



MUNICIPAL SOLID WASTE COST OF SERVICE ANALYSIS

City of Phoenix, Arizona



PREPARED BY:





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November 5, 2019
via email to: ginger.spencer@phoenix.gov

Ms. Ginger Spencer
Public Works Director
City of Phoenix
Public Works Department
200 W. Washington St., 7th Floor
Phoenix, AZ 85003

Subject: Municipal Solid Waste Cost of Service Analysis – Final Report

Dear Ms. Spencer:

NewGen Strategies and Solutions, LLC (NewGen) is pleased to present the enclosed report regarding the Municipal Solid Waste Cost of Service Analysis, Benchmarking Analysis, and Recycling Market Analysis (Analysis or Report) completed for the City of Phoenix (City).

NewGen was retained to conduct this Analysis with the purpose of providing the City with a comprehensive report that details the City's cost of providing solid waste and recycling services to its customers and provide guidance with regard to establishing cost of service based rates for the solid waste and recycling services provided by the City. The study equitably allocates costs to the various services provided by the City to ensure the rate structures are fair and equitable to all customers. In addition, the Benchmarking Analysis and Recycling Market Analysis sections provide insight into the types and levels of services provided by other cities, as well as the funding mechanisms used to finance these operations; and an update on the status of the recycling market.

NewGen would like to express its appreciation to the City of Phoenix staff who contributed to the development of this Analysis. We appreciate the time and effort taken by these individuals to provide information, input and feedback over the period this Analysis was undertaken.

If there are any questions concerning the report, please feel free to contact me by phone at (512) 649-1254 or email at dyanke@newgenstrategies.net.

Sincerely,

NewGen Strategies and Solutions, LLC

A handwritten signature in black ink, appearing to read "D. Yanke".

Dave Yanke
Managing Director – Environmental Practice

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EXECUTIVE SUMMARY

The City of Phoenix, Arizona (City) retained NewGen Strategies and Solutions, LLC (NewGen), to conduct three separate studies enclosed herein. The contents of the Report are organized as follows:

- Part I: Municipal Solid Waste Cost of Service Analysis
- Part II: Benchmarking Analysis
- Part III: Recycling Market Analysis

The City of Phoenix Public Works Department (Department or Utility) currently provides solid waste and recycling collection services to over 400,000 households. The Department also provides solid waste and recycling collection services to a variety of city and county facilities, as well as schools. These “institutional” customers are served by front-load, rear-load, and roll-off trucks. The Department owns two transfer stations, the North Gateway Transfer Station located in north Phoenix, and the 27th Avenue Transfer Station located in south Phoenix. Both transfer stations are used to unload waste from the City’s collection vehicles, which is then loaded onto semi-trailers and transported to the State Route 85 Landfill in Buckeye for disposal. All recyclables in Phoenix are also sent to the transfer stations and sorted at the adjoining Materials Recovery Facilities (MRFs). Green organics are sent to the 27th Avenue Compost Facility where it is processed into quality compost.

Part I: Municipal Solid Waste Cost of Service Analysis

The purpose of a cost of service analysis is to determine the cost of providing solid waste services, equitably distribute the costs to the appropriate customer classes, and design rates to safeguard the financial integrity of the utility.

NewGen submitted a detailed data request to the City to collect historical and background information on operations and practices. The information requested included:

- Detailed Financial Reports and Budgets
- Solid Waste Policies and Ordinances
- Customer and Container Counts
- Personnel Rosters
- Solid Waste and Recycling Tonnage Reports
- Fleet Inventory Operating Costs

NewGen also held numerous meetings with the City staff throughout the course of the project to discuss, plan, and finalize the cost of service analysis. The process also included four (4) meetings with the City’s Solid Waste Rate Advisory Committee.

Revenue Requirement by Scenario

In developing the Test Year revenue requirement for the City, NewGen used the FY 2020 adopted budget as the basis for the Test Year. NewGen compared the FY 2020 adopted budget to historical expenses for FY 2017, FY 2018 and budgeted expenditures for FY 2019. Through this comparison and with input from City staff, NewGen made adjustments to ensure that the Test Year would reflect expenses that occur on a regular basis. In addition to developing the Test Year revenue requirement, NewGen forecast the annual

Executive Summary

revenue requirement for FY 2020 through FY 2024. In order to develop this forecast, NewGen projected how costs would change over the years due to a variety of different inflation factors.

