Community Solid Waste Reuse and Recycling Strategic Plan

"Formulate what a solid waste vision could be for Scottsdale that embodies Scottsdale's community values, and develop a strategic plan to achieve that vision." Excerpted from motion made by Virginia Korte 5-17-2016, adopted by Council 5-2

Scottsdale's Community Solid Waste Reuse and Recycling Strategic Plan

Overview

This plan is meant to carry out direction from City Council to identify a vision that reflects Scottsdale's community values, and then to develop a strategic plan to achieve the vision. Through the development of this plan, we have sought input from many stakeholders, including:

- Direct input from residents and businesses in Scottsdale
- Citizen volunteers serving on boards and commissions
- The Scottsdale Solid Waste Department, as well as other public and private entities involved in the solid waste and recycling industry
- Other city departments

The result of this effort is a plan that includes eight policies, and establishes objectives for each policy:

Policy:	*Objective:*
1. Maintain and expand citywide recycling programs- single family residential.	Increase diversion to 60% by weight for single-family homes by 2030.
2. Maintain and expand diversion programs for City facilities and programs, including special events and public spaces	Increase diversion to 90% by weight for City facilities and programs by 2030.
3. Maintain and expand citywide recycling programs- multi-family residential.	Increase diversion to 30% by weight for multi-family buildings by 2030.
4. Maintain and expand citywide recycling programs- commercial, particularly for tourist areas, businesses, and institutional facilities	Increase diversion to 30% by weight for all other commercial customers by 2030.
5. Encourage public and private establishments to minimize waste generation, and establish effective programs for waste reduction.	Expand and grow customer education programs for waste reduction, reuse and recycling with the goal of changing behavior.
6. Encourage the recycling and/or reuse of building materials to reduce construction and demolition waste.	Reduce amounts of construction and demolition waste landfilled on capital projects constructed by the City of Scottsdale.

Policy:	*Objective:*
7. Identify opportunities to use solid waste and recycled materials as marketable commodities.	Implement new opportunities to divert material to alternative uses, and to achieve cost savings and generate revenue by marketing materials.
8. Promote composting and other programs that reduce the amount of organic waste going to the landfill.	Divert 75% of material collected from the brush and bulk program to green waste uses and keep it out of the landfill.

The rest of this document details the process used to develop these objectives, and provides background information and viable strategies for each objective.

Introduction

The City of Scottsdale's Solid Waste Department delivers solid waste and recycling services to many members of the community, including all of Scottsdale's single-family homes. The direction the City Council provided in May, 2016 was in the context of the review of a set of proposed rate increases put forward by the Solid Waste Department. The Department, however, is only one of many entities in Scottsdale with an interest in the business of solid waste collection and disposal, and the related business of collecting, processing and re-purposing of recyclable and reusable materials. The intent of this plan is to go beyond directing the activities of the Scottsdale Solid Waste Department, and instead provide a community-wide vision and plan for addressing all solid waste and recycling needs.

Historically, members of the Scottsdale community have expressed broad support for, and embraced efforts to, increase diversion of material from landfill disposal through the concepts of Reduce, Reuse, and Recycle. Scottsdale's citizens have experience in this process through the single stream recycling collection provided by the City's Solid Waste Department. This popular program was established in 1996 and is embraced by the majority of Scottsdale citizens today. The Community Solid Waste Reuse and Recycling Strategic Plan should build on this history, and should contemplate the community health and image as well as the financial impacts of increasing Scottsdale's community-wide diversion rates, thus reducing the disposal of waste in our limited landfill space.

Much of this plan focuses on reducing waste going to the landfill, and increasing recycling. The benefits of increased recycling are clear, including reduced reliance on finite natural resources; cost savings from marketing recovered commodities instead of paying tipping fees for landfill disposal; and extending the life of landfills. The landfill the City currently uses is targeted to close in 2035, only 17 years from now. Landfills have finite space available. More diversion means less trash volume going into the landfill. When the Salt River Landfill reaches the end of its lifespan, the City will have to find alternatives; current alternatives are two to four times farther away, meaning more fuel, more labor, more vehicle wear and tear, and more pollution. Bringing less waste to the

Each arrow in the recycling logo represents one step in the recycling loop:

- Source separate / collect recyclable materials
- Manufacture new products from recycled materials
- Purchase products with recycled content
- Repeat

Recycling does not succeed by source separation/collection alone. All three steps are essential for success. Consumers at all levels – from individuals to businesses to government units – have direct control over the first and third steps. Purchasing recycled-content products creates the market demand for recyclables and completes the recycling loop.

landfill helps extend its usable life, avoiding these additional costs, and saving money for the City's customers well into the future.

Background

There are currently multiple providers of solid waste and recycling services in Scottsdale.

Single-family Homes: Arizona Revised Statutes Title 49 governs solid waste collection and disposal in Arizona (ARS 49-741 establishes local government authority for implementing the State's solid waste management program). Under this regulatory authority, the City's Solid Waste Department provides collection service to each of about 82,000 single-family homes in Scottsdale. This service includes weekly curbside refuse collection service using 20-gallon or 90-gallon containers, or weekly alley pickup in shared 300-gallon carts. The City also provides once per week curbside, single-stream recycling collection as part of its standard service package, using 20-gallon or 90-gallon containers. Each residential customer is also provided monthly pickup of bulk items and uncontained brush and yard waste. Finally, as part of the base residential service fee, residents can also receive on-call move-in box collection, on-call appliance collection, and on-call household hazardous waste collection. For an additional fee, residents may request an additional refuse container.

Multi-family Complexes: ARS 49-746 states that "a municipality of this state shall not prohibit or unreasonably restrain a private enterprise from delivering recycling or solid waste management services to commercial, industrial or multifamily residential properties within or to the municipality." While Scottsdale requires all single-family residential homes to be serviced by the City's Solid Waste Department, because of this legislative requirement, this is not the case for residents living in apartment and condominium complexes. Scottsdale's Solid Waste Department treats these complexes as commercial customer accounts. The Scottsdale Solid Waste Department does have a collection program to service commercial accounts; this program is available to provide refuse and recycling collection service to multi-family complexes, but there are several other private sector alternatives for landlords and property managers to choose from as well. The Scottsdale Solid Waste Department provides service to multi-family complexes using two, three, four, five, six and eight cubic yard containers, and can arrange for pickup between one and six times per week. Private sector service providers operate with limited regulatory oversight from the City, and provide a similar range of services.

Other Commercial Customers: As with multi-family complexes, ARS 49-746 prohibits the municipality from restraining a private enterprise from delivering recycling or solid waste management services to all other commercial activities. As a result, options for all other commercial customers are similar to those described above for multi-family residential complexes. The Scottsdale Solid Waste Department provides a service option for businesses, but any business may also purchase service from one of several private sector service providers licensed by the City to operate in Scottsdale. For customers served by the Solid Waste Department the range of services is similar to that described above, with the addition of service using large roll-off containers of various sizes also available.

While the subject of collection of waste and recyclable materials generally prompts images of large trucks driving down the streets picking up containers along the way, there are many alternatives available within the community, usually for various specialty options. These include, but are certainly not limited to, textile collection drop-off points; retail outlets accepting used light bulbs, batteries, motor oil, or plastic grocery bags for proper disposal; and thrift stores and other marketing of used items.

Processing and disposal: The Scottsdale Solid Waste Department has a contract with the Salt River Community Landfill Corporation (SRCLC) for disposal of refuse at the Salt River Landfill, located on the Beeline Highway and Gilbert Road. The current expected life of the Salt River Landfill is through the year 2035, and the SRCLC is seeking ways to extend the life of the facility beyond that time frame. The Solid Waste Department's trucks haul refuse directly to the Salt River Landfill, or they haul it to the Scottsdale Transfer Station, located near Pima Road and the 101 freeway in northern Scottsdale, to consolidate it into larger trucks for transfer to the landfill.

The Solid Waste Department's transfer station helps reduce cost and improve sustainability by reducing the amount of miles driven by the Department's fleet

The SRCLC also operates a Materials Recycling Facility adjacent to the landfill, which the Scottsdale Solid Waste Department uses for processing of all recyclable materials collected. The SRCLC facilities are also available to private-sector waste haulers operating in Scottsdale. Some private sector haulers, particularly the larger entities like Republic Services and Waste Management Inc., also own and operate their own landfill or material recycling capabilities, all of which are located further from Scottsdale.

Processing line at the Salt River Pima-Maricopa Indian Community's Material Recycling Center

Vision

The most widely recognized statement of the collective vision of the residents of the City of Scottsdale is the City's General Plan. The community vision is built on a foundation of citizen involvement. Building on the Scottsdale Town Enrichment Program (S.T.E.P.) forums in the 1960's, 1970's, and early 1980's, two community visioning processes, Scottsdale Visioning (1991-1992) and City Shape 2020 (1994-1996) identified Dominant Themes and created Guiding Principles for the community. These ideas were carried forward into the 2001 General Plan and validated through voter ratification.

Two of these Dominant Themes relate to the mission of the Community Solid Waste Reuse and Recycling Strategic Plan:

> 1) **Sonoran Desert**: Our growth and development should proceed with clear awareness of the impact on our rare and beautiful environment.
>
> 2**) Resort Community**: Tourism and the constant influx of people from all over the world strongly affect our way of life as well as our economy.

These Scottsdale Visioning Dominant Themes are reflected in the following quote:

> *"Building on its southwestern heritage, stylish reputation, and innovative methods of delivering municipal services, Scottsdale has evolved into an internationally recognized resort center, art community, and health care provider. The desert community of Scottsdale has always been its own special place. It has never tried to be all things to all people."*
>
> -Scottsdale Shared Vision 1992

Similarly, the following two Guiding Principles created during the City Shape 2020 also speak to visions that should be embodied in the Community Solid Waste Reuse and Recycling Strategic Plan:

> 1) **Seek Sustainability**: Scottsdale is committed to the effective management of its finite and renewable environmental, economic, social, and technological resources to ensure that they serve future needs.
>
> 2) **Value Scottsdale's Unique Lifestyle and Character**: Scottsdale offers a superior and desirable Sonoran Desert lifestyle for its citizens and visitors. The preservation of the unique lifestyle and character will be achieved through a respect for our natural and man-made environment, while providing for the needs of our citizens.

