

# SOLID WASTE BEST PRACTICES IN THE MAG REGION



The compilation of Solid Waste Best Practices in the MAG region required the participation and assistance from the members of the MAG Solid Waste Advisory Committee. The following individuals contributed to the success of this document.

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At the October 12, 2011 Maricopa Association of Governments (MAG) Management Committee meeting, members expressed interest in reconvening the MAG Solid Waste Advisory Committee to share ideas on best practices. The Committee held its first meeting in February 2012 and has since heard presentations on successful solid waste projects and programs being implemented in the region. In August 2012, a questionnaire was distributed to the members of the MAG Management Committee requesting assistance in compiling a list of solid waste best practices. The best practices highlighted in this document represent innovative ways MAG member agencies are addressing some of the challenges associated with solid waste.

The best practices cover several aspects of the solid waste industry. For example, communities provided details on recycling programs, signifying the importance of keeping these materials out of the landfills.

Best practices to address household hazardous waste have also been included. In addition, there are best practices on emergency and safety procedures which are critical in solid waste management. This document demonstrates the commitment of communities in the region to protecting the environment and promoting a sustainable lifestyle through a variety of effective solid waste and recycling services. Educating the public on these projects and programs is an important component to their success.

The goal of this document is to highlight the solid waste projects and programs submitted by MAG member agencies as best practices. The region is making great strides to reduce the amount of waste being sent to the landfills by encouraging residential participation in the many programs offered. Solid waste and recycling services play a vital role as the region moves toward a more sustainable future.



**BEST PRACTICE:  
CITY OF AVONDALE “CAST OF  
CHARACTERS” EDUCATION &  
MARKETING TOOLS**

When Avondale first introduced recycling to the community nearly a decade ago, the City rolled out a cartoon character named Phil D. Blue to encourage residents to fill their blue recycling containers with recyclables. Phil was very instrumental in helping to educate the community about the importance of recycling and diverting tons of recyclable material from the waste stream. The Community Relations Department brainstormed with the Public Works Department to expand upon this idea to include an entire cast of colorful characters to help inform, educate, entertain and encourage residents to become better stewards of the environment. The additional characters include: Will I. Close, Miss D. Curb and Bulk E. Pile. In addition, “smiley face” and “thumbs up” stickers have been incorporated into the program.



**Bulk E. Pile**

**Benefits**

Avondale has found that its residents respond positively to City staff when the focus is on education rather than enforcement. As an example, when a resident incorrectly sets out his bulk trash or places his trash can on the sidewalk, instead of an impersonal notice of violation, the resident receives a friendly reminder from Bulk E. Pile or Miss D. Curb. The characters have helped to foster a sense of community spirit that everyone is working together to keep the community clean and green.

**Reach**

The program is used city-wide. Avondale is also developing materials for distribution in elementary schools.

**Key Indicators/Performance Measures**

The key indicators and performance measures for the program include:

1. Reduction in notice of violations. After the first neighborhood outreach in FY 2011-2012, where the City delivered educational materials door-to-door, Avondale experienced a 40 percent decline in overfilled trash cans in that neighborhood.
2. Significant decrease in the contamination rate of inspected cans since implementing this new campaign. Contamination rates have gone from 11 percent to as low as 3 percent in some areas, when there is a focused effort to educate.

**Lessons Learned**

Residents have been very positive about the program. The most effective changes are seen when personal contact is made. A surprising outcome was the phone calls received from residents wanting to know why they did not get a “smiley face” on their can when their neighbor did. This provided an additional opportunity to speak one-on-one with residents about recycling.

**Changes Since Implementation**

The program started with a single character. There are now four characters along with “smiley face” and “thumbs up” stickers.



**Costs/Budget**

The initial cost of having each character developed by an artist averaged \$250. The ongoing costs were absorbed by the existing operating budget for advertising.

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**BEST PRACTICE:  
CITY OF CHANDLER TRASH TO  
TREASURE REUSE PROGRAM**

In December 2010, the City of Chandler implemented the Trash to Treasure Program, which diverts gently used household items, brought in by residents, to the Recycling-Solid Waste Collection Center located at 955 East Queen Creek Road in Chandler. Many of these items are brought to the facility by residents for disposal. This program segregates gently used items for donation to local non-profit organizations.

The Trash to Treasure Program accepts gently used, working items in the following categories:

1. Large household items (large appliances, furniture, exercise equipment, etc.).
2. Small household items (toys, home décor, small appliances, etc.).
3. Personal items (clothing, shoes, bed and bath linens, etc.).
4. Construction material (cabinets, sinks, fixtures, tools, etc.).

Chandler currently has agreements with four non-profit organizations. These organizations will rotate collecting the items although there are provisions allowing other non-profit groups to join the program. Vendors currently participating include: Big Brothers/Big Sisters of Central Arizona, Catholic Charities Community Services, Stardust Building Supplies, and Swift Charities for Children.

**Benefits**

The program diverts useable items from the landfill, saving the City of Chandler and its residents' money. Donated items assist charities in helping others in need - supporting job training for individuals with disabilities, and selling repaired items in thrift stores to fund other charitable programs in the community.



**Reach**

Residents and businesses from any community can drop off gently used items at the Recycling-Solid Waste Collection Center. City staff inspects loads brought to the facility and directs residents to the designated area for unloading gently used items in the containers for the Trash to Treasure Program. Program details are promoted using various sources, including the City of Chandler website at [www.chandleraz.gov/recycle](http://www.chandleraz.gov/recycle).

**Key Indicators/Performance Measures**

The key indicators/performance indicators for the program include:

1. Reducing tons from the landfill, saving transportation and landfill tipping fees.
2. Providing items in usable condition to non-profit partners.
3. Customer satisfaction survey for the Recycling-Solid Waste Collection Center.

**Lessons Learned**

Some residents categorize useable items as trash. Chandler staff checks loads arriving at the Recycling-Solid Waste Collection Center to determine if there are items that can be recycled or donated to the program. Staff performs quality inspections to make sure items are in decent condition. Items not easily repaired or heavily soiled are diverted for recycling or disposal.



### Costs/Budget

Start-up cost for the Trash to Treasure Program was less than \$200 to construct metal top covers for the 40-yard containers used to store items. There is no additional cost for the program.

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**BEST PRACTICE:  
CITY OF CHANDLER RECYCLING  
EDUCATION KITS**

The City of Chandler Solid Waste Services staff offers presentations to Chandler students about recycling and waste reduction. Many requests come from teachers who are seeking additional classroom activities and lessons about waste reduction, recycling, and the environmental impact of landfills. Most often, schools struggle to maintain funds for procuring materials to supplement environmental lessons.

In 2011, the City of Chandler Solid Waste Services created 25 Recycling Educational Kits. The kits are checked out to teachers of Chandler schools

(public, private and charter), providing educational materials to fulfill the learning process. The Solid Waste Recycling Education Kits include:

1. Interactive table-top portable landfill model.
2. Lessons and worksheets on CDs for teachers.
3. Recycled paper for teachers to copy worksheets.
4. Children's literature for lessons.
5. Educational videos.
6. City of Chandler Solid Waste Program literature.
7. Recycling games and activities.
8. 25-gallon recycling bins.

**Benefits**

The City of Chandler, partnering with educators in the community, uses the Solid Waste Recycling Education Kits to create a learning experience that makes learning fun. The activities prompt classroom



discussions that raise awareness about the City of Chandler solid waste and recycling programs as students learn about solutions to waste management issues, starting at home, in schools, and in the community. The activities encourage others to follow their lead in managing waste by reducing, reusing and recycling.



**Costs/Budget**

The City of Chandler was awarded a grant for \$14,757 by the Gila River Indian Community State Shared Revenue Program for an educational program promoting waste reduction and recycling. The City of Chandler matched the grant to purchase materials and establish the 25 Recycling Education Kits. The cost to restock the kits with education material is approximately \$1,000 annually.