NewGen developed rate recommendations under three separate scenarios, whose revenue requirement forecasts are summarized below.

- Status Quo Scenario:** The revenue requirement forecast for the status quo scenario is summarized in Table ES-1. The status quo scenario includes a comprehensive plan for the replacement of vehicles, which includes the annual purchase of vehicles in the amount of between \$16.8 million and \$19.9 million. These vehicle replacement costs are also included in Scenario 1 and Scenario 2. This scenario does not include any major capital improvement projects.

All scenarios also include a reserve contribution amount of approximately \$2.4 million per year to assist and stabilize the reserve fund.

Table ES-1
Revenue Requirement, Status Quo

	Year 1 FY 2020	Year 2 FY 2021	Year 3 FY 2022	Year 4 FY 2023	Year 5 FY 2024
O&M Costs	\$132,479,672	\$138,068,057	\$143,751,149	\$149,225,886	\$154,940,756
Vehicle Replacement	16,866,780	18,074,327	19,026,351	19,027,584	19,920,827
Outstanding Debt Service	14,310,366	13,725,145	13,750,171	12,167,456	6,575,298
Central Services & Lieu Tax	7,968,390	8,185,180	8,484,626	8,627,066	8,849,439
Reserve Contribution	2,415,252	2,433,366	2,451,617	2,470,004	2,488,529
Total Expenses¹	\$174,040,459	\$180,486,075	\$187,463,914	\$191,517,995	\$192,774,849
Miscellaneous Revenues	(2,719,474)	(2,723,874)	(2,728,362)	(2,732,940)	(2,737,609)
Net Revenue Requirement^{1,2}	\$171,320,985	\$177,762,201	\$184,735,552	\$188,785,055	\$190,037,240

1. Any minor arithmetic deviation is due to rounding.

2. The net revenue requirement summarized in this table reflects the subtraction of miscellaneous revenues.

- Scenario 1:** The revenue requirement forecast for Scenario 1 is summarized in Table ES-2. This scenario includes approximately \$83.1 million in total capital improvement project spending between FY 2020 – FY 2024, which is discussed in Section 2 of the Municipal Solid Waste Cost of Service Analysis.

Table ES-2
Revenue Requirement, Scenario 1

	Year 1 FY 2020	Year 2 FY 2021	Year 3 FY 2022	Year 4 FY 2023	Year 5 FY 2024
O&M Costs	\$132,479,672	\$138,068,057	\$143,751,149	\$149,225,886	\$154,940,756
Vehicle Replacement	16,866,780	18,074,327	19,026,351	19,027,584	19,920,827
Outstanding Debt Service	14,310,366	13,725,145	13,750,171	12,167,456	6,575,298
Central Services & Lieu Tax	7,968,390	8,185,180	8,484,626	8,627,066	8,849,439
Reserve Contribution	2,415,252	2,433,366	2,451,617	2,470,004	2,488,529
PAYG Capital	8,504,342	2,885,894	3,259,000	4,442,000	4,818,000
New Debt Service	639,589	1,793,239	2,312,139	2,783,839	3,342,902

**Table ES-2
Revenue Requirement, Scenario 1**

	Year 1 FY 2020	Year 2 FY 2021	Year 3 FY 2022	Year 4 FY 2023	Year 5 FY 2024
Total Expenses ¹	\$183,184,390	\$185,165,208	\$193,035,052	\$198,743,834	\$200,935,751
Miscellaneous Revenues	(2,719,474)	(2,723,874)	(2,728,362)	(2,732,940)	(2,737,609)
Net Revenue Requirement^{1,2}	\$180,464,916	\$182,441,334	\$190,306,690	\$196,010,894	\$198,198,142

1. Any minor arithmetic deviation is due to rounding.

2. The net revenue requirement summarized in this table reflects the subtraction of miscellaneous revenues.

- **Scenario 2:** The revenue requirement forecast for Scenario 2 is summarized in Table ES-3. This scenario includes approximately \$59.5 million in total capital improvement project spending between FY 2020 – FY 2024, which is discussed in Section 2 of the Municipal Solid Waste Cost of Service Analysis.

