.
- Ongoing savings: The City will save nearly \$13 million in cumulative collection cost savings over the next 10 years, net of the equipment cost.
- Annual operating cost reduction of 70 percent: compaction reduces collection demand, which directly reduces operating costs and associated vehicle fuel use and emissions.

	Before	After	Savings
Collection frequency	17/week	5/week	12/week (70%)
Annual operating cost	\$2,300,000	\$720,000	\$1,580,000 (70%)
Cumulative 10-year cost	\$23 million	\$10 million	\$13 million (70%)

During a two month period when the Controller's Office monitored collections from the deployed BigBelly compactors, there was an average of 10 collections per week; a low of seven and a high of almost 14. This level of collections is more than double the anticipated collection frequency, reducing the savings significantly.

In addition to the annual operating costs detailed above, primarily savings from reduced collection frequency and the resultant reductions in manpower and fuel costs, there are other factors to consider when calculating the actual savings. The following issues detail some of those additional costs.

Issue: Not all purchased compactors were deployed.

According to BigBelly Solar monitoring software, approximately 31 of the original 501 received by the City are not deployed on the street.

The City also purchased an additional 220 compactor units in December 2009, and as of April 2010, those units had not been deployed. According to Streets Department management, even though they had been purchased and the warranty was running, many of these



(13) Hundreds of units sitting in warehouse

units were waiting deployment for the completion of business area site preparations.

Pictures (13 and 14) taken April 29, 2010 show some of the approximately 250 units still in the Streets Department warehouse.

Savings, if any, can not be realized with the compactors sitting in the warehouse.

Issue: Non-warranty damage and repairs not factored into savings.

Of the 31 that were listed as not deployed, 9 were listed as either destroyed (4) or damaged (5). The unit in picture (16) was the result of being hit by a car.

When a compactor is destroyed, the replacement cost is at least \$3,075 compared to the \$100 wire basket unit.

Also, non-warranty repairs, part replacements, etc. are significantly higher with these high value, high technology machines. The item in picture (17) needs repair and appears to be a safety hazard to pedestrians. These additional costs for replacement and repair do not appear to be factored into the overall total savings.

Issue: Routine cleaning and maintenance not factored into savings.

As previously mentioned, Streets Department did not have dedicated personnel assigned to routine cleaning and maintenance of the BigBelly compactors. As a result, many are in dire need of attention, as in picture (18) and throughout this report. Assigning personnel for cleaning and maintenance



(14) Rows of compactors stored in Streets warehouse



(16) Compactor unit damaged from a car



(17) Damaged unit on uneven surface that also needs repair

as well as cleaning materials and maintenance tools does not appear to have been factored into the overall savings.

Issue: Additional time needed to empty compactor and replace bag not factored into savings.

As depicted in the sequence of pictures (19 and 20), emptying a trash compactor, particularly if full, requires significantly more time and effort than what was required to empty the old style trash basket.

To empty a BigBelly, the sanitation worker is required to use a key to unlock and open the compactor door, remove the bin, remove and replace the bag, reinsert the bin, close and relock the door and check the compactor status lights. Of course if they encounter a compactor like the one pictured here, even more time is required.

To replace the old wire type baskets, the sanitation workers only had to pull out the old bag and replace it with a new one.

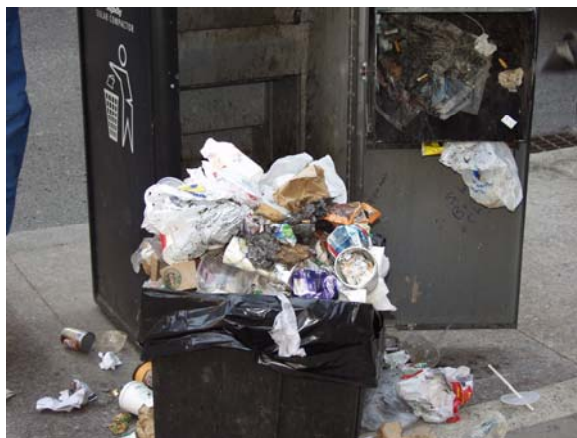
The additional time to empty a BigBelly compactor does not appear to be factored into the overall cost savings.

Issue: Additional manpower needed to remove graffiti not factored into savings.