**Reach**

The Recycling Education Kits are aimed at elementary students in Chandler. The impact goes beyond the classroom as the information received by the students through the interactive lessons and activities are shared with family and friends.

**Key Indicators/Performance Measures**

The key indicators for the Recycling Education Kits include:

1. Number of classrooms and number of students involved in using the kits.
2. Teacher satisfaction survey gauging results from teachers who use the kits.

**Lessons Learned**

Since much of the information was developed by City staff, the kit took longer to create than originally anticipated. Making certain the education materials were compatible for the learning experience on a local level was vital. Some customization was required to ensure the information was relevant to the community.

**Changes Since Implementation**

Per teacher recommendations resulting from survey results, the City of Chandler is evaluating and considering new material for the kit to increase the selection of lessons and activities, and developing a teachers workshop for presentation.

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**BEST PRACTICE:  
CITY OF CHANDLER HOUSEHOLD  
HAZARDOUS WASTE COLLECTION  
FACILITY**

Since 2006, the City of Chandler Household Hazardous Waste Collection Facility provides Chandler residents a permanent location for drop off of non-regulated household hazardous waste with potential risk to the public and the environment when improperly or illegally disposed. Located at the Chandler Recycling-Solid Waste Collection Center (residential transfer facility), the Household Hazardous Waste Collection Facility does not require a full-time dedicated staff. Instead, to minimize costs associated with household hazardous waste operations, staff scheduled to fulfill transfer station duties are scheduled to work household hazardous waste, assisting residents and ensuring safe and efficient operations based on the number of residents scheduled, and the quantities of household hazardous waste anticipated for drop off. Prior to the permanent facility, the City of Chandler hosted household hazardous waste collection events twice each year beginning in 1995.

**Benefits**

Offering a permanent location for proper and safe disposal and recycling of non-regulated hazardous waste is a proactive measure for ensuring hazardous waste does not pose harm to the general public and the environment. Public awareness is a critical component to the success of promoting and achieving the benefits of this program. Through public education, the community becomes aware of the threats posed when household hazardous waste is improperly stored in the home, or improperly or illegally disposed. Likewise, citizens are provided printed information and offered tips on how to safely manage household hazardous waste in the home, how to reduce or reuse quantities of household hazardous waste generated, and safe alternatives to some household products containing hazardous waste.



**Reach**

The program is offered to Chandler residents city-wide.

**Key Indicators/Performance Measures**

Key indicators for the Household Hazardous Waste Collection Facility include:

1. Total pounds of household hazardous waste properly managed for disposal.
2. Total pounds of household hazardous waste recycled/reused.
3. Total numbers of residents using the Household Hazardous Waste Collection Facility annually.
4. Customer satisfaction survey completed by residents who have used the Household Hazardous Waste Collection Facility.

**Lessons Learned**

Lessons learned with the program include the following:

1. Engage staff involved with fulfilling household hazardous waste operations.
2. Learn from others who have implemented similar programs – do not “reinvent the wheel”.
3. Stay current with innovative, cost-saving measures for recycling/reusing household hazardous waste.

### Changes Since Implementation

Nearly 80 percent of household hazardous waste collected is recycled and/or reused. Selected staff acquired hazmat certification training to minimize costs requiring a chemist for identifying unidentified waste. A reuse program for latex paint was implemented. Selected unopened products (motor oil, antifreeze, janitorial type cleaning products, etc.) are diverted for City use for additional savings.

### Costs/Budget

The initial cost associated with construction of the facility was \$350,000. The initial start-up cost of \$225,000 was budgeted for set-up of operations requiring equipment, supplies, and contractual services for collection. The current annual budgeted cost for operation and maintenance and contractual services is approximately \$100,000.



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**BEST PRACTICE:  
TOWN OF GILBERT HOUSEHOLD  
HAZARDOUS WASTE FACILITY**

In July 2007, the Town of Gilbert built a stand-alone 4,000 square foot Household Hazardous Waste Collection Facility at an approximate cost of \$800,000. The facility is unique to the Valley in that it is open to the public three days per week providing a drive up service with no appointment necessary.

**Benefits**

The facility provides an excellent collection and disposal service to the residents. The Town recycles as much of the material collected as possible and keeps it out of the landfills. The current diversion rate is 89 percent.

**Reach**

The facility is currently made available to all Town of Gilbert residents that have the Town’s residential service.

**Key Indicators/Performance Measures**

Each year the facility has increased its diversion rate: FY 2008—54 percent, FY 2009—56 percent, FY 2010—61 percent, FY 2011—85 percent to FY 2012—89 percent. The target goal for FY 2013 is 91-92 percent.

**Lessons Learned**

The Household Hazardous Waste Facility is a great service for all of the Town residents. Prior to its opening, Gilbert held semi-annual collection events. The Town now collects 3.5 times the amount of waste than when collection events were held. The Town of Gilbert has learned better ways to recycle versus dispose of the material. Gilbert now recycles all of its latex paint. There are more products available to the public through the Swap Shop. All propane tanks, batteries, and fire extinguishers are also recycled.



**Changes Since Implementation**

As the facility has grown in popularity with residents the Town has grown from one supervisor and one full-time technician to one supervisor and three full-time technicians. The amount of material that is recycled has grown from 54 percent in 2007 when the facility opened to the current diversion rate of 89 percent. The Town continues to search for new avenues to recycle the products received.

**Costs/Budget**

The construction of the Household Hazardous Waste Facility cost approximately \$800,000 and was part of a Capital Improvement Project. The annual budget is \$448,000 for FY 2013. The service is funded through the fees collected for solid waste service.

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**BEST PRACTICE:  
GLENDALE SAME DAY RESIDENTIAL  
SANITATION COLLECTION SERVICE**

The City of Glendale provides same day residential sanitation collection services to residents for their trash and recycling disposal needs. This best practice was implemented in conjunction with the introduction of the City’s curbside recycling program in 2000. When curbside recycling was introduced to the community, the sanitation division decided that same day collection for both refuse and recycling containers was the most convenient and cost-effective approach for collection.

**Benefits**

The major benefit of the program is convenience for residents by only having to wheel out their containers once per week. There are also cost savings and route efficiencies realized by providing same day collections through increased shared resources and operational consistencies during collections. Additionally, same day service reinforces recycling and helps reduce recycling contamination. It also assists with neighborhood aesthetics by having containers out on the street only once per week, instead of twice.

**Reach**

The same day residential sanitation collection service is offered to all residential homes in Glendale, which is approximately 53,000 homes.

**Key Indicators/Performance Measures**

The performance measures include that weekly residential collections occur with a 100 percent collection rate for all cans placed out on time and a recycling participation rate of at least 60 percent (recycling rate is based on containers being brought out to the curbside each week). A key indicator validating same day service as a best practice is that many communities throughout Arizona



are now exploring the feasibility of converting their curbside program to same day service.

**Lessons Learned**

The primary implementation issues with same day collection service were managing challenges associated with increased operations and effectively communicating the new program to the public.

**Changes Since Implementation**

Changes since the program was implemented in 2000 include route expansion and conversions to maximize customer service while working to keep costs minimal.

**Costs/Budget**

The initial start-up costs included a capital investment for recycling containers and side load garbage trucks to service the new program and an operational budget for city-wide inspection services.

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## **BEST PRACTICE: GLENDALE HOUSEHOLD HAZARDOUS WASTE PROGRAM**

The City of Glendale offers residents the opportunity to safely dispose of unwanted household hazardous waste through a home collection service. Residents can sign-up for the service by contacting the Glendale Sanitation Division and make an appointment for collection of the material at their home, without having to transport the material themselves. The program is offered twice per year, once in the spring and once in the fall.

The household hazardous waste collection program has been in place for well over 10 years; however, the best practice of providing residential home collection by a professional hazardous material collection company first began in 2004. Prior to 2004, City staff collected the material at each residential home and transported the material to a designated storing location for weekly collection. Prior to the City staff collection process, residents were hauling the hazardous material themselves to a designated Glendale facility.

### **Benefits**

The major benefit of the program is that both the resident and the City staff do not have to handle or transport the hazardous material, thus eliminating any hazardous accidents or incidents that can occur while handling the materials. Residents simply place the material out in a safe location on their property and wait for an experienced hazardous material collection company to collect the material. Other benefits include decreasing the amount of illegally dumped hazardous materials throughout the City and minimizing commercial hazardous waste disposal by visually observing the residential property from which the hazardous waste was generated.



### **Reach**

The Glendale Household Hazardous Waste Program is offered on a first-come, first-served basis and collection appointments are provided to the first 750 household calls per event. The maximum appointment limit is always filled to capacity each year for both events, allowing for a total of 1,500 residential collection appointments annually.

### **Key Indicators/Performance Measures**

The key indicator for the program is the allowance for a safe household hazardous waste disposal option for residents. The performance measure is that the program is filled to capacity each year during the spring and fall events.

### **Lessons Learned**

There have been no major issues with implementing the best practice of home appointment collection service. Contracting the service with a professional hazardous materials collections company has

increased staff productivity time during the program and minimized potential hazardous accidents and/or incidents by staff during transport.

### **Changes Since Implementation**

The program changed from residents hauling the material to a designated facility to staff collecting and hauling the material to a designated site. Now a professional hazardous materials collection company collects the material directly from the residential property.

### **Costs/Budget**

The cost of the Glendale Household Hazardous Waste Program is approximately \$50,000 annually to service 1,500 residential appointments. The initial start-up cost was less when City staff was hauling the material to a designated staging area; however, the division felt the increased cost for home collection service outweighed the potential hazards associated with staff hauling the material themselves.



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## BEST PRACTICE: GLENDALE LANDFILL GAS-TO-ENERGY PROJECT

The Glendale Landfill Gas-to-Energy power plant is a renewable energy project located at the City of Glendale Municipal Landfill. This 2.8 megawatt biogas facility is using the methane gas generated from decomposing garbage to power two 20-cylinder engines. The large combustion engine cylinders are connected to and turn turbines that generate electricity. The biogas plant is owned and operated by Glendale Energy LLC (an affiliate of Sexton Energy LLC), and the plant sends all its energy to Arizona Public Service (APS) customers. The gas plant began operations in January 2010.

### Benefits

The project provides environmental and economic benefits such as:

1. Reduces greenhouse gas emissions and local air pollution.
2. Generates renewable energy and offsets use of nonrenewable resources such as coal, natural gas, or oil.
3. Benefits the local economy through revenue generation from the sale of gas, by creating jobs for project construction, and cost savings associated with using landfill gas as a replacement for more expensive fossil fuels to generate electricity.
4. Establishes a simplified financial agreement through a flat annual rate for the sale of the gas rights and land lease by the public landfill owner (the City of Glendale) to the private developer (Glendale Energy).

### Reach

The project is the first public/private biogas facility in the West Valley and the newest of only three landfill gas-to-energy facilities in Arizona. The plant is generating clean, sustainable electricity for approximately 750 nearby homes in the West Valley and expects to do so for the next 40



years. It was also the first biogas project in the APS 240-megawatt renewable energy portfolio, which includes energy generation from solar, wind, geothermal, and biomass. Including the energy from the Glendale gas-to-energy facility, the combined electricity from these resources can meet the needs of 60,000 Arizona homes.

### Key Indicators/Performance Measures

Key indicators or performance measures for the gas-to-energy project include gas quantity and gas quality. These indicators are measured daily by the gas plant operator to ensure that the plant is operating at or above quantity and quality levels necessary to meet performance parameters required by the power purchase agreement with APS.

### Lessons Learned

The lessons learned with the project include the following:

1. An issue to be aware of for any gas-to-energy project is competing interest between goals of the landfill owner, mainly compliance related, and production goals of the gas plant owner. However, this has not become a major issue for this project since the partners have maintained a sound working relationship as well as effective communication protocols for reporting issues.
2. High concentration of siloxane in the landfill gas has been a major issue. When burned, siloxane

causes a sand-like coating on the engine cylinders, which increases maintenance frequency and costs. Glendale Energy will be installing a siloxane removal system to alleviate this problem.

### Changes Since Implementation

The City of Glendale's role in managing the landfill gas condensate more proactively occurred approximately 10 months after the gas plant started operations and Glendale Energy installed an air-cooled chiller unit to reduce the gas temperature before reaching the engines. Although this helped with gas engine efficiency, it did result in more gas condensate generation and increased costs for managing it. These costs to the City of Glendale were alleviated through an in-house project where the gas condensate is recirculated through an underground piping system into the active landfill area.

### Costs/Budget

The total project construction cost was \$6 million. As the owner/operator of the biogas plant, the gas developer Glendale Energy LLC (Sexton Energy LLC) provided the funding for construction. Glendale Energy also maintains the annual budget for plant operation and maintenance.



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**BEST PRACTICE:  
CHRISTMAS TREE DROP OFF PROGRAM**

In 2006, the City of Goodyear began offering a Christmas Tree Drop Off Program to residents for two weeks during the holiday season. Residents are encouraged to use one of the five drop off locations which are available 24 hours per day seven days per week. The Sanitation Division collects and stages the trees for chipping at a City of Goodyear site. Once chipped, the trees are taken to a local farm where the material is used for mulch and ground cover.

**Benefits**

The Christmas Tree Drop Off Program has helped to divert eight tons from the Goodyear waste stream annually. By donating the chipped material to a local farm, residents are appreciative that the trees are put to good use instead of being disposed at a landfill.

**Reach**

The program is available to Goodyear residents. Information is posted on the City of Goodyear website, advertised in the Goodyear INFOCUS magazine that is distributed to all residents, and emailed to residents that subscribe to “The Works” newsletter.

**Lessons Learned**

The City of Goodyear evaluated offering a curbside Christmas tree program; however, the City discovered that the best option was to continue with a drop off site service. Costs associated with providing the service using drop off sites are less than the costs of collecting trees curbside. In addition, fewer City staff resources are needed for the drop off program.



**Costs/Budget**

Funding for the Christmas Tree Drop Off Program is minimal. The City utilizes prison labor for the chipping of the trees and has no disposal costs since the chippings are donated to a local farm.

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**BEST PRACTICE:  
HOUSEHOLD HAZARDOUS WASTE  
COLLECTION DAY EVENTS**

In 2002, the City of Goodyear received a \$50,000 Waste Reduction Grant from the Arizona Department of Environmental Quality to promote and conduct its first household hazardous waste collection day event as a regional effort. The cities of Avondale, Buckeye, Goodyear, Litchfield Park, and Tolleson participated in the effort. Events have continued to occur. In October 2012, the cities of Avondale, Goodyear, Litchfield Park, and Tolleson entered into an Intergovernmental Agreement to conduct two events per year with alternating locations in Avondale and Goodyear.

**Benefits**

The Household Hazardous Waste Collection Day Events help each community by providing residents a proper way to dispose of hazardous material that may otherwise be sent to a landfill and potentially contaminate the water supply.

**Reach**

The events are posted on the City of Goodyear website. A press release is sent to the local paper and the events are also advertised in the Goodyear INFOCUS magazine that is sent to all residents. In addition, an email is distributed to residents subscribed to “The Works” newsletter.

**Key Indicators/Performance Measures**

Approximately 14 tons of household hazardous waste is collected at each event.

**Lessons Learned**

Verifying residency has been a lesson learned for the City of Goodyear. Residents that live in county islands or pockets assume they are able to participate by having a City address. In addition, traffic flow has been a challenge. To prevent participants from backing up onto the main roadway, adjustments



have been made by having traffic serpentine inside the parking lot.