**Table ES-3
Revenue Requirement, Scenario 2**

	Year 1 FY 2020	Year 2 FY 2021	Year 3 FY 2022	Year 4 FY 2023	Year 5 FY 2024
O&M Costs	\$132,479,672	\$138,068,057	\$143,751,149	\$149,225,886	\$154,940,756
Vehicle Replacement	16,866,780	18,074,327	19,026,351	19,027,584	19,920,827
Outstanding Debt Service	14,310,366	13,725,145	13,750,171	12,167,456	6,575,298
Central Services & Lieu Tax	7,968,390	8,185,180	8,484,626	8,627,066	8,849,439
Reserve Contribution	2,415,252	2,433,366	2,451,617	2,470,004	2,488,529
PAYG Capital	3,804,342	2,635,894	2,659,000	4,242,000	4,618,000
New Debt Service	389,589	943,239	1,462,139	1,896,339	2,307,040
Total Expenses ¹	\$178,234,390	\$184,065,208	\$191,585,052	\$197,656,334	\$199,699,888
Miscellaneous Revenues	(2,719,474)	(2,723,874)	(2,728,362)	(2,732,940)	(2,737,609)
Net Revenue Requirement^{1,2}	\$175,514,916	\$181,341,334	\$188,856,690	\$194,923,394	\$196,962,279

1. Any minor arithmetic deviation is due to rounding.

2. The net revenue requirement summarized in this table reflects the subtraction of miscellaneous revenues.

Rate Recommendations

Residential Rates

NewGen would recommend the following residential rates for the base case scenario (i.e. Status Quo), as well as the two CIP scenarios as described in Table ES-4 depending on which CIP scenario the City selects. The implementation of these proposed rates will minimize the Utility's overall under-recovery over the five-year forecast, and places it on a course to generating an overall positive cash flow for the Utility by FY 2024.

**Table ES-4
Proposed Residential Rates**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Cost per HH per Month (Status Quo)	\$31.00	\$31.00	\$33.00	\$33.00	\$34.50
Cost per HH per Month (Scenario 1)	\$32.50	\$32.50	\$34.50	\$34.50	\$36.50
Cost per HH per Month (Scenario 2)	\$32.25	\$32.25	\$34.25	\$34.25	\$36.00

NewGen would also recommend the green organics container rate be increased from \$5.00 per month to \$5.50 in FY 2020, and then \$6.50 in FY 2022, and finally \$7.50 in FY 2024.

Institutional Rates

NewGen would propose that all front-load and tipper rates be increased 10% each year for FY 2020 through FY 2024, and roll-off pull rates be increased \$10 each year for FY 2020 through FY 2024. The City may also wish to consider charging non-profit and other free customers for recycling collection who do not currently pay a monthly fee.

Uniform Gate Rates & Gate Rate Increases

The City charges gate rates based on the type of material brought to the transfer stations and landfill. NewGen would recommend that the City standardize gate rates for similar material types. For example, green waste at the 27th Avenue Facility is charged a gate rate of \$24.00 per ton, while green waste at the North Gateway Facility is charged a gate rate of \$28.00 per ton. NewGen would recommend that all green waste be charged a gate rate of \$32.00 per ton, beginning in FY 2020. NewGen would also recommend an increase in the tipping fee from \$38.25 per ton to \$40.00 per ton for refuse.

Table ES-5 shows the proposed rate increases.

**Table ES-5
Proposed Gate Rates**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Refuse Tipping Fees (\$/Ton)	\$40.00	\$40.00	\$42.00	\$42.00	\$44.00
Other Tipping Fees, Organics (\$/Ton)	\$32.00	\$32.00	\$34.00	\$34.00	\$36.00

Revenue Recovery from Proposed Rates

Table ES-6 shows the forecasted revenue recovery from proposed rates under the status quo scenario, which will allow the City to realize a positive cash flow by FY 2024. The initial under-recovery of approximately \$16.2 million in FY 2020 is largely due to the fact that the rate increases in FY 2020 will not take effect until March 2020. By FY 2024 the City is projected to realize a positive cash flow and modest over-recovery of approximately \$685,194.

