

October 11, 2012

TO: Members of the MAG Solid Waste Advisory Committee

FROM: Christine Smith, Phoenix, Chair

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Thursday, October 18, 2012 - 10:00 a.m.
MAG Office, Suite 200 - Ironwood Room
302 North 1st Avenue, Phoenix

A meeting of the MAG Solid Waste Advisory Committee has been scheduled for the time and place noted above. Members of the Solid Waste Advisory Committee may attend the meeting either in person, by videoconference or by telephone conference call. Those attending by videoconference must notify the MAG site three business days prior to the meeting. If you have any questions regarding the meeting, please contact Chair Smith or Julie Hoffman at 602-254-6300.

Please park in the garage underneath the building, bring your ticket, and parking will be validated. For those using transit, Valley Metro/Regional Public Transportation Authority will provide transit tickets for your trip. For those using bicycles, please lock your bicycle in the bike rack in the garage.

In 1996, the Regional Council approved a simple majority quorum for all MAG advisory committees. If the MAG Solid Waste Advisory Committee does not meet the quorum requirement, members who arrived at the meeting will be instructed a legal meeting cannot occur and subsequently be dismissed. Your attendance at the meeting is strongly encouraged. If you are unable to attend the meeting, please make arrangements for a proxy from your entity to represent you.

Pursuant to Title II of the Americans with Disabilities Act (ADA), MAG does not discriminate on the basis of disability in admissions to or participation in its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Jason Stephens at the MAG office. Requests should be made as early as possible to allow time to arrange the accommodation.

TENTATIVE AGENDA

COMMITTEE ACTION REQUESTED

1. Call to Order

2. Call to the Audience

An opportunity will be provided to members of the public to address the Solid Waste Advisory Committee on items not scheduled on the agenda that fall under the jurisdiction of MAG, or on items on the agenda for discussion but not for action. Members of the public will be requested not to exceed a three minute time period for their comments. A total of 15 minutes will be provided for the Call to the Audience agenda item, unless the Solid Waste Advisory Committee requests an exception to this limit. Please note that those wishing to comment on action agenda items will be given an opportunity at the time the item is heard.

3. Approval of the July 24, 2012 Meeting Minutes

4. Solid Waste Best Practices in the MAG Region

At the October 12, 2011 MAG Management Committee meeting, members expressed interest in reconvening the MAG Solid Waste Advisory Committee to share ideas on best practices. Since the first meeting in February 2012, the Committee has heard a number of presentations on successful solid waste projects and programs occurring within 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 responses received highlight the innovative ways MAG member agencies are addressing some of the challenges associated with solid waste. A report on the Solid Waste Best Practices in the MAG Region has now been prepared. Please refer to the enclosed material.

2. For information.

3. Review and approve the July 24, 2012 meeting minutes.

4. For information, discussion, and input on the Solid Waste Best Practices in the MAG Region.

5. Same Day Trash and Recycling Collection Service

Same Day Trash and Recycling Collection Service combines refuse and recycling collection into one designated pick-up day for residents. It was listed as a best practice by three MAG member agencies in the compilation of solid waste best practices. An opportunity will be provided for jurisdictions with same day collection to discuss their programs.

6. Regional Solid Waste Management Statistics

The Solid Waste Advisory Committee has identified solid waste statistics on the regional waste stream, solid waste management facilities, and programs being implemented by municipalities as areas where updated information is needed on a regional level. In addition, Committee members have requested that information on recycling, diversion rates, and green waste be collected. An update will be provided.

7. Regional Recycling Video

Members of the MAG Solid Waste Advisory Committee have expressed interest in a regional recycling message. A potential video on the benefits of recycling and encouraging citizens to do their part will be discussed.

8. Next Steps for the MAG Solid Waste Advisory Committee

The MAG Solid Waste Advisory Committee was reconvened to share solid waste best practices and discuss solid waste issues impacting the region. The Committee has since heard presentations on several best practices and a summary has been compiled. Presentations have also been given on other areas of interest. At the July 24, 2012 Committee meeting, the Chair requested that members report back at the October meeting

5. For information and discussion.

6. For information and discussion.

7. For information and discussion.

8. For information and discussion.

on additional solid waste areas for the Committee to address in the future. An opportunity for discussion will be provided.

9. Call for Future Agenda Items

The Chair will invite the Committee members to suggest future agenda items.

10. Comments from the Committee

An opportunity will be provided for Solid Waste Advisory Committee members to present a brief summary of current events. The Committee is not allowed to propose, discuss, deliberate or take action at the meeting on any matter in the summary, unless the specific matter is properly noticed for legal action.