During the draft General Plan 2035 process, the community has retained these themes and principles by summing them up into primary Community Aspirations for Scottsdale's future: **Exceptional Experience, Outstanding Livability, and Community of Prosperity.**

Draft General Plan 2035 begins with a Vision and Values chapter which identifies the overarching community values used in "implementing Scottsdale's vision, community aspirations, and goals found in the General Plan." Among these values, one in particular directly addresses the goals in General Plan 2035 that concern the subjects of the Community Solid Waste Reuse and Recycling Strategic Plan:

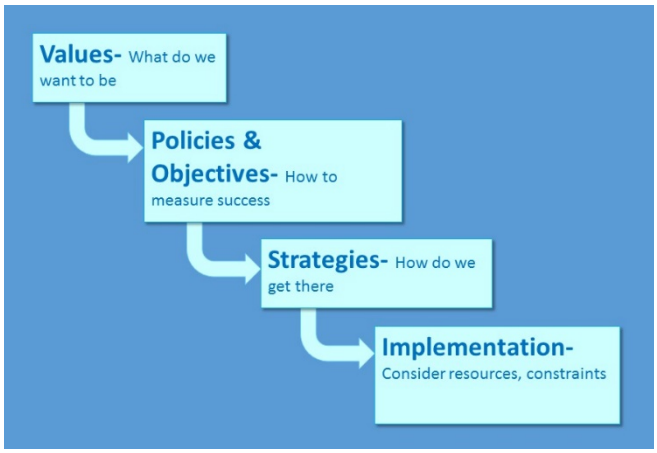
> Conserve and Preserve the Environment:
> Lead the region in the stewardship and effective management of the Sonoran Desert environment and conservation of natural resources and open spaces for the visual, physical, and personal enrichment of everyone.

This is a clear statement of Scottsdale's environmental and sustainability ethic, and serves as an organizing principle for the supporting policies, objectives and strategies included in the Community Solid Waste Reuse and Recycling Strategic Plan.

<u>Community Solid Waste Reuse and Recycling Planning Process</u>

The proposed General Plan provides an organized set of goals within the broader, community-wide vision for the future of Scottsdale. Using this as a starting point, we can identify and prioritize the policies for the Community Solid Waste Reuse and Recycling Strategic Plan, identify appropriate

objectives for each policy, and develop a list of strategies to attain the objectives. The result is a process driven by the community's stated vision, which then focuses through successively more detailed levels to arrive at a set of objectives and strategies to achieve them.



Details of this process are included in Appendix A: General Plan Analysis. The analysis shows all of the chapters, elements, goals and policies included in the draft General Plan 2035 that pertain to policies and objectives considered for this strategic plan. The end result of this process is the identification of eight separate policy statements for the Community Solid Waste Reuse and Recycling Strategic Plan:

1. Maintain and expand citywide recycling programs- single family residential.
2. Maintain and expand diversion programs for City facilities and programs, including special events and public spaces
3. Maintain and expand citywide recycling programs- multi-family residential.
4. Maintain and expand citywide recycling programs- commercial, particularly for tourist areas, businesses, and institutional facilities.
5. Encourage public and private establishments to minimize waste generation, and establish effective programs for waste reduction.
6. Encourage the recycling and/or reuse of building materials to reduce construction and demolition waste.
7. Identify opportunities to use solid waste and recycled materials as marketable commodities.
8. Promote composting and other programs that reduce the amount of organic waste going to the landfill.

These policies are driven by the community's values and vision as represented in General Plan 2035. Together, they provide a comprehensive approach to meeting the community's expectations for how Scottsdale will approach the reduction, reuse, collection, recovery and disposal of solid waste materials generated within the city, while adhering to the environmental and sustainability ethic that is so

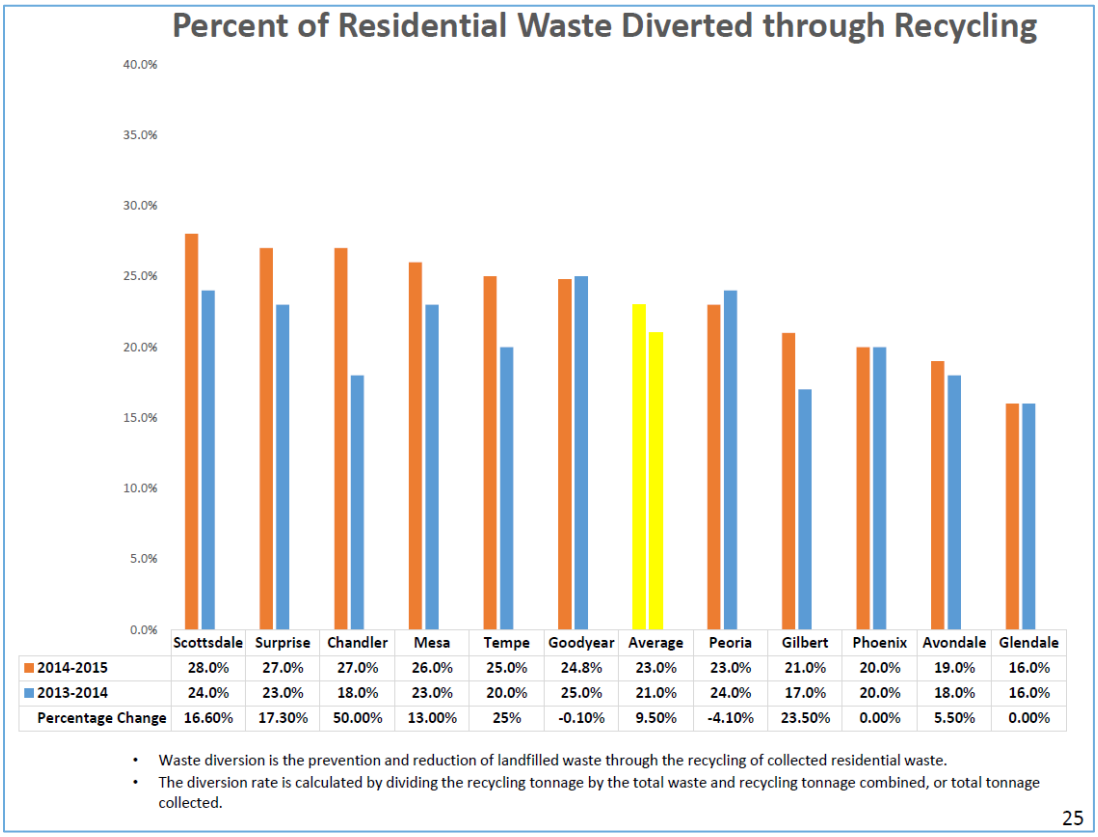
important to the community's members. The next eight sections of the Community Solid Waste Reuse and Recycling Strategic Plan will address each of these policies in turn.

Each policy discussion includes a background section which describes the current status of the policy, an objective statement, and a discussion of strategies which may help achieve the objective. Strategies have costs; where possible, the discussion identifies the associated costs, and who may potentially pay the costs. In some cases, possible cost offsets are also identified. Finally, the community's values are a reflection, in part, of how much individual community members say they value something, and how much they are willing to pay for it. As part of the development of this plan, staff did extensive community outreach to try to gain a greater understanding of how the community might view different proposals. Outreach included an online questionnaire to get a sense of attitudes towards recycling and other issues. Detailed results of this outreach are included in Appendix B to the plan, while specific findings are mentioned in some of the individual policy discussions.

Policy 1: Maintain and expand citywide recycling programs- single family residential.

Background:

The City's Solid Waste Department currently provides weekly recycling pickup for each of approximately 82,000 single-family homes in Scottsdale. In fiscal year 2015/16 Scottsdale diverted 24% of the material by weight it collected in the single-family residential program from disposal in the landfill. The chart below shows that Scottsdale is already a leader in the Valley in diversion, although there is room for significant improvement. The 28% figure shown in the chart below is consistent with the 24% figure above, as the chart includes only the weekly refuse and recycling pickups, and not the monthly brush and bulk pickups, in order to be consistent with the other reporting communities for valid comparison purposes.



	Scottsdale	Surprise	Chandler	Mesa	Tempe	Goodyear	Average	Peoria	Gilbert	Phoenix	Avondale	Glendale
2014-2015	28.0%	27.0%	27.0%	26.0%	25.0%	24.8%	23.0%	23.0%	21.0%	20.0%	19.0%	16.0%
2013-2014	24.0%	23.0%	18.0%	23.0%	20.0%	25.0%	21.0%	24.0%	17.0%	20.0%	18.0%	16.0%
Percentage Change	16.60%	17.30%	50.00%	13.00%	25%	-0.10%	9.50%	-4.10%	23.50%	0.00%	5.50%	0.00%

- Waste diversion is the prevention and reduction of landfilled waste through the recycling of collected residential waste.
- The diversion rate is calculated by dividing the recycling tonnage by the total waste and recycling tonnage combined, or total tonnage collected.

25

Data from final draft, Valley Benchmark Report FY 2014/15, June 2016

Citizen responses to the online questionnaire indicated overwhelming support (91%) for the idea that Scottsdale should recycle "the majority of its trash." If most residents are willing to recycle, current low levels of diversion can be caused in large part by simple lack of knowledge regarding what and how to recycle.

While some strategies to increase diversion have additional costs associated with them, there is also a potential cost savings associated with recycling that can offset some of these costs. Using current costs and the value of revenue received for recycling during the first part of fiscal year 2016/17, we calculate a

savings of about $26,000 annually for each one percent increase in recycling. This equates to a reduction in cost of $0.03 per month per residential customer.

Objective:

The City's residential diversion rate goal is to increase diversion of single-family residential curbside single-stream recycling (e.g., metal, glass, plastic, paper) by the end of:

FY 2019/20 to 36%
FY 2024/25 to 48%
FY 2029/30 to 60%

Diversion rate is by weight of all materials collected from single-family homes in weekly refuse and recycling collections.

Strategies:

Customer education: For single-family residential homes, the customer sorts waste into either their refuse bin or their single-stream recycling bin; this places a significant responsibility on the customer to identify recyclable materials properly. While education can have a great impact, it can also be done for a modest cost. We estimate that an additional customer outreach employee and appropriate educational materials would add a cost of about $0.07 per month per residential customer.