Table ES-6
Revenue Recovery from Proposed Rates

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenue from Proposed Rates	\$151,767,785	\$167,705,049	\$174,518,509	\$181,438,274	\$187,249,836
Revenue Requirement	167,978,393	174,419,608	181,350,174	185,356,345	186,564,641
Over/(Under) Recovery	(\$16,210,608)	(\$6,714,560)	(\$6,831,665)	(\$3,918,070)	\$685,194

Other Issues – Revenue Enhancements and Cost Reduction Opportunities

In addition to the proposed rate recommendations, NewGen has also discussed several other policy issues in Part I: Municipal Solid Waste Cost of Service Analysis, Section 3. NewGen recommends that the City continue to evaluate opportunities which may increase revenues and/or decrease costs during the next 12 months. Some of these opportunities may include the following:

- **Put or Pay Contracts:** NewGen would recommend the City consider evaluating the feasibility of potentially developing contracts with a “put or pay” provision for customers (both existing and new customers) who bring large amounts of refuse tonnage to the City’s transfer stations and/or landfill. A “put or pay” contract requires the hauler to deliver a guaranteed waste stream to the landfill/transfer station, or otherwise pay the monetary difference at the contracted tipping fee.
- **Bulk Trash Collection Services:** NewGen would propose that the City consider potentially reducing the frequency of the bulk trash collection service as offered to the residents. The City currently provides this service four times per year, with the cost included in their monthly user fee. This is a fairly high level of service, and NewGen has seen cities move toward (and we have helped some of them) implementing less frequent collections, and/or providing the service on a “call-in” basis with some minimal fee (\$25 to \$50).
- **Municipal Material Recovery Facility (MRF) Contracts:** Renegotiated: Given the volatility in the recycling markets, NewGen would propose that to the extent the City has not already visited with all of its MRF customers that the City begin discussion with them to look at charging tipping fees for bringing materials to the MRF.
- **“Go-Away” Costs:** During the course of the cost of service analysis, NewGen was asked to quantify the estimated cost savings if the City were to eliminate its residential curbside collection recycling program. NewGen conducted an analysis based on the City’s operational metrics (i.e. how many carts are collected per hour) as well as NewGen’s experience conducting operational efficiency studies for cities to determine at a high-level the potential cost savings. Based on NewGen’s analysis it is estimated the City would save approximately \$6.4 million per year in collection operating costs, which equates to approximately \$1.32 per month per household in annual cost savings. This does not include the one-time costs to re-route the City’s collection routes, re-educate citizens, etc. In NewGen’s opinion it does not make sense to discontinue the City’s curbside recycling program.

The detailed analysis by NewGen quantifying the \$6.4 million in cost savings is documented in a memo dated October 10, 2019 which is an attachment in Part I: Municipal Solid Waste Cost of Service Analysis, after the schedules.

Part II: Benchmarking Analysis

NewGen was asked as a part of the scope of services by the City of Phoenix (City) to conduct a benchmarking analysis. NewGen has completed numerous benchmarking studies for other clients, therefore the first step was to identify the list of cities that the City of Phoenix wished to be benchmarked. Based on those discussions, the 14 cities listed below were identified. The next step was to develop a questionnaire that captured the topics that the City of Phoenix desired to be addressed. Based on input from City staff the questionnaire was finalized by NewGen and distributed to the 14 cities. Because benchmarking questionnaires rarely result in a 100% participation by all benchmarked communities, NewGen also con-currently conducted online research and utilized other resources that NewGen retains internally with regard to benchmarking data.

Those that responded to the questionnaire are listed in red.

- Austin
- Chandler
- Dallas
- Denver
- Houston
- Jacksonville
- Las Vegas
- Los Angeles
- Mesa
- Oklahoma City
- San Antonio
- San Diego
- Scottsdale
- Tucson

Residential Solid Waste User Fee

Residential monthly solid waste user feesⁱ vary from city to city, and not all cities have a designated solid waste monthly user fee. Denver, Houston, and San Diego do not have a monthly rate. Their operations are funded via the cities' general funds. Among cities that do charge a residential monthly rate, the rates range from \$12.65 (Jacksonville) to \$42.85 (Austin, 96-gallon) per month.