9. For information and discussion.

10. For information.

MINUTES OF THE
MARICOPA ASSOCIATION OF GOVERNMENTS
SOLID WASTE ADVISORY COMMITTEE MEETING

Tuesday, July 24, 2012
MAG Office Building
Phoenix, Arizona

MEMBERS ATTENDING

Christine Smith, Phoenix, Chair	Manuel Castillo, Scottsdale
Louis Andersen, Gilbert, Vice Chair	* James Swanson, Surprise
Cindy Blackmore, Avondale	Charlie Bladine for Mary Helen Giustizia, Tempe
# Elizabeth Biggins-Ramer, Buckeye	* Rick Austin, Wickenburg
# Tracy Conaway for Shereen Sepulveda, Chandler	* Helen Heiden, Arizona Chamber of Commerce and Industry
* Robert Senita, El Mirage	Jaclyn Palermo for Veronica Garcia, Arizona Department of Environmental Quality
Frank Lomeli, Glendale	Jill Bernstein, Keep Arizona Beautiful
Willy Elizondo, Goodyear	Tim Phillips, Maricopa County
* Chuck Ransom, Litchfield Park	* Dan Casiraro, Salt River Project
Michael Comstock for Will Black, Mesa	Alfred Gallegos, Valley Forward
* William Mead, Paradise Valley	
# Rhonda Humbles, Peoria	
Ramona Simpson, Queen Creek	
* Richard Allen, Salt River	
Pima-Maricopa Indian Community	

*Those members neither present nor represented by proxy.

#Attended by telephone conference call.

OTHERS PRESENT

Julie Hoffman, Maricopa Association of Governments	Maher Hazine, Peoria
Kara Johnson, Maricopa Association of Governments	Patrick Murphy, Mesa
# Tobie Mitchell, Los Angeles County	Brian Kehoe, Maricopa County
# Coby Skye, Los Angeles County	Christina Betz, Glendale
# George Gomez, Los Angeles County	Dave Hauser, Republic Services
	Tara Acuna, Mesa

1. Call to Order

A meeting of the MAG Solid Waste Advisory Committee (SWAC) was conducted on Tuesday, July 24, 2012. Christine Smith, City of Phoenix, Chair, called the meeting to order at approximately 10:05 a.m. Tracy Conaway, City of Chandler; Elizabeth Biggins-Ramer, Town of Buckeye; and Rhonda Humbles, City of Peoria, attended the meeting via telephone conference call.

2. Call to the Audience

Chair Smith provided an opportunity for members of the public to address the Committee on items not scheduled on the agenda that fall under the jurisdiction of MAG or items on the agenda for discussion, but not for action. She noted that according to the MAG public comment process, members of the audience who wish to speak are requested to fill out comment cards, which are available on the tables adjacent to the doorways inside the meeting room. Citizens are asked not to exceed a three minute time period for their comments. Chair Smith noted that no public comment cards had been received.

3. Approval of the April 19, 2012 Meeting Minutes

The Committee reviewed the minutes from the April 19, 2012 meeting. Cindy Blackmore, City of Avondale, moved and Ramona Simpson, Town of Queen Creek, seconded, and the motion to approve the April 19, 2012 meeting minutes carried unanimously.

4. Southern California Conversion Technology Demonstration Project

Tobie Mitchell, Los Angeles County, provided a presentation on the Los Angeles County Conversion Technology Program. She stated that she was accompanied by Coby Skye and George Gomez who are also part of the Los Angeles (LA) County Department of Public Works Environmental Programs Division. She indicated that LA County has been evaluating various technologies for over a decade and that she will discuss how conversion technologies (CTs) apply to the management of solid waste.

Ms. Mitchell gave an overview of LA County. She indicated that LA County is the most populous county in the nation, with over 10 million residents living in 88 cities and 140 unincorporated communities. Ms. Mitchell noted that approximately one million people live in the unincorporated communities, which is their primary service area for solid waste collection and programs. Each year, over 24 million tons of solid waste is generated in the County. She added that half of the 24 million tons of solid waste is diverted from disposal by recycling and waste reduction programs. Ms. Mitchell noted that the remainder of the solid waste is managed through the County's infrastructure that includes seven major landfills, four small landfills, two waste-to-energy facilities, nearly 200 transfer/processing facilities, and hundreds of waste haulers and self-haulers. She added that approximately 70 percent of waste generated in LA County is managed within the County and approximately 30 percent is transferred to surrounding counties.