Re-brand the City Solid Waste Department: Developing a new name and new image that focuses less on waste and more on resources can be a powerful educational tool. Re-branding the Department to "Scottsdale Resource Recovery" is an option.

Advertising: Use various available media to highlight the benefits of recycling, as well as to help identify recyclable materials. Readily available media includes the City's website, social media, utility bill inserts, signs on the side of collection vehicles, and various paid media options.

Education of school-age children: City staff should work with public school districts (Scottsdale Unified, Paradise Valley Unified, and Cave Creek Unified) as well as private and charter schools within the City to promote onsite recycling and recycling education. In addition to helping students make the right choice when discarding materials themselves, a well-informed child can help spread information about recycling to other members of the household.

Customer Incentives: Incentives can include use of the rate structure used to pay for the service, as well as other external incentives. A possibility may include an incentive program to pay for recycled materials delivered by individuals or non-profit groups directly to the transfer station.

Sorted materials at the Material Recycling Facility prepared for shipping to commodity resellers

"Pay as you throw" (PAYT): This specific incentive involves a rate structure that rewards customers if they reduce the volume of waste they discard as refuse. PAYT is based on the assumption that customers who discard less refuse generate less, divert more, or both. The City's residential program already uses a rudimentary PAYT structure, as any customer who generates more refuse than can be handled weekly in a single container can obtain a second container for an increased monthly fee. More elaborate programs can potentially use on-vehicle sensors on collection vehicles to weigh refuse, or use multiple sizes of containers with lower rates for smaller containers. These programs have initial costs associated with acquisition of new technology or new containers.

"Pay as you throw" brush and bulk: Scottsdale's single-family residential customers currently receive monthly pickup of bulk items and uncontained brush and yard debris as part of the basic service. A PAYT option could assess fees for the use of this service, or for use that exceeds a minimum threshold.

Mandated recycling: Future consideration may be given to mandating recycling. In some communities (Cambridge, MA; Vail, CO; Washington DC) ordinances require mandatory recycling of specified materials. Any mandated program will require an enforcement mechanism, with compliance inspections and consequences for violations.

> Research and hundreds of case studies show that PAYT ... programs have been found to be the single most effective, and most cost-effective method of increasing waste diversion. Under PAYT programs, participation in recycling programs increases dramatically, and tons to landfill decrease on the order of 15-20% from the residential sector.
>
> - Skumatz, Lisa A., Ph.D., Dana D'Souza, and Dawn BeMent, "Pay as you Throw/Variable Rates for Trash Collection: 2014 Update," The Econservation Institute, February 2015

Policy 2: Maintain and expand diversion programs for City facilities and programs, including special events and public spaces.

Background:

One of the most effective ways in which City government can effect citizen behaviors and promote recycling is to lead by example. City offices and services occupy many buildings and generate substantial volumes of recyclable materials, including office paper, plastic bottles and other packaging. Availability and use of recycling alternatives in these buildings varies widely. When City-operated parks and trailheads are included, the volume of recyclable materials increases substantially, while efforts to recycle at these facilities are relatively minimal.

City Solid Waste staff conducted audits in summer and fall of 2017 to determine the recycling baseline for major municipal buildings. This survey found diversion rates of approximately 60% in larger City office buildings. The City has not made recycling bins available at most park facilities or trailheads for many years, so the diversion rate for these facilities is very low.

Keeping grass clippings, tree trimmings and other organics generated at City parks, golf courses and recreational facilities out of the landfill represents a significant proportion of the total waste generated at City facilities (Strategies for City organics diversion are covered in Policy 8).

Objective:

The City's goal is to increase diversion to 90% by weight of all materials collected from City-operated facilities and programs by fiscal year 2024/2025. Materials includes organic material collected from parks and golf courses. Facilities include, for example, all administrative buildings, parks, trailheads, libraries, senior and community centers, public safety facilities, golf courses, Scottsdale Stadium and WestWorld. Programs include City-sponsored and permitted special events.

Strategies:

More recycling at City facilities: The City chooses the level of service it provides for recycling at government offices and other public facilities such as parks, libraries, senior centers and community centers. Providing more recycling containers, educating building occupants and facility users, and supporting efforts of the custodial contractor can all be part of this strategy. More receptacles and a higher level of custodial service potentially carry additional costs, which will potentially be paid either through increased general fund support of the facility or through increased user fees for the activity using the facility.

More recycling at City events: The City can increase the availability of recycling receptacles at City events, including spring training games at Scottsdale Stadium, public events at the Civic Center Mall, and events at WestWorld. The City can consider mandating recycling collection as a condition for use permits of facility rentals.

Reduce use of paper: The city can focus efforts on using paperless media and limit the use of hard copy materials for city programs and activities, with little to no additional cost.

Internal staff education: Educating employees who use the City's buildings on the value of recycling and how they can do their part will have a direct impact on improving recycling rates, and will also equip employees to carry the message to visitors and other users of City facilities.

Policy 3: Maintain and expand citywide recycling programs- multi-family residential.

Background:

Residents of multi-family buildings make up a very large proportion of the City's population, and correspondingly account for a large percentage of the total volume of municipal solid waste generated in the community. 42% of Scottsdale's occupied housing units are multi-family units (condominiums, townhomes and apartments). 38% of occupied multi-family units are owner-occupied. Almost one-quarter (23%) of Scottsdale's population resides in multi-family housing units. Ideally, these residents should have access to the same level of recycling services their single-family counterparts receive.

Owners and property managers of multi-family apartment or condominium complexes currently procure waste disposal services either from the Scottsdale Solid Waste Department's commercial services program, or one of several private-sector waste collection and disposal operators. As of October 2016, the Solid Waste Department provided service to over 250 multi-family accounts, which included over 8,000 individual apartment or condo units. Data was not available for the number of units served by private sector services providers.

Unlike the single-family program, where every customer receives once per week recycling pick-up as part of the basic service package, there is no requirement for multi-family complexes to have recycling available for their residents, and there is no requirement for waste collection operators to provide recycling services.

Plaza Osborn Recycles

Plaza Osborn, a 16-unit multi-family complex, provides recycling service to its residents and encourages them to use it. The lease:

- Lists recycling as a Landlord Provided Utility.
- Requires tenants, occupants and guests to abide by all local recycling regulations.
- Gives direction for disposal of recyclables.
- Includes the City of Scottsdale's Recyclables List as an Addendum.

In addition, Plaza Osborn equips the kitchen of every apartment with an 11-gallon recycling bin. This small, inexpensive touch makes it easy for residents to sort recyclables from trash and carry their recyclables to the recycling carts. The complex started with two 90-gallon carts and recently added a third. Pick-up is weekly. To reduce contamination, Plaza Osborn owners created a custom sign for the recycling area with visuals and descriptions to remind residents what is recyclable - and what isn't. View Plaza Osborn's sign at www.plazaosborn.com/green-features.

- Alisa McMahon, EQAB

Findings from our citizen outreach questionnaire indicate some support for mandating recycling. A majority of respondents indicated they "somewhat agree" or "strongly agree" that "the City should adopt a law requiring residents and businesses to recycle, with associated enforcement and fines for those who don't."

It is currently difficult to measure diversion rates for multi-family complexes, as the City's Solid Waste Department is not the sole service provider. The City code requires private haulers to report tonnage of refuse and recycling collected in Scottsdale, but does not require these haulers to report multi-family accounts separate from other commercial accounts, which would allow accurate calculation of diversion rates for those complexes they serve. The City will conduct waste audits on multi-family accounts it services in order to establish a baseline, and will periodically repeat these audits to measure improvement on City accounts.

Objective:

The City's multi-family diversion rate goal is to increase diversion in multi-family buildings by the end of:

FY 2019/20 to 10%
FY 2024/25 to 20%
FY 2029/30 to 30%

Diversion rate is by weight of all materials collected from multi-family buildings. The City has the ability to directly monitor progress toward this goal for accounts the Solid Waste Department services; ideally the goal should include accounts serviced by private waste haulers as well.

Strategies:

Education: Additional challenges in educating multi-family tenants on proper recycling arise from the fact that multi-family tenants tend to move more frequently, requiring more frequent education to keep up with new residents. There are opportunities for the City to cooperate with other entities, including Maricopa Association of Governments (MAG), other municipalities, environmental organizations and educational institutions to develop educational materials and outreach programs.

Remove physical barriers to recycling service: In some apartment or condo complexes physical limitations need to be overcome in order to provide recycling services. The smaller living and kitchen spaces in many apartments may limit the ability of residents to have multiple containers needed to sort recycling from refuse. Buildings with dumpsters in parking lot or alley enclosures may have limited space to place additional containers for recycling. The City and other collection service providers can use compactors, smaller containers or split containers to accommodate refuse and recycling in the same space currently used for refuse collection.

Require space for recycling in new construction: To ensure that projects built in the future do not have physical barriers to recycling, the City can revise the Refuse Collection section of the Design Standards and Policies Manual to provide for recycling collection. The standards should include provisions for: exterior space for recycling containers, paired recycling chutes in multi-story buildings with trash chutes, and a recycling collection area on each floor of multi-story buildings. In addition, the City can amend the building codes to provide not less than two 7-gallon recycling/trash pull-out bins in a kitchen base cabinet.

Incentives for property managers to provide recycling service: Both public sector and private sector waste haulers can implement incentives through their rate structure, making it cost-advantageous for the customer to have recycling replace a portion of their existing refuse service. Of course, both public and private sector haulers are subject to the economic realities of the business, and when revenues for recycled commodities are low it may be difficult to offer price incentives for customers to convert from refuse to recycling.

Winfield Place Saves!

Winfield Place, an 8-unit condominium community has proudly recycled since 2010. The community has many Canadian and U. S. owners who hail from locales where recycling has been the norm for many years.Winfield owners expect and want recycling services.

Initially, Winfield had a combined capacity of 79 yards per week - 7 yards of recycling and 72 yards of trash. When the 300 gallon recycling containers began to overflow, Winfield went on a City wait list for larger containers. In March 2015, the City delivered seven 4-yard front load containers, growing the recycling capacity to 28 yards per week.