Austin, Mesa, Phoenix, San Antonio, and Tucson charge increasing rates for increasing container sizes. This is known as a pay-as-you-throw (PAYT) system. Pay-as-you-throw is intended to incentivize residents to generate less waste by providing a discount to customers who use smaller containers. In Austin, for example, a customer using a 96-gallon container pays \$42.85, well above the general average, but a customer using a 24-gallon container pays \$18.55, below the general average.

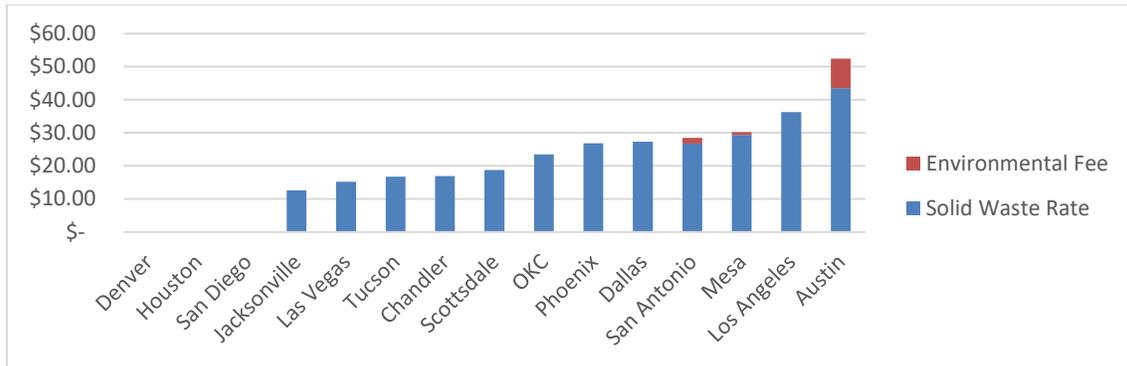
Austin, Mesa, San Antonio, and Tucson have an additional fee such as an environmental fee, clean community fee or other surcharge mechanism in addition to the monthly user fee. These fees do not fund collections, but rather go toward other services provided by the solid waste department. The fees range from \$0.84 in Mesa to \$8.95 in Austin. More detail on usage of these fees is included in the Part II: Benchmarking Analysis.

Tucson's monthly rate includes variable surcharges for fuel and recycling to accommodate changing market conditions. Currently the fuel surcharge is \$0, and the recycling surcharge is \$0.45 per month per household.

Figure ES-1 shows residential monthly rates with all fees included in ascending order for all benchmarked cities. For cities that utilize a pay-as-you-throw rate structure, the 96-gallon (or near equivalent) rate was used.

ⁱ NewGen will use the term "user fee" and "rate" interchangeably.

Figure ES-1
Total Monthly Residential Bill for 96-Gallon Container



Services Provided

Each city’s solid waste department provides a different set of services for the previously described user fee. All benchmarked cities provide weekly residential garbage collection.

Curbside Recycling Collection

Listed below in Table ES-7 is a description of how frequently the cities offer curbside collection – with a sizeable number of cities electing to offer curbside recycling every other week.

Table ES-7
Curbside Recycling Frequency

Every Week	Every Other Week
Chandler	Austin
Dallas	Denver
Los Angeles	Houston
Mesa	Jacksonville
Phoenix	Oklahoma City
San Antonio	Tucson
San Diego	
Scottsdale	

Bulk Collection

Bulk collection is offered by most cities, but collection frequency and level of service varies widely. Some cities include scheduled bulk collection in the monthly rate, while other cities offer bulk collection on an on-demand basis (i.e. customer must call and request the service), sometimes for an additional fee.

Table ES-8 shows the details of bulk collection for each city.