Ms. Mitchell stated that the LA County Department of Public Works provides solid waste collection and recycling services to unincorporated areas through 21 exclusive residential franchises, seven Garbage Disposal Districts, a nonexclusive commercial franchise system, and an open market system. She discussed that the Department of Public Works administers a number of programs, some of which include composting, business recycling, a campaign against illegal dumping, and a waste tire program. Ms. Mitchell noted that LA County has the largest household hazardous waste and electronic waste management program in the country. She stated that a primary function of the Department is to report to the LA County Board of Supervisors on long-term disposal capacity. Ms. Mitchell noted that every 15 years a long-term solid waste planning document is prepared. The document includes waste forecasts and strategies on how to efficiently manage waste. Ms. Mitchell commented that approximately 12 years ago the LA County Board of Supervisors directed the Department to look at sustainable alternatives to landfills and managing waste locally with finite space.

Ms. Mitchell discussed conversion technologies. She stated that conversion technologies are thermal, biological, chemical processes that are capable of converting post-recycled residual solid waste into useful products and chemicals, including green fuels and renewable energy. Ms. Mitchell indicated that CTs are a non-combustion process. She mentioned that the CTs evaluated by LA County take residual waste (after recyclables have been removed) and run it through a heat injected or microbial process that converts the basic waste in to either a solid, liquid, or gas. Ms. Mitchell explained that the gases are valuable due to a high methane and carbon dioxide content that can be used for the generation of electricity or biofuels. She commented that LA County's long-term strategy has three prongs: CTs, expansion of recycling programs, and expansion of landfill capacity.

Ms. Mitchell indicated that LA County has researched the international development of conversion technologies. She stated that LA County has investigated CT projects operating in 28 countries. Ms. Mitchell noted that some of the international CT projects reviewed include thermal and gasification. She commented that Europe has over 200 anaerobic digesters that annually process nearly 6 million tons of biosolids and municipal solid waste.

Ms. Mitchell provided an overview of LA County's role in CT development. She mentioned that the Department of Public Works is evaluating and promoting the development of CTs under the direction of the LA County Board of Supervisors. Ms. Mitchell stated that CTs have been incorporated into their solid waste management approach. Due to the incorporation of CTs, LA County has conducted an in-depth evaluation of many technology processes and companies. Ms. Mitchell noted that LA County is a strong supporter of state and federal legislation that would enable the CTs to have a permitting pathway to development. She indicated that there are many legal definitions and requirements surrounding CTs which has slowed the development of CT projects in California. Currently, LA County has a few projects in development; however there are no completed facilities. Ms. Mitchell discussed that one of the ways that LA County supports the CT Program is through the landfill permit conditions which include funding to enable the program to move forward.

Ms. Mitchell presented a timeline of the Conversion Technology Program. She stated that in 1999 the LA County Board of Supervisors authorized the Department to move forward with finding landfill alternatives. Ms. Mitchell described that the Program has four phases. Phase one, which involved information gathering on various CTs and CT companies, was completed in 2004. Phase two involved an in-depth evaluation of CT companies. Ms. Mitchell indicated that phase two, which was completed in 2008, included site visits to countries operating CT facilities. She noted that finding a site partner in the County was a challenge; however, the County did find three materials recovery facilities in neighboring counties interested in partnering on a project. In 2010, the LA County Board of Supervisors approved three memoranda of understanding with the materials recovery facilities and three technology vendors for a demonstration project. Ms. Mitchell commented that also in 2010, the LA County Board of Supervisors approved the evaluation of commercial project opportunities in LA County. She added that one of the demonstration projects received a \$4.5 million grant from the California Energy Commission in 2011, which has enabled the project to move forward with development. The demonstration project will break ground next year.

Ms. Mitchell provided an overview of phase three of the conversion technology program. She stated that LA County partnered with three companies. The first company, CR&R Inc., is a solid waste hauling company that operates some recycling centers and transfer stations. Ms. Mitchell discussed that CR&R is developing an anaerobic digestion project at a recycling facility in a neighboring county. The biogas that is generated from the anaerobic digestion project will be made into vehicle fuel for their truck fleet. A fueling station will be located at the facility. Ms. Mitchell commented

that this project is expected to be operational next year. She stated the role of LA County has been as a technical advisor. Financial assistance was not provided by the County.

Ms. Mitchell discussed the remaining two demonstration projects. She indicated that the two projects were thermal projects with International Environmental Solutions and Rainbow Disposal Company. Ms. Mitchell noted that they had strong project proposals; however, the economy has posed challenges to the startup of these projects. At this time, the projects are on hold.