Today, Winfield's combined capacity is essentially the same as it was in 2010, but now 28 yards are recycled and on 52 yards are trash. Recycling is 35% of total capacity. If Winfield were to replace its 28 yards of recycling capacity with 28 yards of trash capacity, it would pay more for solid waste service. In fact, Winfield Place currently pays less for solid waste service than it has in the last decade. Recycling is the key to this cost savings.

Residents deposit trash and recycling in one of seven double enclosures scattered throught the property. The doubl eenclosures provide ample space for two front-load containers, one for trash and one for recycling.

- Alisa McMahon, EQAB

Require waste haulers to offer recycling service: The City could require any hauler licensed in Scottsdale to offer to provide recycling service to any of their multi-family customers. Communities in

which this option is implemented often require that the charge for recycling service cannot be greater than the charge to collect the material as refuse.

Require waste haulers to provide recycling service: Many communities in the country have enacted ordinances to require waste haulers that provide refuse service to multi-family complexes to also provide recycling service. These requirements are often referred to as "universal access" to recycling services. Portland, OR; Cambridge, MA and the state of Vermont are examples of entities using this strategy. This is a strategy the City can consider in the future if other means do not achieve intended results.

Require property managers to make recycling available: Alternatively, some communities have mandated property owners, rather than service providers, make recycling available to multi-family residents. Montgomery County, MD; Austin and San Antonio, TX; and Seattle use this strategy. Some communities adopting universal access ordinances also include provisions that require service providers to charge no more for recycling than they would if the recycling volume had been disposed of as refuse.

Enhanced reporting requirements: While the City code currently requires private haulers to report refuse and recycling collected within Scottsdale, it does not require them to distinguish between multi-family and other accounts. The City could potentially modify reporting requirements to obtain data to support calculation of city-wide multifamily diversion rates. Adopting this change would allow market-based incentives and voluntary compliance to be the main tools for increasing diversion in multi-family complexes, while allowing the City to be able to monitor effectiveness and report progress to the community. Reporting requirements would entail some cost on the part of the private waste haulers for data collection and compilation, but would be less onerous and have less financial impact than mandating service.

Public recycling drop-off center at City offices on Indian School Road & Drinkwater Boulevard

Public recycling drop-off locations: The previous strategies address ways to provide and promote recycling services within the physical layout of multifamily complexes. The other possibility is to provide an alternative for residents of multi-family housing to use outside of their complexes. The Solid Waste Department currently provides nine recycling collection points available to the public at large.

The City may elect to maintain this public drop-off service, or potentially even expand the program to make it readily available to more people. There is, however, a cost to provide this service. The Solid Waste Department spends roughly $35,000 per year to provide public drop-off service at these locations. Currently, the Department absorbs the cost, but since the entire Department operates as an enterprise and recovers all its costs through the rates it charges, the cost for these "free" drop-off points is actually being paid by rate-paying customers who presumably do not use the "free" drop-off points. Alternatively, the cost could be funded with general fund money, which would distribute the cost across all members of the community, not just those paying for City solid waste service.

Locations of Solid Waste Department public drop-off collection points:

Eldorado Park/Boys and Girls Club	2311 N. Miller
Paiute Neighborhood Center	6535 E. Osborn
City Office Building	7447 E. Indian School
Church	4425 N Granite Reef
City Corporation Yard	9191 E San Salvador
Scottsdale Ranch Park	10400 E. Via Linda
Scottsdale Fire Station #609	14970 N 78th Way
Scottsdale Fire Station #611	20775 N Pima Rd
Scottsdale Fire Station #610	16701 N 100th St

If the community values public drop-off service for recycling as a broad community benefit, then there may be a willingness to continue to pay for the service through the existing rate structure. Responses to our outreach questionnaire indicate that residents are in favor of paying a premium to support community recycling programs. About 1/3 of all respondents were willing to pay an additional $1 to $2 on their monthly bill, and another 1/3 of respondents were willing to pay an additional $2 to $3 on their monthly bill "to support programs that would increase recycling throughout Scottsdale." The question was not specific to public drop-off service, but the feedback may indicate support for keeping, or even potentially expanding, the free drop-off program.

Cost responsibility aside, public drop-offs have other disadvantages. Because they are less convenient than onsite recycling, they have a lower impact on multi-family diversion rates. Furthermore, their availability can be a disincentive for property managers and landlords to provide onsite recycling services. Moreover, public drop-offs can be used by businesses. For all these reasons, while public drop-offs can provide short-term benefit, ultimately the community should place greater emphasis on strategies to enhance availability of recycling services within multi-family housing properties.

Policy 4: Maintain and expand citywide recycling programs- commercial, particularly for tourist areas, businesses, and institutional facilities.

Background:

Similar to the current situation described under policy 3 related to multi-family housing, owners, operators and managers of other commercial entities procure waste disposal services from either the Scottsdale Solid Waste Department's commercial services program, or one of several private-sector waste haulers. The Scottsdale Solid Waste Department currently services over 1300 business accounts, while an unknown number obtain service from a range of private-sector haulers. Similar to the situation with multi-family residential complexes, there is currently no requirement for commercial entities to have recycling service available, and there is no requirement for waste collection operators to provide recycling services to these customers.

Also similar to the situation with multi-family complexes, it is difficult to measure diversion rates for non-multi-family commercial entities. The City code requires private haulers to report tonnage of refuse and recycling collected in Scottsdale, but does not require these haulers to report non-multi-family accounts separate from other commercial accounts. The diversion rate for accounts handled by the Scottsdale Solid Waste Department is currently about 4%.

Findings from our citizen outreach questionnaire indicate some support for mandating recycling. A majority of respondents indicated they "somewhat agree" or "strongly agree" that "the City should adopt a law requiring residents and businesses to recycle, with associated enforcement and fines for those who don't."

Objective:

The City's commercial diversion rate goal is to increase diversion in commercial accounts by the end of:

FY 2019/20 to 10%
FY 2024/25 to 20%
FY 2029/30 to 30%

Diversion rate is by weight of all materials collected from commercial accounts. The City has the ability to directly monitor progress toward this goal for accounts the Solid Waste Department services; ideally the goal should include accounts serviced by private waste haulers as well.

Strategies:

Remove physical barriers to recycling service: Physical limitations may need to be overcome in order to provide recycling services to commercial entities. Many businesses have limited space in dumpster enclosures. Resolving space constraints may require flexibility from the collection service provider to implement solutions. Specific solutions may involve maximizing use of existing space, including increased use of compactors, split containers and small containers.

Require space for recycling in new construction: To ensure that projects built in the future do not have physical barriers, the City can revise the Refuse Collection section of its Design Standards and Policies Manual to provide for recycling collection. The standards should include provisions for: exterior space for recycling containers, paired recycling chutes in multi-story buildings with trash chutes, and a recycling collection area on each floor of multi-story buildings.

Incentives for businesses to provide recycling service: Both public sector and private sector waste haulers can implement incentives through their rate structure, making it cost-advantageous for the

customer to have recycling replace a portion of their existing refuse service (The City's current rates for commercial service are online at www.scottsdaleaz.gov/solid-waste/commercial-services). Results from our outreach questionnaire showed a very high level of support for offering a one-time bill credit as an incentive for businesses that implement a new recycling program, with over 50% of responses supporting the idea.

Require waste haulers to offer recycling service: The City could require any hauler licensed in Scottsdale to offer to provide recycling service to any of their commercial customers. Communities in which this option is implemented often require that the charge for recycling service cannot be greater than the charge to collect the material as refuse.

Mandate universal access to recycling: Government could enact ordinances requiring commercial waste haulers to provide recycling service to all accounts within a specified category or above a specified weight or volume threshold. Some communities adopting universal access ordinances also include provisions that require service providers to charge no more for recycling than they would if the recycling volume had been disposed of as refuse.

One of the Solid Waste Department's commercial program vehicles- The Department's commitment to use of compressed natural gas fuel is one of the ways it promotes sustainability

Enhanced reporting requirements: While the City code currently requires private haulers to report refuse and recycling collected within Scottsdale, it does not require them to distinguish between their non-multi-family customers and other commercial accounts. Reporting requirements could be limited to specific sectors such as hotel & tourism, retail, or office; and in this way tailored to achieve targeted improvements. In this case market-based incentives and voluntary compliance would continue to be the main tools for increasing diversion, but the City would gain the ability to monitor effectiveness and report progress. Reporting requirements would entail some cost on the part of the private waste haulers for data collection and compilation.

Work with tourism proponents to encourage recycling at resorts, gold course, and other tourist destinations: Focusing efforts on tourism facilities enhances the image of the City. Staff can develop a supporting educational package to make available to the tourism community.

Policy 5: Encourage public and private establishments to minimize waste generation, and establish effective programs for waste reduction.

Background:

While the previous policies focus on diverting material in the waste stream from disposal in a landfill, this policy focuses on minimizing amounts or types of materials that enter the waste stream.

Source reduction, or waste prevention, is the design, manufacture, distribution, sale, purchase, and use of materials in ways that reduce the quantity and toxicity of waste generated. Source reduction preempts the need to collect, process and dispose of materials by preventing their generation in the first place. Source reduction practices include:

- Reduce consumption
- Rent, lease or share
- Design, manufacture or purchase for product durability and repairability
- Rebuild, repair, repurpose, remanufacture and refurbish
- Purchase rebuilt, remanufactured and refurbished products
- Replace toxic materials and products with less toxic on non-toxic alternatives
- Use the least amount pf packaging possible to prevent damage or spoilage
- Use durable, reusable packaging
- Purchase in bulk, concentrated form, and refillable containers
- Choose reusable over single-use
- Donate unwanted items with useful life remaining
- Extended Producer Responsibility
- Environmentally Preferable Purchasing

Objective:

Expand and grow customer education programs that highlight initiatives for waste reduction, reuse and recycling of resources with the goal of changing behavior.

Strategies:

Note: Strategies for organics reduction are covered in policy 8.

Public education: Promoting reuse of bags, bottles, and other items prevents these items from entering the waste stream. Reusable shopping bags and water bottles are alternatives to disposable items, and can also be used as a platform to promote waste reduction messages. Educational efforts can address other materials that are difficult to recycle, like expanded polystyrene (commonly referred to as Styrofoam), informing the public of why these materials are difficult to recycle and promoting alternatives.

Publication of a community resource directory: The community resource directory can be a one-stop information center for reduce, reuse, and repair resources. For example, it can provide resources for rental and sharing of items as an alternative to purchase. It can provide information about “opt out” programs, where residents and businesses can choose to opt out of receiving unwanted mail and phone books. It can facilitate reuse and repair of electronics by listing Arizona Students Recycling Used Technology (AZ-StRUT) and other organizations that give electronics a second life. Collecting this information, keeping it current, and making it easily and widely available, including through a web page, will reduce the amount of materials entering the waste stream.

Scottsdale Solid Waste Department's Household Hazardous Waste collection program: The Department is evaluating the move from a centralized collection every few months to a pickup by appointment system in an effort to make the system more readily available in the most cost effective manner. It is important to ensure citizens have a safe means of disposal by continuing and enhancing programs like this one and the City's electronics recycling program.

Provide alternatives to disposable containers: An example is providing readily available alternatives to the single-use, throw-away water bottle, which is a particularly challenging item at the City's parks and recreation facilities. To promote the use of refillable water containers, the City has begun to install bottle-filling stations at Preserve trailheads and in some public buildings. The City can step up this effort as well as retrofit existing water fountains with bottle fillers. The City can also reduce or eliminate its purchase of bottled water. Encouraging businesses to provide and accept refillable beverage containers and reusable take-out containers will also reduce use of disposables.

Promote use of "Bring Your Own" (BYO) containers: The City can use its website, the community resource directory, and other media to encourage the public to use BYO mugs, bottles, other refillable beverage containers, reusable take-out containers, shopping bags and other items instead of using disposables.

Promote donation instead of disposal: Encourage residents to consider donation as an alternative to disposal through the bulk pick-up program. The City could identify non-profit and for-profit resale opportunities in a community resource directory. Some communities have established partnerships with Goodwill and other agencies to make curbside donation of clothing, bulk items and other reusable materials available alongside normal refuse or bulk collections.

Promote textiles recycling programs: A composition study of residential garbage and recycling collected in Phoenix showed that textiles (clothing, bed sheets, curtains, towels and non-leather shoes) accounted for 4.2% of garbage collected and 2.6% of recycling collected. As these materials are not recyclable in the single stream recycling program, both of these amounts represent a lost opportunity. The City could partner on a public awareness campaign with organizations involved in textile collection and recycling, including national organizations like Council for Textile Recycling (CTR) and Secondary Materials and Recycled Textiles (SMART). The City could promote local drop-off locations and collection events in a community resource directory.

Promote repair instead of disposal: Some communities have leveraged the public library system to make how-to repair books readily available. An online resource directory can include links to the library for books related to home, furniture, textile, electronics, appliance, musical instrument, power equipment and bicycle repairs.

Advocate for Extended Producer Responsibility (EPR) legislation or initiatives: Traditionally, local government has been responsible for managing discarded products, but has had no ability to drive design changes that would make product disposal safer, easier and less costly. EPR, also known as Product Stewardship, alters this paradigm, particularly for hazardous, non-recyclable and hard-to-recycle products and packaging. EPR extends the responsibility of the producer of a product across the entire life cycle of the product, from its design to ultimate disposition at the end of its useful life. EPR seeks to have manufacturers examine the health, safety and environmental impacts of a product over its full life cycle and mitigate negative impacts. When manufacturers are responsible for end-of-life impacts and costs, they are motivated to "design the waste out" from the earliest stages of development. Manufacturers are often best equipped to physically manage their products' end-of-life. For example, products and packaging can be returned through the manufacturer's reverse logistics chain, and

manufacturers can then recapture value by disassembling products to reclaim resources and refurbish working parts.

Adopt EPR requirements in City procurements: Addressing end-of-life management at the front end in City procurement and contracts delivers fiscal, operational and environmental benefits. For example, Phoenix purchases electronics registered under the Electronic Products Environmental Assessment Tool (EPEAT). EPEAT registration requires manufacturer take-back and recycling objectives that meet specified best practice standards.

Single-use packaging and bag bans: Some municipalities have banned the use of specific items, including plastic grocery bags and Styrofoam. Grocery bags are a widespread example of single-use, hard-to-recycle, and non-compostable packaging items. Reducing the use of these items is a viable waste reduction strategy. Enacting similar bans in Arizona, however, is a challenge. As of 2016, Arizona Revised Statutes 9-500.38 prohibits cities from regulating the sale, use or disposition of plastic grocery bags, or from imposing a tax, fee, assessment, charge or return deposit on a plastic grocery bags. This prohibition of local government action applies not only to grocery bags, but more broadly to "reusable bags, disposable bags, boxes, beverage cans, bottles, cups and containers that are made out of cloth, plastic, extruded polystyrene, glass, aluminum, cardboard or other similar materials and that are used for transporting merchandise or food to or from a business or multifamily housing property." If the City wishes to pursue the regulation of these particular elements of the waste stream, it would have to pursue a legislative change through the State Legislature. This could potentially be pursued collaboratively with other municipalities and the League of Arizona Cities and Towns.

Policy 6: Encourage the recycling and/or reuse of building materials to reduce construction and demolition waste.

Background:

Construction and demolition (C&D) waste represents a significant proportion of the waste generated in Scottsdale and the surrounding region. The 2005 MAG Regional Solid Waste Management Plan determined that within the Phoenix region, C&D waste reached almost 1 million tons over a one-year period. Nationwide, the EPA reports that in 2014, over 530 million tons of C&D waste were generated, more than twice the amount of municipal solid waste generated ("Advancing Sustainable Materials Management: 2014 Fact Sheet," USEPA, Nov 2016, pp 17-19)

The Scottsdale Solid Waste Department can provide roll-off containers for landfill disposal of C&D debris. Private haulers are also very active in this sector, although the City does not have any data to indicate the relative proportions collected by private haulers. Private haulers and other service providers also offer several options for recycling and reuse of construction materials and salvaged building materials.

Objective:

Reductions in the amount of construction and demolition waste landfilled on capital projects constructed by the City of Scottsdale.

Strategies:

Leverage the City's green building policy for public construction: The City has adopted a policy to use the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program for capital projects. This is a points-based certification program designed to promote a wide range of sustainable building practices, including reduction of C&D waste and use of recycled construction materials.

Recycled barn wood in Scottsdale's Museum of the West is an example of imaginative and effective use of recycled building materials

Since Council adopted the policy in 2005, the City has built ten buildings that achieved LEED New Construction certification. Every one completed since 2009 has earned the LEED credits for both use of recycled materials and management of construction waste. With the LEED policy already in place, its positive impact on reuse and recycling could potentially be enhanced by requiring designers and contractors to achieve the maximum credits for reduction of C&D waste and use of recycled construction materials. The City can also adopt a policy to follow green deconstruction and demolition practices on all City demolition and renovation projects that do not fall under the LEED program.

Scottsdale LEED Certified City Buildings

Building	*LEED certification level*	*Year completed*
Granite Reef Senior Center	Gold	2006
Arabian Library	Certified	2007
Fire Station 602	Platinum	2008
Gateway to the Preserve Trailhead	Platinum	2009
Appaloosa Library	Gold	2009
McKellips Service Center	Silver	2009
McCormick Model Railroad Building	Gold	2010
Fire Station 601	Platinum	2011
Fire Station 608	Platinum	2011
Scottsdale Museum of the West	Gold	2015

Recycle asphalt on public projects: The City's Street Operations Department promotes the use of recycled construction materials through the reuse of old asphalt. To maintain the quality of the street network, the Department applies a range of maintenance treatments to selected streets each year. A percentage of these treatments each year involve removing the top one to one-and-a-half inches of asphalt and replacing it with new asphalt. The removal process mills and grinds the old asphalt, generating a large volume of asphalt "millings." The Department stockpiles the millings and uses them in the City's dust abatement program, placing them in alleys and on unpaved parking areas to provide a usable, clean and relatively dust free surface. In 2016, the Department placed an estimated 8,000 tons of recycled asphalt in this way, avoiding disposal in a landfill. Since 2016, the Department has also increased use of fiber-reinforced slurry seal treatments instead of milling and overlaying, which is an effective waste reduction approach.

Recycled asphalt used to minimize dust on the road to Tom's Thumb Trailhead in the Preserve

Strengthen diversion requirements in the Scottsdale Green Building program for private construction: Voluntary participants in the City's Green Building program for residential or commercial construction receive certification and recognition from the City for their sustainability efforts. The International Green Construction Code (IgCC) serves as a compliance mechanism for the City's Commercial Green Building Program. In addition, the IgCC is mandatory when stipulated as part of the planning approval process for zoning bonuses including floor area, building height and density. The IgCC requires diversion from the landfill of at least 50% of nonhazardous construction waste. When Scottsdale adopted the IgCC in 2011, the City amended the diversion requirement to 35%. The City can delete the amendment and revert to the 50% code requirement. In addition, the City can delete the amendment that allows projects to elect not to comply with the IgCC at the time of building permit application submittal. The

City can also strengthen the C&D recycling and salvage requirement for its Residential Green Building Program. Further promotion of and participation in the Scottsdale Green Building Program will achieve greater diversion of C&D materials.

Implement a Green Deconstruction and Demolition Permit: The City requires a Demolition Permit for the demolition of commercial and residential structures when the demolition is not done in conjunction with new construction. The City can develop and implement a Green Deconstruction and Demolition Permit (GDDP) as an alternative. The GDDP should also be offered to major renovation and new construction projects that will not be built under a green building program. The GDDP should provide a menu of options for full deconstruction, pre-demolition salvage of materials with architectural value or reuse potential, and recycling of non-usable materials. The City can incentivize the GDDP with technical assistance, expedited permitting and permit fee reduction.

Promote programs and services to reuse excess or salvaged construction materials: The City should develop partnerships with programs like Stardust Building Supplies, Habitat for Humanity ReStore, The ReUse People of America, HARVEST eco-salvage, and other non-profits to encourage and provide pathways for deconstruction and reuse of building materials, appliances, furniture and home accessories. Stardust Building Supplies participates in Tempe's Zero Waste Day events.

Develop a C&D Resource Sheet: The City could develop a resource sheet with information and points of contact for facilities, businesses, agencies and organizations that a) accept reusable and recyclable building materials and b) provide deconstruction and other services related to C&D reuse and recycling. The resource sheet should be distributed with all building permit inquiries and applications for new construction, remodeling, deconstruction and demolition. It should also be posted on Planning and Development Services and Green Building Program webpages.

Collaborate with regional public and private partners to develop C&D material recovery facilities: The City can work with regional partners, potentially including ASU and the City of Phoenix, to develop needed C&D recycling infrastructure, such as a comprehensive C&D Material Recovery Facility and facilities to process specific commodities, like asphalt roof shingles, gypsum wallboard and carpet. Facility development requires guaranteed feedstock. Scottsdale and other municipalities can play a role in ensuring that planned facilities will have an ample supply of feedstock.

Encourage adaptive reuse of existing buildings: Reuse of existing buildings avoids creation of large volumes of demolition and construction debris, conserves resources, preserves historic value and revitalizes existing neighborhoods. LEED and other programs give credit for adaptive reuse and encourage it. The City can publicize and encourage similar programs to support the objective. The City can also practice adaptive reuse with its facilities.

Mandate construction and demolition waste diversion: Mandates could include an ordinance establishing minimum diversion rates for C&D debris; for example, California requires residential and non-residential projects to recycle or salvage at least 65% of non-hazardous C&D debris. Other jurisdictions require certain materials be recycled; for example, Fort Collins, CO requires wood, metals, cardboard and aggregate be recycled at all new construction sites as well as additions and remodels over 2,500 square feet. These requirements could potentially increase costs for private development, and would require a tracking and enforcement capability. Documentation similar to the reporting used to comply with the voluntary Green Building Program could be used to track compliance.

Policy 7: Identify opportunities to use solid waste and recycled materials as marketable commodities.

Background:

Scottsdale already markets commodities it collects through its single stream recycling program for residential and some of its commercial customers. This marketing occurs through the City's contracted recycling services provider, the SRCLC. SRCLC's contracted recycling facility operator sorts recyclable materials by commodity and sells them through various commodity markets, with a portion of the revenues coming back to the City of Scottsdale. While this revenue does not provide a positive revenue stream after accounting for the costs of collection and transportation, it does provide a net savings over the alternative of landfill disposal. The same could potentially be true for other recyclable commodities outside of the single stream recycling program.

In recent years, several entities have approached the City seeking to acquire a portion of the City's waste stream in order to produce a marketable commodity. These proposals have most often taken the form of building a plant to convert portions of the organic material in the waste stream into energy using pyrolysis, gasification or other technologies. The City until recently has operated under a contract with the SRCLC that guaranteed it would deliver at least 90% of the refuse collected by the Solid Waste Department to the SRCLC landfill. This contractual requirement effectively kept the City from pursuing alternative options.

Scottsdale is working through a regional partnership to explore ways to market organic material

Scottsdale currently partners with the Resource Innovation and Solutions Network (RISN), a public-private collaboration led by the Global Sustainability Solutions Services program at Arizona State University. This important regional effort "brings together university, government, business and non-governmental partners to transform the relationship between resources, the environment, the economy and society in order to create a resource-focused Ethical Circular Economy platform that replaces the linear model of produce-use-discard with a circular model in which discarded materials are transformed into usable products, essentially eliminating waste." (RISN Regional Circular Organic Resource System report, August 2016).

Objective:

Explore and implement new opportunities to divert material from the waste stream to alternative uses, and to achieve cost savings and generate revenue by marketing materials.

Strategies:

Develop regional processing capacity and markets: Collaborate with regional public and private partners to identify and develop regional processing capabilities and end markets for recoverable commodities, such as items from the construction and demolition waste stream.

Seek markets for organic material: The biggest potential in terms of value and volume of waste diverted lies in the area of organics. The City is already working through the RISN regional network to explore markets for composted organic material. Various waste-to-clean-energy options may also become viable as technology progresses and large enough volumes of organic material become available. As this technology becomes readily available, the City will work through RISN or other regional cooperatives to support development of a regional waste-to-clean-energy facility.

Seek non-landfill solutions for hard-to-manage waste streams with potential for resource recovery: These solutions may be found in public-private partnerships or in partnerships with other municipalities. For example, mattresses are a challenge for waste collection and landfill operations. They are clumsy to handle, take up a lot of space, and do not compact. On the other hand, 80 to 90 percent of a traditional mattress is recyclable. Recyclers deconstruct mattresses and box springs to recover metal, wood, foam and fabric. A typical mattress contains 25 pounds of steel and 9 pounds of cotton. In furtherance of ASU's zero-waste goal, the university has contracted since 2009 to de-manufacture mattresses from its residence halls.

Engage the City's Economic Development Office in the formation of material exchanges and other initiatives: The City of Austin's Recycling Economic Development Program is a joint effort of the Economic Development Department and Austin Resource Recovery to drive new recycling markets, create green jobs, and generate investment in reuse and recycling businesses. The Austin Materials Marketplace is one of the program's initiatives. The International Economic Development Council awarded the city a Gold Excellence in Economic Development Award for the Marketplace initiative. (https://austinmaterialsmarketplace.org/)

Policy 8: Promote composting and other programs that reduce the amount of organic waste going to the landfill.

Background:

In a recent City of Phoenix residential solid waste composition study, 50.0% of collected refuse was compostable (yard waste 29.9%, food waste 14.7% and paper 5.4%). Additionally, 5.1% of the material collected in recycling was compostable, representing contamination in the single-stream recycling program (Cascadia Consulting for the City of Phoenix Public Works Department, 2014 City of Phoenix Residential Waste Characterization Study, Final Report; September, 2015). Organic material in the residential waste stream is a great opportunity for diversion.

Food waste is a major component of organic waste. In the US in 2014, about 136 million tons of municipal solid waste went to landfills. Food was the largest component, accounting for 21.6%. In the same year, 76.3% of US municipal solid waste food waste went to landfills, about 18.6% went through an energy recovery process such as combustion, and only 5.1% ended up as compost ("Advancing Sustainable Materials Management: 2014 Fact Sheet," USEPA, Nov 2016). The percentage landfilled in Scottsdale is likely higher than this national average. Food waste is both a huge problem and a huge opportunity.

"The case for focusing Sustainable Materials Management Program efforts on sustainable food management is compelling. Roughly one third of the food produced in the world for human consumption every year (approximately 1.3 billion tonnes) gets lost or wasted (UNEP 2011). In addition, in the United States, more than 30% of edible food goes to waste costing Americans approximately $161 billion annually. The cost to the environment is staggering.
Food loss represents a tremendous waste of resources used in production such as land, water, energy, and inputs. Food is the largest stream of materials in our landfills, accounting for 21% of the American waste stream. This large volume of disposed food is a main contributor to the roughly 18% of total U.S. methane emissions that come from landfills. Costs are even greater considering that 48 million Americans, of which roughly 16 million are children, live in food insecure households. One UNEP global indicators goal is to "halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses" by 2030. To achieve this ambitious goal, the U.S., led by EPA and USDA, need to work with the public and private sectors to reduce wasted food by roughly 66 billion pounds within 15 years." — U.S. EPA Sustainable Materials Management Program Strategic Plan - Fiscal Year 2017 - 2022

Horse manure is another organic waste stream diversion opportunity available to Scottsdale. As noted in the RISN Regional Circular Organic Resource System analysis, manure from the WestWorld equestrian center and Scottsdale's many horse properties can be diverted for use as a feedstock for an organics processing facility (Regional Circular Organic Resource System Final Report, RISN; August, 2016).

The Scottsdale Solid Waste Department does not require its residential customers to source-separate organic waste from other waste. Residents dispose of organic food waste in their refuse containers. Residents may dispose of yard waste, including grass clippings, tree trimmings and other organic material, in their monthly brush and bulk pickup, where it is generally mixed with other materials either at the source or in the City's collection vehicles.

Commercial entities may arrange for collection and disposal of organic materials with their waste hauler. The City currently does not track the degree to which private waste haulers servicing commercial accounts separate organics from the rest of the waste stream for composting or other use.

The Salt River Landfill maintains a separate green waste disposal area. The City's Solid Waste Department, as well as other waste haulers, can leave loads at the green waste disposal area and avoid

landfilling them if the loads have minimal non-organic contamination. The Salt River Landfill operator currently contracts with a firm that grinds organic material on site, and ships the material to other facilities in Arizona for either composting or use as a feedstock for renewable energy.

Objective:

The City's goal to reduce organic waste disposed of in the landfill is to increase the portion of materials collected from the brush and bulk program that are delivered to the SRCLC green waste collection area by the end of:

FY 2019/20 to 40%
FY 2024/25 to 60%
FY 2029/30 to 75%

Strategies:

Promote backyard composting: Backyard composting is the most sustainable form of composting. It requires no transportation or infrastructure. Input is generated onsite and output is utilized onsite. The Solid Waste Department, in collaboration with Scottsdale Public Library and Scottsdale Water, can offer composting classes taught by Master Gardeners from The University of Arizona Cooperative Extension Program. These enthusiastic experts provide instruction on how to properly and effectively establish and maintain composting procedures in the desert. Mesa and Phoenix sell compost bins to their residents for $5. (www.mesaaz.gov/residents/solid-waste-trash-recycling-/trash-recycling-for-single-family-homes/backyard-composting-program) The containers are repurposed 90-gallon refuse containers. Because the repurposed bins do not tumble, some municipalities bulk purchase compost cranks (www.lotechproducts.com) or tumbling composters for resale to residents.

Evaluate establishment of a City composting and anaerobic digestion facility: The City is engaged in a regional effort led by ASU's RISN to explore potential solutions for collecting, processing and marketing organic material on a regional scale. In 2016 RISN completed a study that provides a region-wide assessment of available organic material volumes and potential regional markets, and generates a possible future scenario for a regional organic material collection and processing network (Regional Circular Organic Resource System Final Report, RISN; August, 2016). The scenario includes a 20,000 ton per year composting facility or a combined 25,000 ton per year composting facility co-sited with a 25,000 ton per year anaerobic digestion facility at Scottsdale's transfer station. Further analysis of this concept could be tied to the next revision of Scottsdale's Water Reclamation Master Plan.

Green waste collection at the Salt River Landfill, on the Salt River Pima-Maricopa Indian Reservation

A City composting facility would allow for composting of materials it collects as well as for direct deliveries from residents. This would require dedicated space, equipment to handle and transport material, and manpower, all of which would have an associated cost. It would also require the development of a market for the composted materials. The cities of Tempe and Phoenix are operating composting facilities.

Develop markets for organic materials: Marketing organic material can potentially generate revenue to offset collection costs, similar to the current practice with recyclable materials. The cost offset would help the City keep rates lower, and generate support from residents and customers to divert larger quantities of organic material from the refuse stream. Alternatively, the same incentive could be achieved by reduced tipping fees for material the City delivers to the green waste facility at the Salt River Landfill. This should be a negotiating point in future contract discussions with the Landfill.

Promote grasscycling: This is simply the practice of leaving lawn clippings on the lawn instead of bagging them and disposing of them as waste. This practice has environmental benefits in addition to waste reduction. It helps retain moisture in the soil and recycles the nutrients in the grass, reducing the need for chemical fertilizers. A recent study of the contents of the waste stream generated by residential customers in Phoenix found that 23% of the city's residential refuse stream was grass & leaves (Cascadia Consulting for the City of Phoenix Public Works Department, 2014 City of Phoenix Residential Waste Characterization Study, Final Report; September, 2015). If proportions are similar in Scottsdale, even a modest reduction in the amount of grass entering the waste stream could represent several thousand tons.

Lead by example: Consistent with policy 2 to increase diversion for City facilities and activities, the City also has an opportunity to lead the way in organics diversion through its own practices. Landscape maintenance operations at City parks, buildings and golf courses could be diverted away from the landfill. Future contracts for landscaping at City facilities could require diversion of landscape refuse from the landfill. Additionally, City maintenance operations adopting the use of grasscycling could achieve significant reductions in organic material going to the landfill while also providing a powerful example for the community.

Evaluate a "third bin" program: Some communities, including Mesa and Phoenix, have implemented "third bin" programs, providing residential customers a third container for

> "We can collect [food waste] from you. We can make energy from it and compost it. And we absolutely should process food to its highest value when it makes it this far down the value chain. But let me be clear here. The goal is not to recycle more food. It is to see less of it end up as waste to begin with."
>
> - Jim Fish, President and CEO, Waste Management
> 2017 Waste Management Executive Sustainability Forum
> Scottsdale, February 2, 2017

organic material in addition to a refuse container and a recycling container. This can encourage segregation of organic materials at the source, and allow the hauler to divert a greater volume of organic material from the landfill and provide it to a centralized processing facility. These programs involve additional costs for the containers and collection routes. As an example, in Mesa about 32% of the city's single-family residential homes participate in the optional "third bin" program, each paying $6.56 per month for the service. These third bins are set out, on a citywide average, about 34% of the time.

Changes to collection process: Scottsdale Solid Waste Department initiatives can promote diversion from single-family homes. As an example, the brush and bulk program has been loading yard debris into the same truck with furniture, appliances and other bulky items. The mixed load prevents the Department from diverting substantial amounts of organic material from the landfill. A process that allows collection employees to separate brush from bulk at the point of collection, possibly by having two trucks cover the same areas, could enhance diversion with only minimal changes to customer behavior. A similar observation could be made regarding cardboard disposed of with the brush and bulk service. The approach of using multiple vehicles would increase diversion, but there would be an associated cost. Using current data, we estimate this cost to equate to about $0.71 per month per residential customer. The City's Solid Waste Department began using this approach in early 2017 and is assessing costs and results.

Evaluate public use of the City transfer station: Another modification to existing practices could involve making the City's transfer station available for commercial landscapers to deliver organic material. This would involve establishing a fee structure to recover costs, and would also involve weighing incoming loads and creating a space to temporarily store and consolidate loads. If implemented, this could provide a cost effective alternative to landscapers and increase the amount of material the City delivers to the green waste side of the landfill or other future beneficial uses.

Transform landscaping: Reducing the amount of yard waste generated will significantly reduce the amount of organic waste going to the landfill. The City can encourage conversion from grass lawns and high-growth trees and shrubs to more desert-sensitive landscaping. The City's Water Resources Department offers rebates for turf removal, which can be promoted to support this objective. However, desert landscaping can still generate a significant amount of landscaping debris. The amount can be minimized through right-size planting, right-location planting and desert-appropriate pruning practices. These strategies also reduce water use and maintenance cost. The Solid Waste Department can collaborate with Water Resources on outreach to HOA's, property managers and homeowners to reduce generation of landscape debris. The University of Arizona College of Agriculture and Life Sciences Cooperative Extension Program offers support materials such as Publication AZ1613A.

From *Wasted*, 2nd ed., 2017, Natural Resources Defense Council, www.nrdc.org/sites/default/files/wasted-2017-report.pdf

FOOD WASTE: A CONCEPT FOR CULINARY CREATIVITY

"Food waste is money in the garbage can; preventing it is a catalyst for culinary creativity," says nationally-recognized chef Charleen Badman of downtown Scottsdale's FnB. Chef Badman is an alumna of the James Beard Foundation Chefs Boot Camp for Food-System Policy and Change. Inspired by her training at the Boot Camp, Badman has instituted several strategies to reduce food waste at FnB.

Step one is source reduction. Through careful menu planning and purchasing, Badman strives to bring in to the restaurant only as much food as will be eaten. For example, by offering no more than four entrees at a time, Badman can streamline inventory and serve the freshest ingredients. Next, Badman instills in her staff an awareness of the value of food – training them to monitor shelf life and prep just the right amount of each menu item. Finally, Badman repurposes food that might otherwise go to waste. Bread from the prior evening goes into a salad, softened salad peaches become a dessert compote, an entree portion of steak is halved to move out quickly as an appetizer, and vegetables are preserved into pickles before they spoil.

Some food refuse is inevitable in a restaurant. At FnB, pre- and post-consumer food refuse is source-separated in the prep, kitchen and dishwash areas. The refuse bins are emptied each night into 60 gallon sealed drums. The drums are collected weekly, and the contents are processed into compost at an urban farm in Phoenix. Closing the loop of farm to table to farm, Chef Badman receives compost back for her garden.

In the winter (high season), FnB fills three drums a week, diverting about 1.25 tons of food refuse a month from the landfill.

FnB also conserves non-food resources. Guests drink from water glasses that were once wine bottles. Boxes are saved for re-use by FnB's farm partners and to pack up large takeout orders. Sealable plastic bags are washed and reused (unless they contained protein). FnB staff bring their own reusable cups and straws as well as their own containers for takeout food.

Finally, FnB supports end markets for recycled materials through its purchasing practices by choosing recycled-content products and avoiding non-recyclable products. For example, FnB packages customer takeout orders in 100% recycled (average 90% post-consumer content) paper containers and bags; no expanded polystyrene (foam) or other plastics are used.

- Alisa McMahon, EQAB

General Plan 2035 is organized into eight chapters. Seven of these chapters correspond directly to seven overarching vision statements, including the statement of the community's environmental and sustainability vision quoted in the main narrative of this report. The eighth chapter addresses

Chapter 1 - Character & Culture- Community character and how land uses differ throughout the city. Emphasizes the importance of the city's diverse character and unique design quality.

Chapter 2 - Environment - Focuses on Scottsdale's environmental resources and open spaces, from protecting natural systems and the water supply to creating a green built environment.

Chapter 3 - Collaboration & Engagement- Underscores the importance of community involvement in decision-making.

Chapter 4 - Community Well-Being - Emphasizes the importance of health, housing, safety, and recreation opportunities on the overall well-being of the community.

Chapter 5 - Connectivity - Promote a variety of choices for the movement of people and goods throughout Scottsdale.

Chapter 6 - Revitalization - Focuses on preserving neighborhood character, addressing the fiscal impacts of development, guiding reinvestment, providing public services, and allocating public facilities.

Chapter 7 - Innovation & Prosperity- Fosters economic sustainability. Focuses on tourism, business retention and attraction, and high-quality jobs.

Chapter 8 - Implementation - How do we get there? The Implementation Chapter describes steps to put the vision, values and goals into action.

implementation of the general plan, and applies to all the other chapter subjects.

Three of the eight chapters contain policy statements that pertain directly to the subject of solid waste management and recycling:

Chapter 2 - Environment - Focuses on Scottsdale's environmental resources and open spaces, from protecting natural systems and the water supply to creating a green built environment.

Open Space Element
Environmental Planning Element
Conservation Element
Water Resources Element
Energy Element

Chapter 4 - Community Well-Being - Emphasizes the importance of health, housing, safety, and recreation opportunities on the overall well-being of the community.

Healthy Community Element
Housing Element
Recreation Element
Safety Element

Chapter 6 - Revitalization - Focuses on preserving neighborhood character, addressing the fiscal impacts of development, guiding reinvestment, providing public services, and allocating public facilities.

Neighborhood Preservation & Revitalization Element
Conservation, Rehabilitation & Redevelopment Element
Growth Areas Element
Cost of Development Element
Public Services and Facilities Element
Public Buildings Element

Chapter 2, "Environment," is composed of five major elements, three of which contain goals and policies directly related to solid waste, reuse and recycling. One of these elements is "Environmental Planning," which contains seven goals. One of these goals is to "Demonstrate and expand the city's leadership in environmental stewardship and sustainability." Achievement of this goal can be furthered by achieving a leadership position with regard to material reuse and recycling. This goal will be reflected directly in aggressive diversion objectives in the first four strategic plan policies, particularly policy 2 concerning

General Plan 2035

Environment Chapter- Environmental Planning Element

Goal EP-2: Demonstrate and expand the city's leadership in environmental stewardship and sustainability.

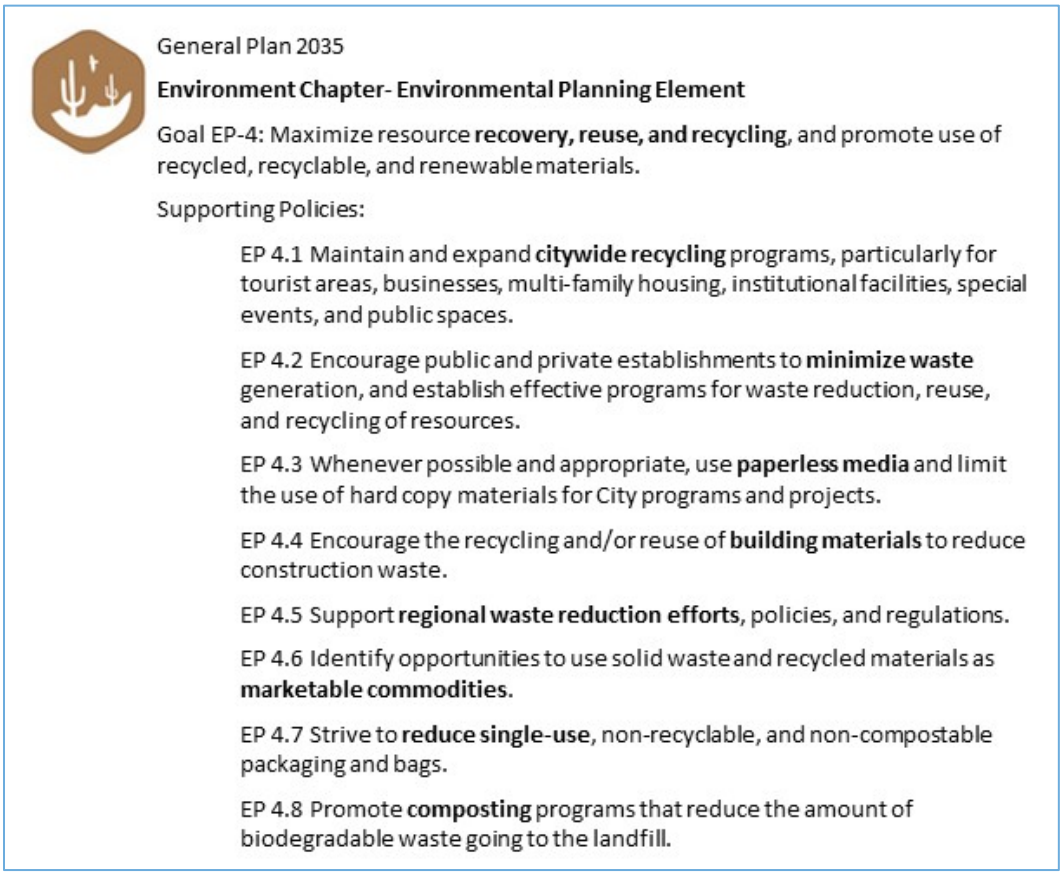
Supporting Policies include:

EP 2.1 Educate and inform the community of the significance and fragility of the Sonoran Desert environment and the City's environmental protection efforts.

EP 2.3 Foster community stewardship and a sense of personal responsibility for the natural environment.

diversion for City facilities and programs.

Another goal in the Environmental Planning element is to "Maximize resource recovery, reuse, and recycling, and promote use of recycled, recyclable, and renewable materials." The discussion of this goal includes eight specific policy statements that support the goal. Each of these policy statements then becomes a logical candidate for consideration either as a policy or a part of a policy in the Community Solid Waste Reuse and Recycling Strategic Plan. The policy to "maintain and expand citywide recycling programs" is reflected directly in the first four policies of the Strategic Plan. The "minimize waste generation" policy is reflected in policy 5 of the Strategic Plan. The "paperless media" policy is addressed as a strategy in policy 2 of the Strategic Plan. The "building materials" policy is part of Strategic Plan policy 6. "Regional waste reduction efforts" can be a viable strategy for almost all of the policies in the Strategic Plan, a specific ongoing regional effort is addressed in policy 8 of the Strategic Plan. The "marketable commodities" policy is adopted as Strategic Plan policy 7. The "reduce single use" policy is part of Strategic Plan policy 5. The "composting" policy is part of Strategic Plan policy 8.



The second element in the "Environment" chapter that contains policies and goals pertaining directly to solid waste, reuse and recycling is the "Conservation" element. Within this element is the goal to "achieve a sustainable balance between the conservation of natural resources and the development of the built habitat." The "public and private partnerships" policy within this goal is addressed within the strategies under several Strategic Plan policies, including cooperating with private sector waste management companies to gather information and track success under Strategic Plan policies 2 and 3. The policy to "encourage cooperation… in developing educational materials" is also reflected in strategies under several Strategic Plan policies, including working with school districts to develop educational materials in Strategic Plan policy 1.

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Environment Chapter- Conservation Element

Goal CONSV 1: Achieve a sustainable balance between the conservation of natural resources and development of the built habitat.

Supporting Policies include:

CONSV 1.1 Promote public and private partnerships to reduce natural resource consumption, such as aggressive conservation, reuse and recycling programs.

CONSV 1.3 Encourage cooperation among natural resource management agencies, professionals, and local school districts in developing environmental education materials and outreach programs.

The final element of the "Environment" chapter with a policy and goal pertaining directly to solid waste, reuse and recycling is the "Energy" element. This element contains a goal to "reduce energy consumption," which includes a supporting policy of supporting "development of regional waste-to-

General Plan 2035

Environment Chapter- Energy Element

Goal E 2: Reduce energy consumption.

Supporting Policies include:

E 2.4 Support development of regional waste-to-energy facilities.

energy facilities." The Strategic Plan addresses this as a strategy under Strategic Plan policy 7.

Chapter 4, "Community Well-being," is composed of four major elements, one of which contains a goal and policy directly related to solid waste, reuse and recycling. This element is "Safety," which contains eight goals. One of these goals is to "Promote the safe handling, storage and disposal of hazardous materials." This goal includes a policy to "continue the household hazardous waste and electronics collection programs to ensure safe disposal practices." This goal is included in the strategy discussion of Strategic Plan policy 5.

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Community Well-Being Chapter- Safety Element

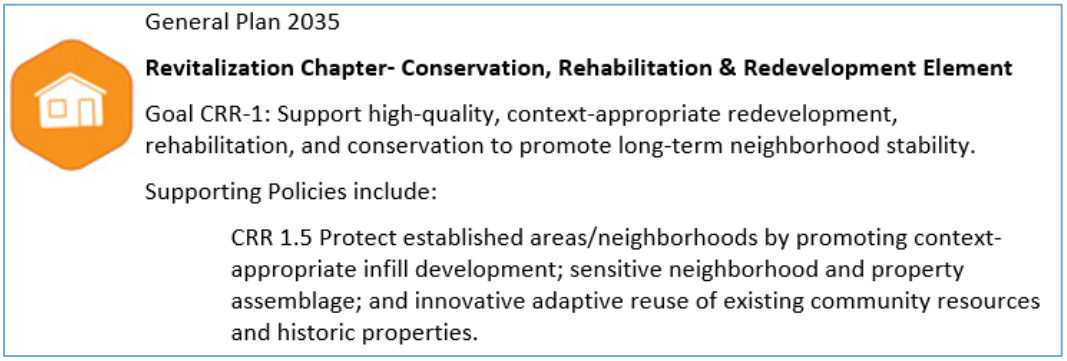
Goal S 8: Promote the safe handling, storage and disposal of hazardous materials.

Supporting Policies include:

S 8.6 Continue the household hazardous waste and electronics collection programs to ensure safe disposal practices.

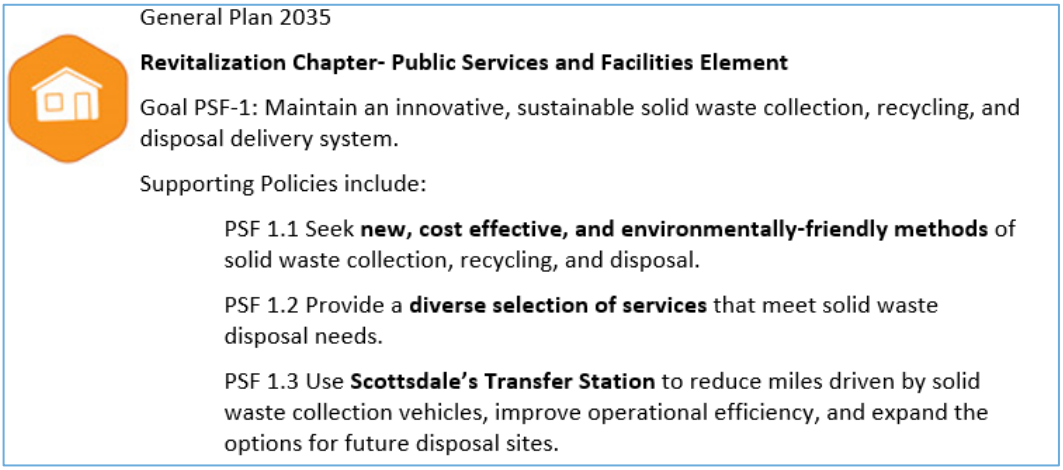
Chapter 6, "Revitalization," is composed of six major elements, two of which contain goals and policies directly related to solid waste, reuse and recycling. One of these elements is "Conservation, Rehabilitation & Redevelopment," which contains three goals. One of these goals involves "adaptive

reuse of existing community resources and historic properties," which aligns with Strategic Plan policy 6



regarding reduction of construction and demolition waste.

The second element in the "Revitalization" chapter with goals and policies directly related to solid waste, reuse and recycling is the "Public Services & Facilities" element. This element contains five goals, one of which is to "Maintain an innovative, sustainable solid waste collection, recycling, and disposal delivery system." All of the three policies listed under this goal are addressed in various places in the Strategic Plan, especially in the strategies under Strategic Plan policy 5.



Appendix B: Summary of Public Outreach

Outreach summary

- List board and commission meetings, dates
- List other stakeholder meetings: SRPMIC, MRF, Waste Management, Republic Services
- List comments received/resolution
    - EQAB: Attached
    - Neighborhood Advisory Commission: Suggested a neighborhood competition to obtain the highest diversion rate as an incentive program
    - Parks and Rec Commission: Suggested a certification program for small businesses as an incentive
- Show results of online input