**Changes Since Implementation**

Resident awareness and participation has increased. Residents are now calling to find out when the next event is scheduled.

**Costs/Budget**

Continued funding for the Household Hazardous Waste Collection Day Events is through the Enterprise Fund in the Sanitation Division. The City of Goodyear is given a contracted price based on the participation number. Additional costs include staffing of 15 employees that participate at the events. Each year the Sanitation Division projects the costs for the following year based on anticipated participation and personnel costs.

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**BEST PRACTICE:  
ELECTRONIC WASTE RECYCLING  
PROGRAM**

In 2009, the City of Goodyear began collecting electronic waste for recycling. Prior to 2009, e-waste was only collected at the Goodyear hazardous waste collection events. The City worked with Waste Management to stage a permanent drop off bin for e-waste at the White Tanks Transfer Station. The City anticipated a large number of televisions to be disposed of in 2009 due to the transition from analog to digital broadcasting. The e-waste bin is available to residents six days per week.

**Benefits**

Providing e-waste collection helps to remove toxic and hazardous materials that have a potential to leach into the soil and water supply. The e-waste program also assists in conserving natural resources, reducing pollution, and saving landfill space.

**Reach**

The e-waste recycling location is listed on the City of Goodyear website and included in the Goodyear INFOCUS magazine, which reaches over 22,000 residential accounts. The drop off bin is open to the public.

**Key Indicators/Performance Measures**

Prior to 2009, e-waste collected at household hazardous waste events ranged from one to two tons. With the implementation of a drop off bin that is available six days per week, the City has collected approximately six tons of e-waste per year. In fiscal year 2011/2012, the City had increased its tonnage collected to 7.5 tons.

**Changes Since Implementation**

The E-waste Recycling Program initially accepted only computers, monitors, and televisions. Currently, the list of acceptable e-waste includes any item



with a circuit board, such as VCR players, DVD players, cameras, alarm clocks, etc.

**Costs/Budget**

There is no cost to the City for the program. The scale house at the White Tanks Transfer Station notifies Goodyear staff when the bin needs to be serviced and the electronic recycling vendor empties the bin free of charge.

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## BEST PRACTICE: HOUSEHOLD HAZARDOUS WASTE COLLECTION DAY

In a joint effort with the cities of Goodyear and Avondale, the City of Litchfield Park provides residents a drop off location to collect hazardous waste once a year to encourage the proper disposal of hazardous items that could contaminate Valley landfills and bodies of water. The event has been taking place since 2002.

### Benefits

The Household Hazardous Waste Collection Day benefits the region by assisting residents in the disposal of household hazardous waste, which cannot be disposed of in normal trash containers due to possible contamination to the Valley landfills and ground waters.

### Reach

Fliers are distributed to approximately 1,500 households and the event is also posted on the City of Litchfield Park website with contact information.

### Key Indicators/Performance Measures

The key indicator/performance measure is resident participation to eliminate approximately 20 tons of waste in the landfills.

### Lessons Learned

Verifying addresses is a constant challenge. Those who live in a county island assume they belong in the City of Litchfield Park and turning them away is difficult.

### Changes Since Implementation

Since the program was implemented, there appears to be more participation from residents.

### Costs/Budget

There were no initial start-up costs. A contract is made including a cost per vehicle, and the bill is



paid once verification of residency is made. Approximately five employees participate during the event, which includes costs for overtime and employee related expenses. Funding for the program comes from the City's General Fund, with a projection of costs from the previous year.

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**BEST PRACTICE:  
LITCHFIELD PARK CLEAN UP DAY**

In 2000, the City of Litchfield Park implemented Litchfield Park Clean Up Day. It provides residents a curbside pick up of green waste and debris once a year to enhance the Community.

**Benefits**

Benefits of the Clean Up Day include assisting residents in the disposal of garden debris and tree trimmings. A local tree trimming company volunteers to chip the tree trimmings that are used as mulch for landscape projects around the City. Residents are also provided links to assist them in tree trimming techniques and guidelines for maintenance.

**Reach**

Fliers about the program are distributed to approximately 1,500 households and the event is also posted on the City of Litchfield Park website with contact information.

**Key Indicators/Performance Measures**

Key indicators/performance measures include that resident participation eliminates approximately 55 tons of waste in the landfills. Materials chipped are also used on City landscape projects.

**Lessons Learned**

Residents seem to be very pleased with the event and encourage their neighbors to participate.

**Changes Since Implementation**

There appears to be more participation from residents since the program was implemented. The event has been revised to include employees only and the work is completed during business hours. Previously the Clean Up Day was on a Saturday and consisted of resident volunteers.

**Costs/Budget**

The Litchfield Park Clean Up Day began as a community involvement event, with many residents



volunteering to participate in the collection of the debris. Lunches and drinks were provided by the Wigwam Resort. Costs included personal protective equipment to the residents and employees and paying City employees overtime (the event was always held on a Saturday). Due to the cost of liability insurance and the purchase of personal protective equipment the event has since been revised to include employees only and the work is completed during business hours. Costs have been cut significantly and include paying for the equipment provided by a local tree trimming company.

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**BEST PRACTICE:  
WASTE DIVERSION AND REUSE PILOT  
PROJECT**

The Maricopa County transfer stations collect and separate clean organic green waste for subsequent chipping and/or grinding for beneficial use as erosion controls and soil amendments for existing cap material. The transfer station locations are adjacent to the County’s closed landfill facilities which allow for immediate use and incorporation into soils with no real transportation costs. This pilot project is being initiated in 2012 as a waste diversion and reuse project for the closed County landfill facilities.

**Benefits**

Benefits of the project include: diversion of waste from the landfills; reduction in the number of truck trips to the landfills; reduction in diesel and dust (PM-10) emissions; and a reduction of erosion on landfill surfaces. As a result of this pilot project, a vegetative cover on barren land surfaces will be established.

**Reach**

The Waste Diversion and Reuse Pilot Project will have a positive impact on Maricopa County landfills as well as residents and local communities utilizing the County transfer stations.

**Key Indicators/Performance Measures**

The key indicators/performance measures include:

1. The number of tons of green organic waste diverted from landfill disposal.
2. The number of reduced miles and hours for diesel truck operation.
3. Reduced landfill erosion.
4. Reduction of maintenance activities requiring operation of heavy equipment and dust generating activities.

**Lessons Learned**

One of the challenges of the project is obtaining



“clean” materials that are easy to process. Materials such as palm fronds are more difficult to process.

**Costs/Budget**

Costs for the Waste Diversion and Reuse Pilot Project include the purchase or rental of a grinder and conveyor/feed system. Purchasing the equipment would cost \$80,000 to \$100,000. Rental costs would be \$2,500 per month with the equipment operating eight to ten days per month.

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**BEST PRACTICE:  
METAL BIN REFURBISHMENT  
PARTNERSHIP PROJECT WITH EAST  
VALLEY INSTITUTE OF TECHNOLOGY**

During the 2011-2012 academic school year, the City of Mesa Solid Waste Management Department created a partnership pilot program with the East Valley Institute of Technology. Students enrolled in the school’s welding program had the opportunity to refurbish City of Mesa front load trash bins in need of repair. A total of 24 containers were refurbished in 2011-2012.

**Benefits**

Benefits of the program included a cost savings to the City of Mesa of \$100 per container. In addition, students at the East Valley Institute of Technology received welding experience.

**Reach**

The program allowed the City of Mesa to keep its costs down for its residents and customers.

**Key Indicators/Performance Measures**

Key indicators/performance measures included cost savings achieved and quality of work. There is a cost savings of \$100 per container through the partnership program.

**Changes Since Implementation**

During the upcoming school year, a new scholarship program will be added to the program. A \$1,000 scholarship will be donated to the school by the Solid Waste Management Department. The East Valley Institute of Technology staff will be able to use these funds to help students needing financial assistance with program fees and safety equipment purchases.

**Costs/Budget**

The City of Mesa pays for all welding supplies and steel needed to refurbish the containers. Each



container costs the City of Mesa approximately \$300 in materials. Funding for the supplies is supported through the annual budget.

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## BEST PRACTICE: MESA PUBLIC SCHOOLS RECYCLING AND EDUCATION PROGRAM

Since 2008, the City of Mesa has created a working partnership with Mesa Public Schools (MPS) to implement a successful recycling program. Recycling containers are available at all school campuses and administrative locations. Students and staff are able to recycle their paper, plastic, metal and glass products. There are nearly 1,300 blue barrels and 47 cardboard bins currently in service.

To encourage ongoing recycling education at the schools, the City of Mesa works with MPS to hold annual Earth Day events. Past activities have included a plastic bag recycling challenge, the distribution of activity books to all elementary students, and a paper recycling challenge.

### Benefits

Benefits of the program include waste reduction, increased recycling diversion, outreach opportunities to Mesa children, and a cost savings to Mesa Public Schools of nearly \$11,000 per month for reduced trash service needs.

### Reach

The reach of the program is the Mesa Public Schools.

### Key Indicators/Performance Measures

Key indicators/performance measures include waste reduction and recycling diversion increase.

### Lessons Learned

The City of Mesa discovered that the implementation plan used at the elementary school level did not work for the junior and senior high school campuses. A different model had to be developed for these schools.



### Changes Since Implementation

Green waste roll off service is now being provided to the Mesa Public Schools District.

### Costs/Budget

The City of Mesa had to purchase the needed blue barrels to implement recycling at Mesa Public School campuses and administrative sites. A \$61,000 grant was received from the Arizona Department of Environmental Quality and a portion of that was used to purchase 815 90-gallon blue barrels and 1,235 28-quart desk side recycling containers.

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**BEST PRACTICE:  
HYDRAULIC LEAK PREVENTION  
PROGRAM**

The City of Peoria Solid Waste Division identified a serious issue with frequent hydraulic leaks from the fleet and the resources that were impacted when it occurred. A decision to create a plan to minimize or eliminate leaks was put into action. The Solid Waste and Fleet Divisions began by creating a plan which involved field staff to accomplish this goal. After several months of discussions and planning, the plan was rolled out, milestones were evaluated and adjustments made along the way. Staff’s dedication has resulted in going more than 200 days without a leak—a division first. The Division continues to experience success with early detections and reductions in spills/leaks. This program was implemented in 2011.

**Benefits**

In addition to reducing hydraulic leaks/roadways spills, the program also reduces the impact on resources cleaning up the spills. The Hydraulic Leak Prevention Program has resulted in an enhanced partnership with the Peoria Fleet Division and employee buy-in/involvement.

**Reach**

The program is implemented city-wide with minimal reach on neighboring municipal streets.

**Key Indicators/Performance Measures**

Key indicators/performance measures include a reduction in the number of spills and an increase in early preventive identification during inspections.

**Changes Since Implementation**

Since implementing the program, a post incident meeting with key personnel and the employee involved is held to review and identify: preventable measures that could or should have been taken; positive actions that mitigated the spill from being



worse; training that may be needed; vendor impacts; or equipment pattern failures.

**Costs/Budget**

There were no start-up costs and additional supplies and training were absorbed in the current budget.

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**BEST PRACTICE:  
SAME DAY GARBAGE AND RECYCLING  
COLLECTION SERVICE**

On July 9, 2012, the City of Phoenix launched its Same Day Collection Service, which combines refuse and recycling collection into one designated pick-up day for residents. Prior to this service, Phoenix residents had two separate days for collection, one day for garbage and one day for recycling.

**Benefits**

The benefits of the Same Day Collection Service include cost savings and convenience to residents. An annual savings of \$1.3 million was determined by the Phoenix Public Works Department based on the reduction of routes, trucks, and employees. The savings is realized through routing efficiencies. Previously, garbage and recycling trucks operated four days per week with a ten-hour shift schedule. The new program maximizes all five days of the work week for solid waste collection, resulting in the elimination of 12 collection routes and associated operators and collection trucks. Additional operational efficiencies include balancing out disposal workloads at the City’s transfer stations and reducing the number of trucks on the road during rush hour traffic.

Phoenix residents also experience a benefit with the new program by only needing to place their trash and recycling containers out one day per

week instead of two days. In addition, the program reinforces the importance of recycling and its benefits to the community.

**Reach**

The Same Day Collection Service impacts the majority of Phoenix residences with curbside collection service (over 350,000 households). Residences with alley collection and communities with unique solid waste collection needs were not converted to Same Day Collection.

**Key Indicators/Performance Measures**

The key indicators and performance measures for the Same Day Collection Service include:

1. Total operational costs related to solid waste equipment and staff hours (decrease in cost with elimination of 12 trucks and 12 drivers).
2. Recycling tonnage per month (anticipated increase with program).
3. Recycling revenue (anticipated increase in revenues due to increase in recycling tonnage).
4. Customer service (calls related to Same Day Collection).

**Lessons Learned**

The City of Phoenix used an extensive multi-level advertising campaign to coordinate the implementation of Same Day Collection in June, July, and August 2012. The campaign included mass media (television and radio) and print ads as well as social media. A postcard was also mailed directly to all customers two weeks prior to the service



changes. A quarterly Public Works Customer Survey showed that 83 percent of residents were aware of the pending changes the week prior to the implementation. However, customer calls were elevated during the first week of the Same Day Collection Service. The call center received calls from every city in the Phoenix metro area. Following a week of implementation, the Customer Contact Center had returned to its normal call volume.

### Changes Since Implementation

The Same Day Collection Service is thriving and staff continues to monitor its progress. As the program grows, staff will realize new efficiencies related to routing and scheduling collection days based on optimal conditions.

### Costs/Budget

The Same Day Collection Service created a \$1.3 million annual savings or \$6.5 million over five years; therefore, minimizing the need for future solid waste fee increases.



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## BEST PRACTICE: AUTOMATIC VEHICLE LOCATION

In September 2009, the City of Phoenix Public Works Solid Waste Division integrated Automatic Vehicle Location (AVL) equipment into its solid waste collection trucks. AVL is provided by Radio Satellite Integrators, Inc. and assists solid waste staff with tracking and monitoring operational activities.

### Benefits

The Automatic Vehicle Location equipment provides Phoenix solid waste staff with real-time vehicle location data. The data includes the vehicle's last known location; armature lift details for refuse and recycling collection trucks; speed and heading on the vehicle; geofence tracking; and detailed tabular reports. The AVL equipment also manages fleet communication and provides vehicle travel history, usage patterns, and statistics for each vehicle.

### Reach

The Automatic Vehicle Location equipment is featured in all solid waste vehicles which include garbage and recycling trucks to pick-up trucks used by foremen and supervisors. The initial installation included 425 vehicles.

### Key Indicators/Performance Measures

The key indicators and performance measures related to AVL equipment include:

1. Armature lifts per hour per truck.
2. Collection points (records when and where garbage and recycling containers are collected).
3. Geofence reports (records when trucks depart the service yard, enter and exit transfer stations, etc.).

### Lessons Learned

A large user base for Automatic Vehicle Location equipment increases the in-flow of data information. As the data is collected, staff must organize and interpret the information on a timely basis.



### Changes Since Implementation

As information needs and objectives for capturing solid waste vehicle data increase, the City of Phoenix will adopt technology that allows staff to accurately record information that is beneficial to determining operational efficiencies and improving the overall customer service offerings.

### Costs/Budget

The initial cost for hardware and installation of Automatic Vehicle Location equipment was \$1,400 per unit and funded through the Solid Waste Enterprise Fund.

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**BEST PRACTICE:  
BAG CENTRAL STATION—WHERE  
PLASTIC BAGS BELONG**

Bag Central Station is a voluntary recycling program with Arizona Food Marketers Association (AFMA) and their members to recycle plastic bags provided to customers during retail sales. The City of Phoenix works in partnership with AFMA and grocers within the City of Phoenix to accept used bags from their customers for recycling by the grocery store chain. The voluntary program began in 2007.

**Benefits**

There are a number of benefits associated with Bag Central Station. The program maximizes consumer choice and flexibility and minimizes impacts on the retailer. There is also the potential for the program to be a revenue source for the retailer. The plastic bags collected are cleaner and more easily marketed than bags from commingled recycling programs. In addition, the program is voluntary; therefore, no legislative or regulatory action was needed to implement the program. No taxes or fees were assessed as part of the program.

**Reach**

The Bag Central Station Program was implemented city-wide by a majority of the grocery retailers. It also has an impact state-wide since the program has been shared with other communities.

**Key Indicators/Performance Measures**

The key indicators and performance measures for the Bag Central Station Program include the following:

1. Independent telephone survey on the percentage of people recycling bags at the retail outlets.
2. Independent telephone survey on the percentage of people using reusable bags.
3. Visual assessment for reduction of plastic bags in the “Phoenix Recycles” blue barrel recycling program.
4. Reported reduction in the sales and use of plastic bags by the grocery retailers.

**Lessons Learned**

The City of Phoenix has learned that since the Bag Central Station Program is voluntary, it is difficult to change consumer behavior on a large scale to completely recycle the bags. In addition, all grocers need to be 100 percent involved in order for the program to be successful. There is also the need to accurately measure the recycling of the bags.



[www.bagcentralstation.com](http://www.bagcentralstation.com)

The number reported is not an accurate measure since the grocers store, ship, and recycle the bags mixed with the film plastic generated at each store. Another lesson learned was the need to measure the reduction in the number of plastic bags distributed by the grocers; however, stores do not share proprietary information.

### Changes Since Implementation

The City of Phoenix has implemented a recognition program to recognize individual stores that support Bag Central Station. One hundred stores are inspected quarterly and up to ten stores are selected for recognition awards based on exemplary participation. The City of Phoenix is also interested in having the program expanded beyond grocery and be implemented by the Arizona Retailers Association.

### Costs/Budget

Costs associated with the Bag Central Station Program included the purchase of reusable bags for distribution to the general public. These were purchased by the City of Phoenix for \$250,000/two years. The City also funded \$25,000 in marketing of the program in the start-up year. Industry funding for marketing of the program is unknown. However, the industry did fund the installation of plastic bag collection bins at the grocery stores. They also contributed \$1,000 for design of the program logo. Ongoing surveys and store visits will be funded by the City of Phoenix at \$10,000 every five years.



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**BEST PRACTICE:  
QUEEN CREEK INSPECTION PROGRAM**

In 2010, the Town of Queen Creek implemented its inspection program for residential curbside solid waste and recycling carts.

**Benefits**

Due to the Town’s same day trash and recycling program, the inspector is able to inspect the solid waste cart for bag and tie violations as well as the recycling cart for violations related to acceptable recycling material to decrease contamination. The inspector is able to provide educational material along with the violation warning to the resident on either or both carts.

**Reach**

The Inspection Program is implemented town-wide.

**Key Indicators/Performance Measures**

The inspections are tracked by type/location of the violation. Public education materials can then be created regarding the most prevalent issues (i.e. bag and tie or pizza boxes in recycling).

**Lessons Learned**

The inspector required a better process to log inspection results into the billing/tracking software. A program was created using GIS and the billing software to track and maintain the inspections.

**Costs/Budget**

Costs are associated with the initial start-up in 2010 and funded through the residential solid waste monthly fees.

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# Do More Blue



**1. CORRUGATED CARDBOARD**  
Remove plastic wrappers and flatten



**10. MILK CARTONS AND DRINK BOXES**



**2. BROWN PAPER BAGS**



**3. NEWSPAPERS**



**4. PAPERBOARD**  
Cereal, food, shoe boxes, etc.  
Remove plastic liners



**5. MOLDED FIBERBOARD**



**11. GLASS FOOD AND BEVERAGE BOTTLES AND JARS**  
No other glass



**6. PLASTIC (PETE) BOTTLES**  
Soda, water, etc.



**12. ALUMINUM CANS**



**13. STEEL / TIN CANS**  
Non-hazardous aerosol cans are okay. Please no other steel



**7. MAGAZINES AND CATALOGS**  
Less than 1/2 inch thick



**8. PHONEBOOKS**



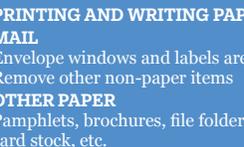
**14. PRINTING AND WRITING PAPER**



**15. MAIL**  
Envelope windows and labels are okay. Remove other non-paper items



**9. PLASTIC (HDPE) BOTTLES / JUGS**  
Milk, water, juice, liquid detergent, shampoo, etc. No hazardous material containers\*



**16. OTHER PAPER**  
Pamphlets, brochures, file folders, card stock, etc.

\*Hazardous materials include pesticides, herbicides, automotive fluids, pool chemicals, etc.



Please recycle plastic bags at your participating neighborhood grocery store. Only shredded paper should be placed in a sealed clear plastic bag for recycling. This is the only exception to the No Plastic Bags rule.

[www.QueenCreek.org/recycling](http://www.QueenCreek.org/recycling) or (480) 358-3450 option 7



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## **BEST PRACTICE: SAME DAY TRASH AND RECYCLING COLLECTION**

The Town of Queen Creek began Same Day Trash and Recycling in 2010 following a review of collection day options. After considerable study, the Town discovered that Same Day Trash and Recycling collection best suited the needs of the community and resulted in additional efficiencies.

### **Benefits**

The benefits of Same Day Trash and Recycling for residents include only having to place containers curbside one day per week. In addition, the trucks are in the neighborhoods just one day resulting in less congestion and parking issues. There is also easier, more efficient, routing for street sweepers since the subdivisions only have trash and recycling carts out one day per week. Efficiencies are also found in the Inspection Program since the solid waste inspector is able to inspect the trash cart for bag and tie violations and the recycling cart for recycling violations. The inspector can then provide public education materials on both carts if necessary at the same time, avoiding a second trip.

### **Reach**

Same Day Trash and Recycling is offered to all Queen Creek residents on the program.

### **Key Indicators/Performance Measures**

The Town of Queen Creek has the goal of inspecting each location (both carts) twice annually.

### **Lessons Learned**

Public education and outreach was critical for residents to understand the change to their day of service and that both carts would be placed curbside on that one day.

### **Changes Since Implementation**

There have been no changes since the program



was implemented in 2010. Residents are responding well to the program and most have expressed positive remarks to the same day collection. Participation rates for recycling seem to be consistently high. The Town believes the high rates are in part due to the program.

### **Costs/Budget**

The program and contract costs from the beginning of the solid waste program included same day collection. The user fees support the service.

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## **BEST PRACTICE: RECYCLING PUBLIC EDUCATION/ OUTREACH**

In 2010, the Town of Queen Creek launched its Recycling Public Education/Outreach Program. The program was then updated in 2012 and provides public education/outreach to the community emphasizing the benefits of recycling. The program components include: the campaign slogan (Do More Blue), banners, e-newsletter, water bill inserts, website updates, community events, special recycling collection events (Earth Day, America Recycles Day), community guides, citizen leadership academy training, and elementary school recycling education program.

### **Benefits**

The public education and outreach results in increased exposure to the benefits and acceptable materials for recycling. The Town of Queen Creek has stayed consistently at a 20 percent diversion rate for recycling since the implementation of the entire solid waste program in 2010.