Ms. Mitchell stated that the purpose of involvement in the demonstration projects was to obtain operational data that would assist in the development of a commercial project in LA County. In phase four, the commercial project phase, 24 possible host sites were identified within the County and 18 locations are currently being explored. Ms. Mitchell indicated that there has been an increase in interest in these projects in the past few years due to the changes in the LA County waste system. She noted that the largest landfill in LA County will be closing in 2013, which will dramatically shift the market. Ms. Mitchell stated that many of the larger landfills are privately owned by the large haulers; therefore, they will be controlling the tip fees. She added that it is the smaller haulers that do not own landfills that are expressing interest in hosting a CT project at their recycling centers. Ms. Mitchell noted the shift in dynamics. She indicated that most of the sites being evaluated are materials recovery facilities due to convenience of the materials already being transported to those facilities. She added that existing and closed landfills and industrial zoned land have also been evaluated.

Ms. Mitchell stated that in 2011, LA County released a Request for Expressions of Interest to technology vendors and financiers to gauge interest in participation in a commercial project. The County was interested in soliciting information from technology vendors on their experience with projects, capability, and interest of participation. Ms. Mitchell stated that 11 financial institutions expressed interest in potentially funding a CT commercial project. She stated that many technology vendors provided feedback and that 36 of the vendors met the minimum criteria. Ms. Mitchell mentioned that the information gathered is now being compiled into a searchable online database resource for stakeholders that will be available on the LA County website. She noted that this online resource should be made available this summer. Ms. Mitchell discussed that an additional resource being developed is an economic model to estimate tipping fees for various types of technologies and facility sizes. This resource will also be available on the LA County website.

Ms. Mitchell discussed public outreach efforts. She stated that public outreach is a major component of the program and LA County has been working with public outreach consultants since the beginning of the project. Ms. Mitchell indicated that local and statewide outreach efforts are conducted. She noted that in May 2012, many local jurisdictions conducted visits to the California Energy Commission, CalRecycle, the Air Resources Board, and the Department of Natural Resources. Ms. Mitchell stated that these visits were effective to share the interests of local jurisdictions and discuss the benefits of CT projects for the State of California. She added that presentations are delivered to various committees, conferences, events, and organizations as part of the public outreach effort. Ms. Mitchell mentioned that the Department of Public Works recently held a successful workshop on CTs. She stated that outreach materials have been developed and are successful in aiding the ongoing endeavor of public outreach.

Ms. Mitchell concluded with four long-term benefits to the development of conversion technologies. LA County has pursued the development of CTs for the benefit of landfill diversion. Conversion technologies can divert 80 to 100 percent of residual waste (after recycling) into products and energy. The second benefit of pursuing CTs is the creation of local, green collar jobs. The environmental benefits of CTs are significant, especially the reduction in air emissions, including greenhouse gas

emissions, due to reduced truck traffic. Ms. Mitchell stated that the potential of using biofuel to fuel the solid waste equipment fleet will provide further environmental benefits. The fourth benefit is the local control over waste. Ms. Mitchell cited that with local landfills closing in the community, LA County is looking for ways to manage the waste locally.

Frank Lomeli, City of Glendale, asked why LA County focused on post-recycling residual waste instead of municipal waste conversion technologies due to the landfill shortage. Coby Skye, Los Angeles County, replied that LA County is committed to recycling as much waste as possible from the beginning. He stated that the benefit of that approach is that the recycling will require less trips, either to the landfill or CT facilities.

Mr. Lomeli inquired if LA County had researched waste-to-energy technologies in the United States. Mr. Skye responded that LA County did research many technologies; however, they did not look into traditional waste-to-energy. He noted that there are two traditional waste-to-energy facilities within LA County. Mr. Skye stated that communities in California are apprehensive regarding traditional waste-to-energy facilities and the LA County Board of Supervisors felt that the misconception of incinerators may be a challenge for waste-to-energy projects. Ms. Mitchell added that traditional waste-to-energy systems produce ash; however, conversion technologies produce either liquids, solids, or gases. Due to the output, more recyclables can be extracted from the process. Ms. Mitchell provided the example of pyrolysis technology. She stated that this thermal CT process retrieves additional metals which can then be further recycled. Ms. Mitchell stated that some biological CT processes are net producers of water. She noted the diversity of these technologies.

Mr. Lomeli asked if LA County has any research available on pyrolysis or gasification technologies. Ms. Mitchell replied that she would provide some of those resources to MAG to share with the Committee.

Chair Smith inquired how LA County has engaged high numbers of residents. Mr. Skye responded that LA County, in collaboration with the technology partner in charge of the project, reach out to the community surrounding the project site. He stated that residents are made aware of the project and questions residents may have are answered. He added that residents are encouraged to provide feedback on the project.