**Table ES-8
Bulk Collection**

City	Frequency	Collection Rules	Fee
Austin	Twice per year	-	Included in rate
Chandler	On-demand once every six weeks	Pile must fit in 4x4x16 cubic yard (CY) area, items must be <50 lbs.	Included in rate
Dallas	Monthly	-	Included in rate
Denver	Every four weeks	Max 5 large items per pickup	No fee
Houston	Every other month	8 cubic yards	No fee
Jacksonville	Weekly, collected with recycling	No more than 5 feet in any direction	Included in rate
Los Angeles	On demand, unlimited	-	Included in rate
Mesa	On-demand	Pile must fit in a 4 x 4 x 8 CY area	\$23.04 per load
Oklahoma City	Monthly	First 4 cubic yards free, additional fee after	Included in rate
Phoenix	Four times per year	20 cubic yards	Included in rate
San Antonio	Twice per year	8 cubic yards	Included in rate
San Diego	Service not offered	N/A	N/A
Scottsdale	Monthly	Pile must fit in 10x6x4 CY area.	Included in rate
Tucson	Twice per year	10 cubic yards	Included in rate

Organics

The 15 cities being benchmarked (including Phoenix) offer a wide variety of organics services. This service can be broken down broadly into three categories:

- Brush collection
- Yard trimmings collection
- Compost collection (i.e. food waste)

These services improve the diversion rate and can be used to produce mulch and compost soil amendment that can be sold or given back to the public.

Brush is green waste that is too large to fit into a container, such as tree branches and other large yard waste items. Out of the benchmark cities, only San Diego does not offer brush collection. All other cities collect brush materials at varying frequencies.

Yard Trimmings are grass, leaves, and small, baggable branches. Chandler, Oklahoma City, and Tucson do **not** collect yard trimmings separately from normal refuse.

Compost includes yard trimmings as well as certain food scraps and other organic matter. Austin, San Antonio, and Los Angeles offer compost collection with a dedicated container as an optional service for no additional fee. Denver offers compost collection for an additional fee of \$29.25 per quarter year.

The level of organics collection by the 15 cities is shown below in Table ES-9.

**Table ES-9
Organics Service Offerings**

City	Brush	Yard Trimmings	Compost
Austin	Collected twice per year	Collected weekly	Collected weekly in dedicated cart
Chandler	On-demand, free once every six weeks, collected with bulky, not diverted	Collected with brush, not diverted	Not offered
Dallas	Collected Monthly	Collected monthly, with brush	Not offered
Denver	Every four weeks	Collected with compost	Collected weekly, \$29.25 quarterly fee
Houston	Collected every other month	Collected weekly, must be in city provided compostable bags	Not offered
Jacksonville	Collected Weekly	Collected weekly, with brush	Not offered
Las Vegas	Contracted with private hauler	Contracted with private hauler	Not offered
Los Angeles	Collected once per year, on-demand	Included in compost cart	Collected weekly with dedicated cart
Mesa	On-demand, fee based, collected with bulky	Collected weekly, with \$6.93 monthly fee	Not offered
Oklahoma City	Collected once per month with bulky	Collected with garbage	Not offered
Phoenix	Collected four times per year with bulky	Collected weekly, \$5 monthly fee per requested container	Not offered
San Antonio	Collected twice per year	Leaves collected twice per year	Collected weekly in dedicated cart
San Diego	Not offered	Collected weekly	Not offered
Scottsdale	Monthly	Collected 12 times per year with brush	Not offered
Tucson	Twice per year, with bulky	Not offered	Not offered

Equipment Replacement

Capital equipment replacement is a major cost for solid waste utilities. Cities have different policies for replacing their equipment. For instance, typically within the industry side-load trucks are generally replaced every 7 years. Factors that drive replacement other than age are mileage, hours, and cost of repairs and maintenance. Table ES-10 lists the responses by surveyed cities' regarding their general replacement schedule for each type of vehicle used by the city, and factors considered in replacement.

**Table ES-10
Equipment Replacement**

City	Replacement Schedule	Replacement Factors
Austin	Side-Load Trucks: 7 years Roll-off trucks: 10 years	Age, mileage, hours

**Table ES-10
Equipment Replacement**

City	Replacement Schedule	Replacement Factors
Mesa	Side-load trucks: 11 years Front-load trucks: 11 years Roll-off trucks: 11 years	Age, maintenance cost, probability of major repairs.
Phoenix	Side-load trucks: 7 years Front-load trucks: 10 years Roll-off trucks: 10 years	Age, maintenance cost, mileage, hours
San Antonio	Side-Load Trucks: 6 years Roll-off trucks: 8 years	Age, cost of maintenance/repairs, usage
Scottsdale	Side-load trucks: 7 years Front-load trucks: 7 years Roll-off trucks: 7 years	Age, mileage, hours, cost/type of repairs.
Tucson	Side-load trucks: 6 years Front-load trucks: 8 years Roll-off trucks: 10 years	Age and cost per mile.