### **Reach**

The elementary school recycling education program provided outreach to all the 4th grade classrooms in the Town of Queen Creek, reaching over 500 students in the first year of the program. It will continue to develop as the solid waste program grows, intending to reach 2nd through 4th grade classrooms every year.

The other materials listed above are available to all residents. Monthly articles about recycling are provided for the e-newsletter and water bill inserts.

### **Key Indicators/Performance Measures**

The recycling diversion rate goal of 20 percent or higher is an indicator if the outreach programs are effective or if adjustments need to be made.



### **Lessons Learned**

Lessons learned include the need for better outreach on the Elementary Recycling Education Program to reach the charter schools, which have refused the program.

### **Changes Since Implementation**

The Do More Blue Campaign was added the year following implementation of the entire solid waste program to help residents identify with the recycling component and direct residents to the Town's website.

### **Costs/Budget**

The first year costs of the program were higher since public education and outreach related to the entire solid waste program. The recycling education component was not separate. For FY 2011 and FY 2012, the budget was \$31,849, which included the start-up costs for 2010. The FY 2013 budget is projected to be \$16,888. The program is funded through user fees for monthly solid waste services.

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## BEST PRACTICE: EMERGENCY PROCEDURES

In 2007, the Salt River Landfill implemented procedures as a best practice for various emergencies that may be encountered at the landfill. These include fire, injuries, and loss of electrical power. The steps to be taken for each emergency are identified in their standard operating procedures. In addition, the equipment to be used during the emergency situations is listed.

### Benefits

The benefits of the procedures are improved employee and general public safety. There has also been improved coordination with outside authorities.

### Reach

The emergency procedures cover the entire Salt River Landfill property.

### Key Indicators/Performance Measures

The key indicators/performance measures include the results from when the policy was implemented.

### Lessons Learned

Phone numbers for proper authorities must be kept current and should be reviewed annually.

### Costs/Benefits

There were no initial start-up costs associated with implementing the procedures. Time was needed to draft the policy and educate and train employees on the emergency procedures.



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## BEST PRACTICE: SAFETY PROCEDURES

In 2007, the Salt River Landfill implemented safety procedures as a best practice. The procedures impact both employee and customer safety issues at the landfill. The policy identifies procedures for the following: general safety, individual safety equipment, reporting/documentation, first aid, safety during emergencies, traffic control safety, equipment operator and driver safety, scale house safety, and blood borne pathogen safety. The procedures provide a detailed list of steps to be taken to ensure safety at the Salt River Landfill.

### Benefits

Benefits of the best practice include improved employee and general public safety. The number of injuries, accidents, and employee lost time incidents are limited.

### Reach

The safety procedures cover the entire Salt River Landfill property.

### Key Indicators/Performance Measures

The key indicator/performance measure is lower costs associated with injuries and accidents.

### Lessons Learned

Lessons learned include constantly updating and reinforcing the safety procedures as different unforeseen incidents occur or as necessary for implementation.

### Costs/Budget

There were no initial start-up costs associated with implementing the procedures. Time was needed to draft the policy and educate and train employees on the safety procedures.



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## BEST PRACTICE: SPECIAL WASTE

In 2007, the Salt River Landfill implemented a best practice for special waste acceptance at the landfill. Special wastes are defined as any waste that is not considered typical household or commercial waste or is a waste that requires special handling or disposal practices. Special wastes are profiled using a Salt River Landfill Generator's Waste Characterization Form and if disposal costs are involved, a Service Agreement for Industrial Waste Disposal is completed.

### Benefits

The improved screening of waste streams coming into the landfill ensures hazardous or unacceptable wastes are not accepted. Additionally, the best practice results in improved employee and general public safety and future implications of accidentally accepting hazardous and/or unacceptable wastes.

### Reach

The special waste procedures cover the entire Salt River Landfill property.

### Key Indicators/Performance Measures

The key indicator/performance measure is that the policy lowers liability exposure associated with accepting hazardous or unacceptable wastes.

### Lessons Learned

A lesson learned with implementing the best practice was to be vigilant as regulations are adopted that may change some of the acceptance criteria.

### Costs/Budget

There were no initial start-up costs associated with implementing the procedures. Time was needed to draft the policy and educate and train employees and the customers on the special waste procedures.



Photo credit: Tim Roberts Photography

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**BEST PRACTICE:  
COMMERCIAL RECYCLING FOR CITY  
COMMERCIAL ACCOUNTS AND MULTI-  
FAMILY PROPERTIES**

The need for recycling was identified for businesses, schools, and multi-family accounts in the City of Scottsdale. In 2002, a program was designed for commercial customer accounts to have the ability to take advantage of co-mingled recycling service and cardboard box pick-up. The City of Scottsdale commercial recycling routes also service public drop off points located throughout the City. These drop off points are used by residents and businesses that do not have City service.

**Benefits**

Through diversion, the City of Scottsdale has been able to reduce refuse container sizes and frequency of refuse collections for commercial accounts, resulting in cost savings for commercial customers. The Scottsdale Unified School District has reduced its refuse collection from five days per week to three days per week and has a goal of going to two days per week.

**Reach**

The reach of the program is city-wide for commercial customers. This reach is met with the current fleet of collection vehicles and an on-site baling machine located at the Scottsdale transfer station.

**Key Indicators/Performance Measures**

Commercial accounts experience a cost savings and are able to advertise as recycling friendly. The City of Scottsdale pays less in tipping fees for refuse disposal and generated recycling income helps offset disposal fees for commercial accounts.

**Lessons Learned**

The numbers show that customer retention is good; a high percentage of commercial accounts that have implemented recycling services have kept it. One issue



identified is the space needed for an additional container on a commercial property. The City uses multiple sized containers to address this issue. Another solution offered is the cardboard box collection service, which eliminates the need for a fixed container on site.

**Changes Since Implementation**

Since the program was started, the City has seen the need for multiple sized containers to fit into different business property sizes and layouts. Days of service have increased from one day per week to twice per week, as needed. Adding commercial cardboard box pick-ups to the existing weekly moving box service offered by the City was another change made for accounts that did not have space for a fixed container.

**Costs/Budget**

There was no initial start-up cost. New plastic recycling containers for a participating commercial account are purchased through existing replacement container funds. Each commercial account is charged an additional monthly fee for the collection of recycling material.

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**BEST PRACTICE:  
GREEN WASTE TO COMPOST PROGRAM**

In 2010, the City of Tempe launched its Green Waste to Compost Program as a pilot project. The purpose of the program is to collect green waste in the community, both from the residential bulk and brush services and the parks maintenance operations. The material is then processed into high quality compost used in the maintenance and rehabilitation of community parks, athletic fields, and other community projects. Because of the program, healthy soil and turf is created.

**Benefits**

By recycling green waste into compost, there is a reduction in the material going to the landfill. In addition, the City experiences a small savings by paying \$20 per ton versus \$25.62 per ton to dispose of the material at the landfill. Once the green waste material is composted, the City of Tempe is able to purchase the material back at a reduced cost. Rather than chemicals, the compost is used as a soil amendment on parks. In addition to the purchase of compost, fish tea is used to supplement the compost application.

**Reach**

Currently, the Tempe Green Waste to Compost Program is a pilot program for 500 households, in five areas of Tempe. Green waste and bulk trash are collected on alternating months in these neighborhoods. To date, there has been 655 tons of green waste diverted and 2,010 cubic yards of compost purchased back. The compost is used in the parks, ball fields, and community give aways.

**Key Indicators/Performance Measures**

Key indicators include the following:

1. Cost savings.
2. Landfill diversion.
3. Reduction in the use of chemicals by replacing chemicals with compost.

4. Residents willingness to separate green waste materials.
5. Environmental sustainability.



**Lessons Learned**

One of the biggest challenges with the program is keeping the green waste clean. The City of Tempe bulk item

crews are able to control what is picked up during bulk item collection. If material is placed into roll off containers, there is limited control over what is placed into the containers.

**Changes Since Implementation**

A major change since the program was implemented was the move from working with Parks staff on green waste diversion and repurchasing of the material from the parks system to expanding the program to the Bulk Item Program.

**Costs/Budget**

There were no real initial start-up costs. There has been a cost savings by diverting material from the landfill. The savings is \$5.62 per ton of material diverted from the landfill to the compost facility. There have been minimal printing costs for pilot bulk items collection area of green waste. All sources of funding have been part of the solid waste operating budget.

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## **BEST PRACTICE: COLLECTION OF HOUSEHOLD HAZARDOUS WASTE THROUGH THE TEMPE HOUSEHOLD PRODUCTS COLLECTION CENTER**

On Earth Day 1999, the City of Tempe began collecting household hazardous waste through its Household Products Collection Center. The Center collects household hazardous waste from residents in Tempe and Guadalupe.

### **Benefits**

The benefits of the program include the diversion of household hazardous waste from entering the water system through the sewer or storm drain; saving landfill space by properly disposing of chemicals and paints; public outreach in educating residents of household hazardous waste; and reducing, recycling, or repurposing e-waste and other household products. Over 46,000 customers have used the services with over 2.2 million pounds of materials collected in 10+ years. Ninety percent of the materials collected at the facility are recycled or reused.

### **Reach**

The Household Product Collection Center is open to residents of Tempe and Guadalupe.

### **Key Indicators/Performance Measures**

Key indicators and performance measures include: residential drop-offs; total pounds of material collected; and percent of materials recycled, reused, or re-purposed. The City's 2011 citizen satisfaction survey indicated that the Center is the 5th most visited city facility with 38 percent of Tempe residents using the facility in the last year.

### **Lessons Learned**

Lessons learned in implementing the program include the fact that bigger is better; space is a necessity. Another lesson is to be creative in recycling everything possible.



### **Changes Since Implementation**

Collected items at the Center include: household hazardous waste, tires, Christmas trees, all blue bin items, electronic waste, textiles, and all appliances. There is also a latex paint reuse program. Participation has more than quadrupled since inception of the program.

### **Costs/Budget**

The initial start-up costs for the program included \$300,000 matched funds from the Arizona Department of Environmental Quality and \$300,000 from the City of Tempe. The annual budget for the program is \$400,000 solely funded by solid waste fees.

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**BEST PRACTICE:  
TEMPE’S EDUCATION RECYCLING  
INFORMATION CENTER (ERIC)**

Tempe’s Education Recycling Information Center (ERIC) is a 32 foot trailer of museum quality exhibits. The ERIC unit consists of a variety of interactive displays that educate the public on how to conserve natural resources through solid waste best practices. It demonstrates why it is important to recycle, what to recycle, and how to recycle through interactive exhibits. Seventy-five percent of the interior furnishing of the ERIC unit are made of recycled/reclaimed materials. ERIC is powered by biodiesel, a renewal resource, and uses sky-lights for interior lighting. The Education Recycling Information Center is unique and is the first of its kind in Arizona.

The core value of the ERIC unit is to provide a venue for innovative and hands on learning. The mission is to increase awareness and participation in Tempe’s municipal recycling program, divert recyclables from the landfill, decrease contamination of recyclables, properly dispose of solid waste, provide advocacy for improved consumer practices, and promote environmental stewardship through

sustainable practices. A primary barrier to recycling and waste reduction is that the public does not know what to recycle or have the opportunity to see what happens to the materials they toss in the recycling container. Through an interactive educational approach, all participants - young and old - learn the benefits of recycling and increase their environmental awareness. The City of Tempe has had the Education Recycling Information Center since 2009.

**Benefits**

A benefit of ERIC is that it can be easily set-up at schools and brings the field trip experience to the doorsteps of schools. The unit is self-contained, ADA accessible, easily set-up, and designed to travel anywhere. ERIC is a teaching aid by providing residents with current information on the many services and programs that Tempe provides. Tempe’s ERIC is an integrated approach and goes beyond words; it demonstrates how to live sustainable lifestyles, which is transformational.

**Reach**

The Education Recycling Information Center has outreached to diverse community members and beyond. This includes people at schools, churches, neighborhoods, offices, apartments, shopping





centers, and special events. The ERIC trailer has been invited to attend state conventions and Earth Day events: American Public Works, Arizona Recycling Coalition, Valley Wide Recycling, Solid Waste Association of North America, Valley Forward Educators' Night, Desert Botanical Garden Educators' Fair, InterTribal Council of Arizona, White Mountain Apache Tribe, Salt River Pima-Maricopa Indian Community, Casa Grande, Show Low, Carefree, Glendale and Phoenix. Tempe has established itself as a community leader in sustainability through its integrated approach to environmental stewardship.

**Key Indicators/Performance Measures**

The ERIC unit provides community visibility among residents. The key measure of success is the number of people that have visited the Center since 2009, which is 26,365. The ERIC program has outreached to a substantial number of community members, increasing recycling best practices and providing positive exposure for new and improved ways to recycle and live sustainably. Tempe's recycling program approval rating by residents is one of the highest in the county.

**Lessons Learned**

Due to staff schedules, the City of Tempe is not able to accommodate the many reservation requests for the ERIC unit. In addition, it is important to keep the information current and look for new ways to improve the exhibits. There is also the need to provide environmental literacy training to employees who serve as tour guides at events.



**Changes Since Implementation**

The City of Tempe is in the process of replacing a static display with a computer touch screen that will be interactive. Participants will then be able to use a computer program to determine their carbon footprint and other applications. Tempe has also added a costume mascot, a desert tortoise called ERIC.

**Costs/Budget**

In July 2008, the City of Tempe was awarded a Waste Reduction Initiative Through Education grant of \$60,000 from Arizona Department of Environmental Quality. The City of Tempe matched the grant and purchased the exhibit trailer for \$120,000. The maintenance of the trailer is funded through recycling revenues. The annual operational and maintenance budget is \$5,000.

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## BEST PRACTICE: CURBSIDE RECYCLING COLLECTION

In November 2011, the Town of Wickenburg expanded its recycling program from a 10 year old single drop off site to a curbside collection program. The curbside collection program was initially rolled out to all single family residences and small businesses. The program is currently in the process of adding multi-family units and larger commercial sites.

### Benefits

The curbside collection program has not only met a demand from the Town's customers, it has diverted approximately 50 tons of solid waste from the tonnage transported to the landfill each month. The program currently saves the Town of Wickenburg \$1,675.50 per month in solid waste tipping and hauling fees plus generated revenue from recyclables of \$1,350.00 per month. The program is anticipated to favorably impact the sanitation budget by \$42,000+ annually after the completion of the commercial rollout.

### Reach

The Curbside Recycling Collection Program is currently serving all single family residences and small businesses within the Town limits. It is currently expanding to multi-family residences and larger business in the same area.

### Key Indicators/Performance Measures

The key indicators for the program will be the tonnage collected, which will reduce solid waste tipping fee expenses, and the recycling contamination levels that are currently good.

### Lessons Learned

Lessons learned include the following:

1. Working with an outside vendor delivering cans in the area, some of which is very rural and lacking properly posted addresses and duplicated street names, proved to be challenging.



2. Ongoing public education of the program is proving to be key to its continued success. A public education campaign, including quarterly newsletters is being planned for FY 2012/2013.
3. Bringing on commercial sites has its challenges. The sites have to be considered on an individual basis due to space issues.

### Changes Since Implementation

Incorporating the commercial sites into the program is requiring some sanitation route changes to improve the flow and timing of the routes.

### Costs/Budget

The program initially cost \$135,000 for containers and hiring an outside company to deliver the 90 gallon containers. Approximately \$200 was spent on printing education materials, which were distributed through the Town's current billing system. An additional \$18,500 is budgeted this fiscal year for containers for the commercial sites. The annual budget for the program is \$15,000 for operating expenses.

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