Chair Smith asked if LA County has experienced acceptance for projects. Mr. Skye replied that residential support has been shown with some of their demonstration projects that are farther along. He mentioned an evaluative process that requires the creation of an environmental document. Mr. Skye indicated that public workshops are then held for the environmental document, while making the document available to the public and other agencies. Mr. Skye indicated that the responses at the public hearings and workshops for the CR&R Inc. project were supportive. He added that the project was supported unanimously by the local officials.

Chair Smith thanked Ms. Mitchell and Mr. Skye for the Conversion Technology Program presentation and offering to provide additional resources to the Committee.

5. City of Glendale Landfill-Gas-to-Energy Facility

Mr. Lomeli introduced Christina Betz, City of Glendale, to present on the Glendale Landfill Gas-to-Energy Project. He stated that she is the Landfill Superintendent for the City of Glendale. Her responsibilities include landfill operations, Material Recovery Facility operations, Glendale's Gas Management Program, and a portion of the Solid Waste Administration Division. He noted that she has worked on the Landfill Gas-to-Energy Project since the beginning.

Ms. Betz presented on the Glendale Landfill Gas-to-Energy Project. She stated that the project is a renewable energy project that has been successfully turning garbage to electricity since 2010. The 2.8 megawatt biogas facility is owned and operated by Glendale Energy which is an affiliate of Sexton Energy. Ms. Betz indicated that the plant sends all of the energy produced to Arizona Public Service (APS) customers. She discussed that the decomposition of organic materials in landfills creates a highly flammable gas, consisting mainly of methane. Ms. Betz noted that instead of burning the gas that is emitted into the atmosphere, the Glendale facility is using the gas to power two 20-cylinder engines which connect to a turbine that generates electricity. She stated that this project is a joint partnership between the City of Glendale, APS, Bryan A. Stirrat & Associates (BAS), and Sexton Energy. The partnership is a combination of experience and resources that operate this state-of-the-art renewable energy facility. The Glendale Landfill Gas-to-Energy 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. Ms. Betz discussed that this project was also the first biogas project in the APS 240 megawatt energy portfolio which includes energy generation from solar, wind, geothermal and biomass. She stated that by including the energy from the Glendale landfill gas-to-energy facility, the combined electricity from these resources can meet the need of 60,000 Arizona homes. Ms. Betz noted that the methane gas once burned off at the Glendale Landfill is generating clean, sustainable electricity for approximately 750 homes in the West Valley and is expected to do so for the next 40 years.

Ms. Betz discussed the legal agreements of the gas-to-energy project. She stated that BAS, a local environmental engineering firm, was selected through a Request for Proposals process. Ms. Betz stated that the City entered into a Gas Rights and Lease Agreement with BAS in 2003 which gave them rights to manage the gas and provided one acre of land at the landfill for the construction of the facility. She stated that BAS partnered with a landfill gas developer, Sexton Energy, which is the parent company of Glendale Energy, the current owner of the gas plant. Ms. Betz indicated that different contract amendments have been made, the first contract amendment in 2007 extended the agreement term by ten years or until December 31, 2017. She also referred to a sublease agreement between BAS and Glendale Energy. She added that Glendale City Council approved an amendment to the Gas Rights and Lease Agreement that provided written consent so that BAS could enter a sublease agreement with Glendale Energy. Ms. Betz stated that Glendale Energy has a Power Purchase Agreement with APS that established delivery terms of the power generated to the electricity grid. The term for the Power Purchase Agreement between Glendale Energy and APS is twenty years. Ms. Betz indicated that the total project construction cost was \$6 million.

Ms. Betz noted that the landfill gas-to-energy facility began operation in early January 2010. She stated that the City of Glendale celebrated the opening of the plant with an open house/ribbon cutting ceremony on January 30, 2010. The public outreach event was titled *Lunch at the Landfill* and included tours of the gas plant and landfill site. The event was attended by over 500 citizens, dignitaries, elected officials, representatives from public/private partnerships, and industry professionals. She indicated that the number in attendance demonstrates the interest in renewable energy and sustainability projects.

Ms. Betz provided a virtual tour of the gas plant. She stated that the Glendale Landfill location includes the 320 acre landfill, the Glendale Energy Gas Plant, the Glendale Materials Recovery Facility, and the Glendale Regional Public Safety Training Center. She commented that the Glendale Materials Recovery Facility currently process approximately 15,000 tons of recyclables, most coming from the City of Glendale Residential Recycling Collection Program. Ms. Betz indicated that the 80 acre Public Safety Training Center site was planned for landfill operations;

however, it is now an Emergency Operations Center that serves West Valley Public Safety Officials. This was identified as a more immediate need due to the landfill life remaining.