Diversion Rates

When measuring recycling and/or diversion ratesⁱⁱ for a community, the most common definition is to look at the “total tons of recyclables + organic tons diverted / (landfill disposal tons + total tons of recyclables + organic tons diverted)”. Oftentimes there are little “tweaks” between how different cities calculate this rate, but generally speaking the diversion rates in Table ES-11 follow the common definition described above. It should be noted that cities in California typically have significantly higher diversion rates due to a regulatory environment that requires compliance with higher recycling rates or the consequence of fiscal penalties. NewGen has not audited these numbers, but rather is merely providing these as points of comparison.

It should be noted that these percentages reflect the residential diversion rates for the customers served by these municipal solid waste utilities and do not incorporate any commercial recycling, which for many of these communities is managed for the most part, if not entirely, by the private sector. Diversion rates are shown in Table ES-11.

**Table ES-11
Diversion Rates**

City	Overall Diversion Rate
Austin	38%
Chandler	27.2%
Dallas	19.4%
Denver	23.1%
Houston	28%
Las Vegas	19.2%

ⁱⁱ The terms “recycling rate” and “diversion rate” are used interchangeably for purposes of this high-level discussion.

**Table ES-11
Diversion Rates**

City	Overall Diversion Rate
Los Angeles	76.4%
Mesa	28.8%
Phoenix	36%
San Antonio	36%
San Diego	67%
Scottsdale	27%
Tucson	18.6%

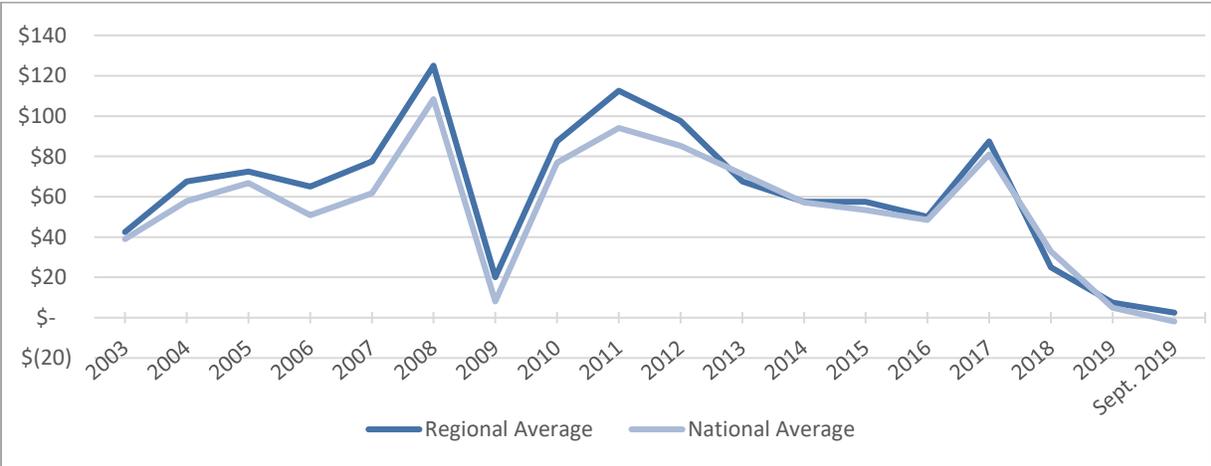
Part III: Recycling Market Analysis

NewGen was retained by the City of Phoenix to develop a report analyzing the current state of the recyclables market.

Historical Prices

Historically, the market prices for recyclable materials have always been volatile. Reasons for the fluctuations are wide-ranging and include market driven changes, political/policy issues, and economic factors, to name a few. Although the price may vary slightly by region, the overall historical trend has been the same nationwide over the past 15 years. This is evident in the following two graphs, which give the average Southcentral regional market pricesⁱⁱⁱ and average national market prices for mixed paper^{iv} and old corrugated containers (OCC)^v.

**Figure ES-2
Mixed Paper Prices (\$/Ton)
Jan. 2003 – Sept. 2019**

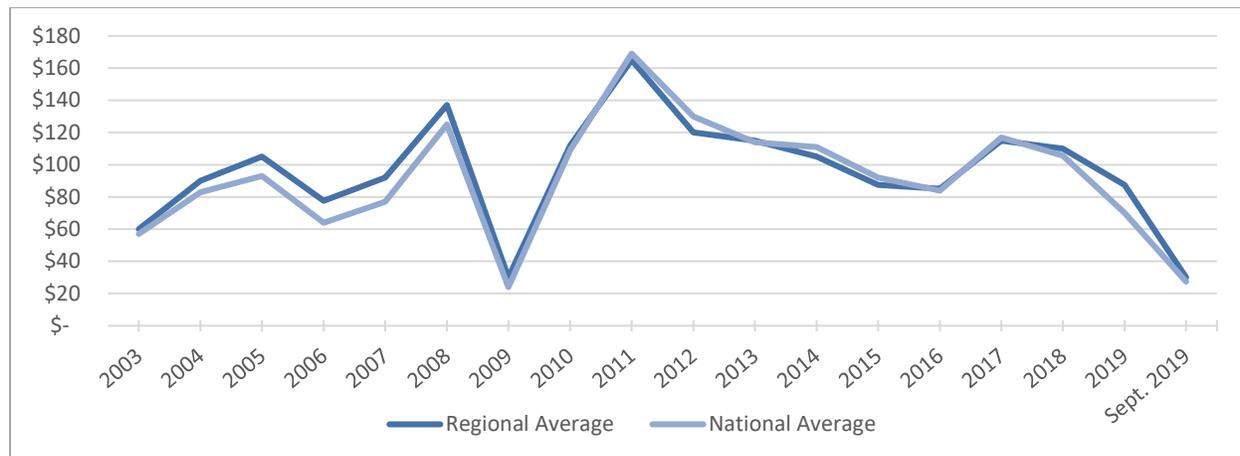


ⁱⁱⁱ The Southcentral U.S. region includes Arizona, Utah, Colorado, New Mexico, Texas, Oklahoma, and Kansas.

^{iv} Consists of all paper and paperboard of various qualities, typically defined as newspaper, office paper, and cardboard.

^v Consists of corrugated containers, cardboard boxes, and linerboard.

Figure ES-3
OCC Prices (\$/Ton)
Jan. 2003 – Sept. 2019



Impact of China

The markets for recyclable materials are undergoing a noticeable change in the United States (U.S.) and around the world. At different times since the early 1990's, when curbside recycling programs became commonplace, recycling programs were making enough money from the sale of commodities to somewhat offset the cost to collect, process, and ship materials to market – this is not one of those times. To a large extent, the decline in revenues can be attributed to policy changes in China. Since 2013, and more intensely in the past two years, China has imposed bans and stringent contamination restrictions on importing recyclable materials, which has resulted in turmoil in the U.S. recycling industry. In July 2017, China notified the World Trade Organization (WTO) of its intention to prohibit the import of certain recyclables and scrap into their country, including mixed paper and mixed plastics, beginning on January 1, 2018. China also announced a new, and exceedingly stringent, contamination standard applicable to recyclable imports (0.5%). Those policies resulted in commodity prices dropping nationwide, while raising the cost to process recyclables to meet more stringent limits of contamination. This shift has occurred across all export-based recyclable materials including:

- paper
- plastics
- metals / precious metals
- some textiles

What Does the Future Hold?

There is a great deal of uncertainty in the current marketplace concerning what the future holds with regard to market prices for OCC and mixed paper. The market is seeing new facilities being built to take advantage of the depressed prices for these various feedstocks. Facilities that utilize PET and HDPE feedstocks can typically come online within 12 to 18 months of permitting. Facilities that are manufacturing linerboard and corrugated containers typically take longer to come online (2 to 4 years).

NewGen does believe that market prices will firm up in the next 2-3 years as these facilities come online. In the meantime, prices will continue to remain depressed, and may not reach where they were back in 2015 to 2017 for some time.