

Why and How did we get to this point?

In 2009 Public Works staff and Council began looking into recycling and better environmentally responsible long range solutions for the collection, containment and disposal of trash in the town's public spaces. The most promising solution appeared to be a solar trash compacting system created by "Big Belly Solar". Initially the company offered a single size container which compacts the trash using solar recharged battery power. This compaction increases the containers capacity to 3 to 4 times that of a similar sized standard container. The unit could be paired with a number of different type non-compacting recycling units, which further increased the capacity of the trash container by removing re-cycle material from the waste stream. The units also can be outfitted with advertising panels which can be used to defray some of the cost or as communication vehicle with the public in lieu of other free standing signage in the public spaces.

At the 2010 and 2011 retreats information about this project was reviewed and the investigation continued due to the pending cancellation of the Beach Strand trash collection contract by Waste Industries. The 2011 town budget includes monies to fund a small pilot operation using this technology

In 2011 the company introduced a recycle unit that also compact its contents and distributed software capability to vastly improve the operational management of the geographically dispersed units from a central location. This allows the labor intense portion of this total system to be effectively managed and streamlined. (*see excerpt from Big Belly Newsletter on following page*). In Aug of 2011 Waste Management a distributor of the Big Belly units, loaned the town an original version of the trash/recycle kiosk. We installed this kiosk at the foot of the gazebo ramp on the parking lot side (*see cover photo*).

What are the Goals to be achieved by this project?

- Initiate recycling in the public spaces of the town.
- Reduce the number of containers currently in use, while increasing total capacity.
- Eliminate the litter caused by open containers and container overflow.
- Improve the curbside appearance of our town's public space.
- Provide a long range solution to effectively address the growing trash problem.
- Improve our staff's ability to handle the ever expanding demand.
- Reduce the long term cost of providing this required service.

What do we look like today ?

Trash collection, containment and disposal in the public spaces within the town present a constantly growing problem today. As the popularity of our town as a resort destination increases and we expand the space available for public use or invest in curbside beautification projects this service need will grow even more. We currently DO NOT RECYCLE town wide and this is a growing request heard by the Council. If and when the County introduces curbside recycling, we will still need to develop a solution to be utilized in our public spaces.

Today we utilize open containers of various sizes some are more cosmetically pleasing to the eye then others. Because most of the containers are fully open they are susceptible to and contributing to a growing litter problem due to wind, rummaging wildlife and overflow. Today we have open 55 gallon trash barrels distributed as follows;

- 119 across beach strand ocean front,
- 6 across main street side of the beach strand,
- 4 in the Gazebo Parking lot,
- 6 at the Twin Lakes ROW along Rte. 179

In addition we have (19) 20 gallon, and (3) 48 gallon decorative receptacles located in the Gazebo parking lot, along Sunset Blvd. and Main St. on the Island. These containers have open tops or slot openings, and due to the years of service they've provided are in a variety of physical conditions appearance wise. Many are passed there useful life and being kept in service through the ingenuity of our town staff.

Summary of Findings

- People have made good use of the recycle capability, estimates of recycle material as percent of trash stream vary from 30% to 80%
- The kiosk of recycle and trash containers replaced 4 of our previously used barrels at the Gazebo (*See cover photo*)
- The physical appearance of the immediate area was vastly improved (*See cover photo*)
- The closed trash container reduced the litter factor by 100%
- The staff found servicing the unit to take a little longer (*replacing bags, opening unit etc.*) instead of just dumping open barrels
- They also found it to be a little messier (*we did not have the correct size bags*) for the units at the outset
- The bagged trash and recycle material was clearly neater to re-handle and transport
- Bagged trash and recycle material can be placed in the same trailer without contaminating the load
- The units had zero malfunctions or failures during the test
- We got off to a slow start:
 - The compacting feature in the unit was not activated initially
 - Then we de-installed the units due to the Hurricane Irene because they're on loan
 - We also failed to adjust our operation, we were visiting and servicing the units daily which negated the benefit of compacting on the trash side
- The daily servicing was required for the recycling unit which gets filled 2 to 3 times sooner due to non-compacting and the absence of management software.
- The trash container appears to be holding 2 to 3 times more physical trash due to compacting
 - Eliminating the recycle material from the trash stream makes this number is even greater compared to the operation today
- We now visit the unit once per week and have seen the benefit of compaction.
 - Note: neither unit needs daily servicing during this slow season
 - Best estimate that compacting trash may cut needed service to an average of every other day on an annual basis
- We performed a test compacting recyclables using the trash unit
 - The compaction reduces the bulk volume to about 1/4th of non-compacted material, however the physical internal container in the compacting unit is about 3/4th the size of the non-compacting recycling unit due to the required mechanism for compaction and the battery

Solar Trash Compacting & Recycling Test Case Staff Feedback

The following worksheet was completed as our staff worked with the new container. The answers presented are a summarization of the variety of responses provided by the staff.

Do people utilize the recycling station?

- Yes, the general public made immediate use of the recycling unit available

What % of waste stream is recyclable?

- It's been reported by staff estimates that between 30 to 80 percent is recyclable

Do you have to empty the non-compacted recycle bin more often than the compacted trash bin? What's the ratio; 2 to 1, 3 to 1 etc?

- The non compacted recycle bin is reported to be emptied 2 or 3 times more often than the compacted trash bin

What is the space saving in the trailer & roll-off handling compacted trash?