Ms. Betz presented an overview of the gas collection system and facility operations. The south area of the landfill, approximately 140 acres in size, provides methane gas through 73 vertical gas extraction wells and six horizontal extraction wells. Ms. Betz indicated that the gas inlet pipe that supplies the gas to the plant from the extraction wells is located on the north side of the building. The gas inlet pipe is outfitted with a field instrument that measures the gas quality daily. Ms. Betz added that the typical range for methane content is 40 to 50 percent, however this can depend on the regional location of the landfill.

Ms. Betz describes facility operations. She stated that the gas travels from the inlet pipe into the engines, which are responsible for power generation. The plant operates two 1.4 megawatt, 20 cylinder combustion engines that drive the turbines that produce the electricity. Ms. Betz stated that the facility control room contains the computer system that monitors the engines. Each engine has its own computer system that monitors engine performance and energy production. She commented that each engine produces energy at approximately 4,000 volts. The energy produced is then converted using switch gear, which is equipment responsible for delivering electricity to APS customers through a 69,000 volt substation that is located outside the facility. Ms. Betz indicated that the electrical substation did require a utility easement to be approved by the Glendale City Council prior to construction. She described that the site also has a gas flare backup system and a condensate tank. Ms. Betz noted that the gas flare was primarily used before the energy gas plant facility was in operation and it is now only used when the engines are down for scheduled maintenance or other unforeseen circumstances.

Ms. Betz discussed the project economical and environmental benefits. She stated that the environmental benefits include: directly reducing greenhouse gas emissions, generation of renewable energy, and offset use of nonrenewable energy such as coal and oil. Ms. Betz noted economic benefits include: revenue generation from the sale of gas, creation of jobs, and an indirect cost savings with using landfill gas as a replacement for more expensive fossil fuels in the generation of electricity.

Ms. Betz presented the operational challenges. She stated that Glendale's previous role in managing gas condensate was minimal prior to the operation of the gas-to-energy project. Ms. Betz mentioned that after about 10 months of operation, Glendale Energy had to install an air chiller to reduce the temperature of the gas before it went to the engines; however, this added more gas condensate to manage. The management of the gas condensate would have added an increased cost of approximately \$50,000 for contracted septic hauling of the gas condensate. She explained that the costs of managing the gas condensate were alleviated due to an in-house project that pipes the gas condensate into the active landfill.

Ms. Betz discussed that maintaining an optimum level of gas quantity and quality is an ongoing challenge of the gas developer to meet the performance standards identified in the Power Purchase Agreement. She stated that another challenge is the balance between gas production and compliance goals. Ms. Betz indicated that a recent challenge has been siloxane removal. She stated that siloxane has been found in high concentrations in the landfill gas which causes issues with the engines. Glendale Energy is looking to install a system that removes siloxane from the gas.

Chair Smith asked how often the gas flare system is used and if the downtime is predictable. Ms. Betz responded that there is minimal use of the gas flare system. She commented that the flare

system is mainly used when there is scheduled maintenance on the engines or if there is an unforeseen situation with the equipment. In the case of unforeseen equipment malfunction, repairs or temporary repairs are made within hours. Ms. Betz discussed that the downtime of the system is predictable.

Chair Smith inquired if the compliance program had to be modified to accommodate energy production. Ms. Betz replied that modifying the compliance program was not necessary. She stated that good communication and an established relationship between Glendale, Glendale Energy, and BAS has assisted in maintaining compliance.

Willy Elizondo, City of Goodyear, inquired about the use of the energy produced. Ms. Betz indicated that all of the energy produced is delivered to APS customers through the electricity grid.

Chair Smith asked when the Power Purchase Agreement was entered. Ms. Betz responded that Glendale Energy entered in the Power Purchase Agreement in March 2009. Chair Smith thanked Ms. Betz for presenting on the Glendale Landfill Gas-to-Energy Project.

6. Solid Waste Best Practices Questionnaire

Julie Hoffman, Maricopa Association of Governments, provided an overview of the Solid Waste Best Practices Questionnaire. She stated that the MAG Management Committee expressed interest in reconvening the MAG Solid Waste Advisory Committee to share ideas on best practices. Ms. Hoffman indicated that a survey was distributed to the Committee in March 2012 that asked about best practices occurring in the region. She noted that many jurisdictions have presented best practices to the Committee. Ms. Hoffman stated that a draft questionnaire has been produced in order to prepare a comprehensive list of solid waste best practices for the region. She inquired if any members have questions or suggestions on the questionnaire prior to distribution. Ms. Hoffman commented that following approval of the draft best practices questionnaire for distribution, the questionnaire would be sent out and responses compiled. The final document would be presented to the Committee.