As these units are more conducive to graffiti than the old style trash containers, additional effort is needed to clean and maintain the compactors free from graffiti as in picture (21).



(18) Unit that has not received routine cleaning



(19) Trash overflowing from the compactor unit



(20) Sanitation workers replacing the compactor bag

Apparently some graffiti removal is being accomplished by the City's Anti-Graffiti Program. The additional manpower cost for graffiti removal does not appear to be factored into the overall savings.

Issue: Additional manpower needed for moving and removing cans not factored into savings.

These compactors are installed with a plate, lag bolts, nuts, and then must be leveled as in picture (22). The BigBelly operators manual has 3 ½ pages on installation alone. As there are times when these compactors need to be moved, such as on Broad Street last year during the Phillies playoff run, the time and manpower needed to move these items may be substantial.

Issue: Battery replacement not factored into savings.

According to the users manual, the BigBelly compactor batteries need to be replaced every four years. This known lifecycle replacement cost, currently estimated at \$58,320, does not appear to have been considered when calculating the 10 year savings. Image of battery in picture (23)

Issue: 10-year life expectancy.

As previously noted, the CEO of BigBelly Solar stated that the 10 year useful life of these compactors was based on a best estimate and that some replacement of parts would be needed during this 10 year period.

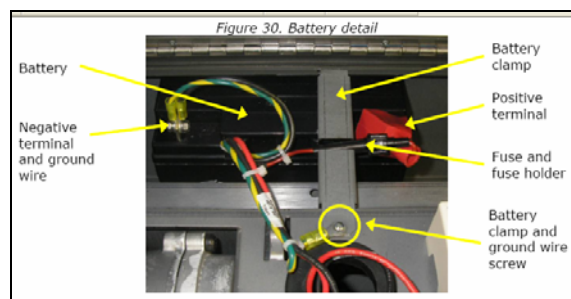
In addition, all the pictures in this report, including (24) are of BigBelly compactors that are less than one year



(21) Graffiti found on many compactor units



(22) Compactor units need advanced installation process



(23) Battery unit within the compactor unit

old. Based on the CEO's comments and observations made by Controller's staff, the 10 year life expectancy of these compactors is suspect.



(24) Trash compactors are less than one year old

Other issues uncovered during investigation included in the following section.

OTHER ISSUES

Issue: Some areas of City may not be compatible with unit.

The BigBelly Users Manual states, “The best surfaces for the *BigBelly* are concrete, asphalt or brick. These surfaces should be as level as possible to allow the machine to be stable.”

Many areas of the City, particularly the older sections such as Old City and Society Hill in picture (25), have sidewalk surfaces that may not be compatible with these units, yet many are installed in these areas.

In addition, in an attempt to level the units appropriately on some extreme surfaces, some units may need to be installed in such a way that unsafe and unsightly gaps are created as in picture (26).

And, if not leveled properly, the insertion hopper (door) mechanism does not operate as intended, i.e. automatically close with minimal force as in picture (27). If improperly leveled to the rear of the compactor, the door closes with too much force and may injure hands or fingers.

Issue: 500 BigBelly compactors reportedly replaced 700 wire baskets resulting in less trash receptacles on the street.

Even though 500 BigBelly units were originally scheduled to be put in service, only 470 were actually deployed yet all the scheduled wire baskets were removed. Since there are fewer receptacles on the street, some



(25) Many locations of trash compactors do not have level surfaces



(26) A compactor unit that is not level



(27) A door that will not automatically shut because the unit is not level

pedestrians would have to walk farther to place trash in a receptacle. This inconvenience could result in less use of receptacles. However, many receptacles now include a recycling kiosk that enhances recycling efforts.

Note in picture (28), the receptacles appear to be leaning to the rear, which may cause the insertion hopper door to close with too much force.

Issue: The design may not be compatible with some modern concerns.

During the course of this review, many citizens commented on the requirement to grasp and pull the handle in order to dispose of trash as in picture (29). While the review was conducted shortly after the H1N1 publicity, these concerns will most likely continue as part of modern living. Requiring citizens to grasp a possibly germ infested unsanitary handle to dispose of trash may not encourage use of these trash receptacles.

Issue: When trash compactor is out of service, it is “out of service”.