- With only the trash unit that compacts the space savings is estimated to be about 1/2 the current volume.

Does the trash compactor handle what the 4 barrels handled? More than they handled? Less then they handled?

- The compactor/recycling units handle the volume of the 4 barrels that were used previously even with only the one unit compacting over the same time period.

How is the operation with the test units?

Neater Messier

Physically easier Physically harder

Faster Slower

Safer Less Safe

- The staff found operationally it was a little more difficult than dumping an open barrel, the unit has to unlocked, bags removed .bags replaced. Initially we had the wrong size bags which made the operation messier. The physical proximity of the units was always neater, no wind blown litter, no loose trash, etc.

How about transporting and Roll-off operation

Neater Messier

Easier Harder

Faster Slower

Safer Less safe

- The bagged collected trash was always neater during transport in the open trailer, no wind blown debris problems.

Solar Trash Compacting & Recycling Test Case Staff Feedback (continued)

Has the equipment performed reliably?

- Initially there was a problem the compacting feature of the unit was not activated, so no compacting occurred, once remedied the unit performed without incident.

Is the weigh of the compacted trash a problem?

- The size of the compacted trash bundle is adjustable and set at maximum proved no problem to handle.

How would total compaction impact operations?

- Reduce the number of required visits to container sites and maximize the space used in the trailer and roll-off.

How do you think smart, communicating, compacting devices could impact operations?

- Given software management capability the sites requiring service could be pin pointed eliminating the need for operating on a continuous complete cycle basis. *(A cycle is defined as traveling from Public Works, Sunset Blvd, Gazebo lot, the beach strand end to end and Main St end to end emptying all trash receptacles and return to Public Works)* Resulting in saving of; manpower, fuel, wear and tear on equipment, improving usage of roll-off capacity. If all public space containers were populated with these devices we estimate the following operational benefits in addition to recycling a significant portion of the current waste stream from this public space.

Reduce number of full cycles by; 20% In Season 90 % Off Season

Eliminate cycles totally by; 10% In Season 50% Off Season

How would respond as needed to specific locations to address peak load situations impact operations?

- It would accurately define the container sites requiring attention, thus making our operation more efficient, effective and environmentally friendly.
 - Reduce our response time by pinpointing containers requiring service
 - Real time monitoring assuring availability of capacity in containers
 - Help us better handle holiday demand
 - Provide management information and trend data for planning purposes

Solar Trash Compacting & Recycling Test Case Staff Feedback (continued)

How do we operate today?

	<u>In Season</u>	<u>Off Season</u>
How do we handle peak loads due to holidays etc?	Extra cycles	Extra cycles
How often do we clear the beach strand of trash? (One cycle)	Every day	3 days a week
How many trips to PW do we make to complete one cycle?	Three	One
Mileage estimate per cycle	30	15
How often is the roll-off replaced with an empty?	Weekly	Every 2 months
How many men are used per cycle?	2	2
How long does one cycle take to complete?	8 hours	4 hours
What's the cost for fuel for a cycle @\$3.50/gal	\$7.00	\$3.50
*Is there a predictable trash pattern? (Heavy at pier, 40 th St.etc)	Yes	Yes
*Is it constant day to day?	Yes	Yes
*What about volume at other sites?	Varies	Varies
<i>*(we really do not have accurate information about our volumes and trend patterns, these answers are recalled experience of our staff)</i>		

See excel spreadsheet on following page for cost analysis

If we went to recycling using our current method of operation:

Would we need more containers?	Yes	Yes
We would need a second roll-off?	Yes	Yes
Would a cycle take twice as long?	No	No
Additional cycles for trash & recycle separately?	Yes	Yes

What do we gain using the compaction technology?

- We can pick-up in less than full cycles
- We can eliminate the full extra cycles for holiday preparation
- We can pick-up selectively due to remote management of the system in real time
- System management will help us better plan the use of our resources
- Statistical data will help us provide service at the right place and time
- We can pick-up recycling and trash at the same time because it's packaged
- We provide a uniform curbside appearance throughout the town
- We improve the esthetic appearance in our public spaces
- We reduce the physical number of trash containers in use
- We initiate recycling in our public spaces
- We eliminate the litter possibility during transport
- Closed containers eliminate litter at remote sites
- Ad panels used to generate income or communicate in lieu of additional signs

Where do we go from here?

Consider the incremental installation of trash and recycling solar driven compacting containers and the management system software over time. This can be achieved by including phased purchases in the annual budgeting process, by applying for available grants to support this initiative and by making this technology solution part of all of our current and future town project plans. These devices will help us further support the "GO GREEN" initiative started by our pursuit of the LEEDS certification for Fire Station #2. Use of these devices will jump start recycling within the town, and help us reduce the carbon foot print of the town by reducing our land fill usage in the providing of this service in our public areas.

The ROI for this expenditure will grow as devices are deployed, initially the return will be negative due to equipment costs. In the cost savings analysis zero dollars were factored in for litter reduction, curbside appearance, esthetic value, public impression, ad income and sign reduction. By the material presented earlier the cost of our operation today is over \$100k per year and growing, saving a significant portion of that cost only occurs when full or a near majority of the compacting devices are in operation. During the transition we will the need to operate as we do today servicing the existing containers. This will defer attaining the major savings for as long as we take to transition to the new capability.