Elizabeth Biggins-Ramer, Town of Buckeye, asked if the questionnaire would be distributed in an electronic format where jurisdictions would be able to type in the information. Ms. Hoffman replied yes.

Maher Hazine, City of Peoria, commented that the American Public Works Association (APWA) has a public works accreditation program with a manual of best practices that is available for solid waste. Mr. Hazine inquired if the Committee would be interested in the APWA document which outlines best practices that can be employed. Mr. Hazine mentioned that local agencies that have gone through accreditation are employing these best practices. Chair Smith stated that this could be a useful resource.

Mr. Elizondo moved and Jill Bernstein, Keep Arizona Beautiful, seconded, and the motion to approve the Solid Waste Best Practices Questionnaire for distribution carried unanimously.

7. MAG Regional Solid Waste Management Plan

Ms. Hoffman discussed the data included in the MAG Regional Solid Waste Management Plan. She indicated that the results from the Solid Waste Advisory Committee Survey conducted in March 2012 identified aspects of the 2005 MAG Regional Solid Waste Management Plan that would be

beneficial to review and update. Ms. Hoffman noted that the areas mentioned included: solid waste statistics, solid waste management facilities, and programs being implemented. Various tables in the 2005 MAG Regional Solid Waste Management Plan were included in the Committee agenda packet. Ms. Hoffman inquired if the provided tables are of interest to the Committee to update. She asked if the Committee has suggestions on other useful information to collect. Ms. Hoffman indicated that recycling has been an area of interest for the Committee. She noted that the information on the tables is from 2002.

Louis Andersen, Town of Gilbert, stated that the provided tables are of interest with regard to updating. He added that a table with recycling, recycling diversion rates, and green waste would be useful. Mr. Andersen commented that the recycling information could be provided alongside the residential total volumes.

Ms. Biggins-Ramer inquired about a separate table for reduction activities. She noted that this could include tonnage statistics and what constitutes as recycling for specific recycling programs.

Tracy Conaway, City of Chandler, discussed diversion rates. She stated that many agencies have varying formulas and calculation methods. Ms. Conaway inquired about one formula being provided to ensure that agencies are calculating the rates similarly. Ms. Biggins-Ramer commented that it is important to compare similar items to avoid misinformation.

Ms. Conaway stated that the City of Chandler contracts their materials recovery facility with United Fibers. She stated that statistics for the facility are percentages based on sorts. Ms. Conaway discussed the idea of a footnote labeling the data provided on the updated tables as best estimates. Ms. Biggins-Ramer stated that was a valid point. Ms. Conaway also commented on contamination rates.

Mr. Hazine discussed performance measures. He noted that operator status, number of employees, miles traveled, rate information, tons of waste collected, average ton per resident, and basic performance measures would be useful to gather. Mr. Hazine indicated that the City of Peoria recently underwent a rate analysis and having information on the fundamentals of operation is beneficial. He inquired about employing a mechanism that would update information on a more frequent basis.

Chair Smith asked if member agencies have reports available on performance measures. She stated that municipalities can provide Ms. Hoffman with that information if available.

Chair Smith discussed pre-system activities. She commented that waste diverted before entering the solid waste management system is difficult to quantify. Chair Smith asked if the Committee is interested in attempting to measure diversion rates of pre-system activities. Mr. Andersen noted that he was interested.

Ramona Simpson, Town of Queen Creek, asked if the tables included in the agenda packet will be sent out for update. She discussed that new facilities, locations, closed facilities, materials accepted are all components that would be important to update. Ms. Simpson stated that the updated information would be valuable for the region in terms of collaboration.

Ms. Hoffman stated that MAG staff will draft tables for Committee review based on the feedback received.

8. Call for Future Agenda Items

Chair Smith asked the Committee for suggestions on future agenda items. She discussed that Household Hazardous Waste (HHW) has been identified as a topic of interest with the Committee, specifically the discussion of regional HHW collaboration. Ms. Biggins-Ramer stated that this would be an interesting topic in that consortiums and co-operated programs can benefit communities who work together while also having economic benefits. Chair Smith encouraged Committee members to contact Ms. Biggins-Ramer if interested.

Chair Smith inquired if the discussion today met the request from Chandler to hear about conversion technologies. Ms. Conaway inquired if communities have been approached by companies or know of projects moving forward in the State. Chair Smith stated that City of Mesa and other cities have been approached. She stated that she will look into it further.