During the course of this review, many citizens complained that the compactor was often not operating and they could not dispose of trash in the receptacle. Unfortunately, many citizens don't understand the LED fullness level system and become frustrated with the units when it won't accept trash or the insertion hopper doesn't operate because the receptacle is full.

During a two month period when the Controller's Office monitored collections, the average of seven-day



(28) Receptacles are leaning to the rear (and need cleaning)



(29) Grabbing the compactor handle like this one, that appeared to contain smeared dog excrement, may not encourage use of trash receptacle



(30) Lights indicate the unit is out of service. Note the hand made and taped on sign

collections when the unit was indicating Red, i.e. full and has stopped compacting, was 22% of the time, or more than 1 in 5 units on the street.

By not fully utilizing the monitoring system (as discussed previously) and allowing receptacles to become full as in picture (31) and to stop operating diminishes public acceptance of the compactors.

Issue: Many have commented that the compactor is not as esthetically pleasing as old trash bins.

During the course of this review many citizens commented that the trash compactors did not always fit in with the surrounding areas, particularly in many historic and older parts of the city as in picture (32). However, it should be noted that a Streets Department Deputy Commissioner was open to community concerns and met with and received input from local community and business groups and, as a result, adjusted deployment of some compactors and recycling kiosks.

Issue: Complicated design and inner workings increase safety issues.

Since these compactors are significantly more complex than previous trash receptacles, they could pose additional safety concerns to the public, particularly if not properly operated or maintained.

For example, the unit in picture (33) was left unlocked and the access door came open when the handle was pulled.



(31) A trash compactor that is full and will not compact trash



(32) Trash compactors did not always fit in with surrounding areas, as this one at the entrance to Elfreth's Alley. Also noted is the compactor is leaning to the left and the odors from the bin permeated the nearby bench area.



(33) A unit left unlocked and could pose additional safety concerns

It should be noted that the compactors do have safety mechanisms that are supposed to keep the compaction ram from operating when the door is open. There have been reported problems with the door sensors not operating properly; however no reports of the compactor operating with the door open were uncovered.

Issue: The City was used as a testing ground for several design issues.

As the City of Philadelphia was one of the first large orders and full deployment of these compactors, some system changes have been made.

Picture (34) shows the original door stop and picture (35) shows the new design of the door stop. The door stop was reportedly redesigned due to problems with the door sensor not operating properly and the old design having too much slack.

The door locking mechanism and handle was also redesigned as shown in picture (36). The City experienced and had to fix many broken keys, locks, and door handles falling out, due to the design.

This new design is supposed to solve the key and handle breakage problems. Unfortunately, due to the nature of this redesign, currently deployed compactors with the old locking/handle system will not be retrofitted.



(34) Old door stop



(35) New installed door stop



(36) New design to solve key and handle breakage problems

Issue: Lack of coordination or input from other City departments.

As these trash compactors are of a significantly different design than the trash bins they replaced, there may be concerns of a different nature. For example, in the top of the compactor, there are electronics, batteries, solar panels and plastics that could pose additional hazards to the public and/or firefighters in the event of a trash bin catching fire.

Also, since they are of an enclosed design and are being placed in some areas of high pedestrian concentrations, there could be additional security concerns associated with their design and placement. The Fire and Police Departments were not consulted or notified prior to purchase or placement of these compactors but the effected districts were later given keys for access to the systems, if needed.

CONTROLLER'S RECOMMENDATIONS:

Based on our review of the purchase, deployment, and use of the BigBelly Solar compactor units, in addition to those items discussed above, the Controller's Office makes the following specific recommendations:

- ❖ The City should be extremely vigilant and careful when using the sole source, sole vendor process. In rare instances when it is justified, detailed attention to all financial aspects of the contract needs to be followed.
- ❖ The City should fully explore and independently calculate claimed savings.
- ❖ When significantly changing modes of operation, as in this case of transitioning from simple wire trash receptacles to high tech, high value compactors, proper pre-purchase planning, training, and operational procedures need to be fully developed.
- ❖ The Streets Department should:
 - Immediately institute training for the workers responsible for BigBelly compactors.
 - Develop procedures and identify personnel for routine cleaning, maintenance, non-warranty repairs and proper accountability of the compactors and kiosks.
 - Review the contract for required items and or services that have not been provided.
 - Before purchasing any additional compactors, do a full cost-benefit analysis using all known associated costs.