

## PTI 2012-2013 SOLUTIONS AWARDS

City of Raleigh

Population C: 350,000-749,999

Category: Sustainability

Title: BigBelly Solar for Waste & Recycling

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Before



After



### Abstract:

BigBelly Solar uses technological innovation to transform the way organizations tackle public space waste and recycling, saving time, fuel and money while reducing their carbon footprint. The BigBelly Solar smart grid system ([www.bigbellysolar.com](http://www.bigbellysolar.com)) is dramatically reducing the City of Raleigh's costs and environmental impacts for waste collection in busy downtown public areas and parks. These smart self-contained units are a visible reminder of the City's first widespread public recycling program. The 45 dual stations, with a recycling side and waste-only side, use solar photovoltaic panels to remove air volume of wasted space by compacting the waste and also to send a wireless signal to service specialists when a pickup is required.

### Statement of the Problem:

Public space recycling efforts in Downtown Raleigh had been thwarted by unclear signage on just a few units; those materials that were "recycled" were so contaminated with non-recyclable items that it wasn't worth separating and were instead simply treated as waste. No budget existed to expand the program, and staff was stretched to the limit by the frequency of waste collection pickups on downtown streets, some as often as three times a day, up to seven days a week.

The open-top traditional waste cans often overflowed, leaked fluids onto the sidewalk, attracted insects and wafted unpleasant odors toward nearby outside dining areas. Pedestrians frequently stacked waste near waste cans that were already full, requiring extra time for service specialists to clean up the area rather than simply emptying the units.

Staff had no way of knowing if a can was full or not, and having to check the units so frequently wasted fuel (increasing greenhouse gas emissions) and added needless wear and tear on city streets and equipment.

**Response:**

City Manager J. Russell Allen presented the innovative BigBelly Solar waste collection system to the Office of Sustainability as a potential new technology that could help the City reach its energy efficiency and emission reduction goals while providing a satisfactory ROI. Staff researched the American-made solution, and after exploring a business case on two separate downtown routes, determined it a worthy pilot project under federal ARRA funding through the U.S. Department of Energy's Energy Efficiency and Conservation Block grant.

The City used the BigBelly Solar deployment as an opportunity to connect citizens and businesses with its sustainability initiatives and to promote new technologies. Messaging panels clearly indicate on each unit what is and is not recyclable, and the *Clean is Green Raleigh* educational campaign partnership through the Downtown Raleigh Alliance underscores the City's commitment to sustainability in a positive manner. Nearby Wiley Elementary 5<sup>th</sup> grade science students attended the unveiling media event, allowing them to see and understand first-hand how technology can promote sustainable behavior. Since the solar panels are at eye level it's an easy way to better grasp how harnessing the sun for energy actually works.

Online data tracking through GIS provides a review of which stations are used most frequently and will allow for unit redistribution as needed to allocate resources in the most efficient manner. The CLEAN software (Collection Logistics Efficiency and Notifications) tracks volume collected and alerts staff to potential maintenance issues. Stations signal through email when they need emptied, eliminating wasted trips "just to check."

The public waste and recycling stations are located on the sidewalks on Glenwood Avenue, Fayetteville Street, City Plaza and Hillsborough Street; additional Downtown areas with heavy pedestrian traffic; Baileywick Park; Chavis Park; and on the Neuse River Greenway Trail.

**Results:**

During the pilot program the annual cost of trash collection on Fayetteville Street downtown was reduced from \$40,903 to \$1,607, a savings of \$39,296 annually. The 32 traditional open-top trash cans were replaced by 10 BigBelly stations.

In the Glenwood South downtown area collection costs have decreased from \$12,056 annually to \$115, an annual savings of \$11,941. Collection cans were reduced from 27 open-top cans to 13 BigBelly units.

During the past six months more than 65,000 gallons of BigBelly collections have been processed. More than 73 percent of the total BigBelly volume collected to date is recyclables, worth \$76 per ton in recycling value (avoided tipping fees and materials recovery payments) to the City.

Downtown business owners have emphatically embraced the program, and there is a waiting list for additional requested locations for the next round of installations.

**Key Participants:**

BigBelly Solar; Downtown Raleigh Alliance; Glenwood South Merchants Association; Raleigh City Council; U.S. Department of Energy; Wiley Elementary 5<sup>th</sup> Graders; French West Vaughn; City of Raleigh, including Office of Sustainability, Solid Waste Services, Parks & Recreation, Public Works, Planning & Development.

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