Mr. Andersen proposed an agenda item with regard to recycling scavenging issues. He asked if other jurisdictions have permits, best practices in place, or enforcement codes with regard to scavenging. Ms. Conaway commented that the City of Chandler is challenged by scavenging as well. Mr. Hazine discussed that City of Peoria faced challenges with commercial recycling scavenging; however, the City modified the receptacles that impede the theft of materials. He stated that Peoria views the scavenging issue as lost revenue. Ms. Conaway stated that the Valleywide Recycling Partnerships will be addressing the issue of scavenging at an upcoming meeting. She stated that Chandler has an ordinance against scavenging and violators can be cited; however, it has not hindered the activity. Ms. Conaway stated that Chandler has experienced lost revenue from metals that are being scavenged from bulk waste. She added that Chandler will report to the Committee after the Valleywide Recycling Partnership meeting. Chair Smith thanked Ms. Conaway.

Chair Smith stated that two primary goals of the Solid Waste Advisory Committee when convened was to identify best practices in the region and common solid waste issues. With the completion of the best practices expected soon, she asked Committee members to determine what their city managers would like to see from the Solid Waste Advisory Committee. She inquired what the cities are interested in doing. Chair Smith commented that a clear Committee direction and goals are needed.

Chair Smith discussed diversion rates. She commented on topics such as glass recycling, green waste, and MAG specifications. She again encouraged Committee members to talk with their managers on activities for the Committee that they would support.

9. Comments from the Committee

Chair Smith asked for any comments from the Committee. With no further comments, Chair Smith thanked the Committee for participating and called for adjournment of the meeting at 11:35 a.m.

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.

MAG Solid Waste Advisory Committee

Chair Christine Smith	City of Phoenix
Vice Chair Louis Andersen	Town of Gilbert
Richard Allen	Salt River Pima-Maricopa Indian Community
Rick Austin	Town of Wickenburg
Jill Bernstein	Keep Arizona Beautiful
Elizabeth Biggins-Ramer	Town of Buckeye
Willie Black	City of Mesa
Cindy Blackmore	City of Avondale
Charles Bladine	City of Tempe
Dan Casiraro	Salt River Project
Manuel Castillo	City of Scottsdale
Willy Elizondo	City of Goodyear
Alfred Gallegos	Valley Forward
Veronica Garcia	Arizona Department of Environmental Quality
Helen Heiden	Arizona Chamber of Commerce and Industry
Rhonda Humbles	City of Peoria
Brian Kehoe	Maricopa County
Frank Lomeli	City of Glendale
Chuck Ransom	City of Litchfield Park
Robert Senita	City of El Mirage
Shereen Sepulveda	City of Chandler
Jim Shano	Town of Paradise Valley
Ramona Simpson	Town of Queen Creek
James Swanson	City of Surprise

TABLE OF CONTENTS



Best Practices Introduction 1

Town of Gilbert

 Town of Gilbert Household Hazardous Waste Facility 2

City of Glendale

 Same Day Residential Sanitation Collection Service 3

 Glendale Household Hazardous Waste Program..... 4

 Glendale Landfill Gas-To-Energy Project 6

City of Litchfield Park

 Household Hazardous Waste Collection Day..... 8

 Litchfield Park Clean Up Day 9

Maricopa County

 Waste Diversion and Reuse Pilot Project..... 10

City of Mesa

 Metal Bin Refurbishment Partnership Project with East Valley Institute of Technology 11

 Mesa Public Schools Recycling and Education Program..... 12

City of Peoria

 Hydraulic Leak Prevention Program..... 13

City of Phoenix

 Same Day Garbage and Recycling Collection Service..... 14

 Automatic Vehicle Location..... 16

 Bag Central Station - Where Plastic Bags Belong 17

Town of Queen Creek

 Queen Creek Inspection Program..... 19

 Same Day Trash and Recycling Collection 20

 Recycling Public Education/Outreach 21

Salt River Pima-Maricopa Indian Community

 Emergency Procedures..... 22

 Safety Procedures 23

 Special Waste 24

City of Tempe

 Green Waste to Compost Program..... 25

 Collection of Household Hazardous Waste through the Tempe Household Products Collection Center 26

 Tempe’s Education Recycling Information Center (ERIC) 27

Town of Wickenburg

 Curbside Recycling Collection..... 29

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 land-

fills. 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:
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: 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

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

2. BROWN PAPER BAGS

3. NEWSPAPERS

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

5. MOLDED FIBERBOARD

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

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

8. PHONEBOOKS

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

10. MILK CARTONS AND DRINK BOXES

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

12. ALUMINUM CANS

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

14. PRINTING AND WRITING PAPER

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

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 or (480) 358-3450 option 7



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.

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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 is 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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NOTES:

