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Austin Resource Recovery

Agency Analysis Report

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EXECUTIVE SUMMARY

Austin generates approximately 1.4 million tons of waste.[1] There are significant environmental and fiscal costs of sending waste to landfills and incinerators—pollution, greenhouse gas emissions, consumption of land, and processing fees. Integrated solid waste management minimizes those environmental and fiscal costs through waste reduction and resource recovery. Recycling and composting reduces the amount of waste sent to landfills and incinerators, which saves energy, reduces greenhouse gas emissions, and conserves land and natural resources.[2]

The City of Austin is a national leader in sustainability—the balancing of economic prosperity with the environment quality and community equity. In 2005, with the signing of the U.N. Urban Environmental Accords, the City extended its sustainability leadership to its solid waste management programs calling for a 20 percent reduction in landfilled or incinerated waste by 2012.[3] Austin Resource Recovery (ARR) furthered these landfill diversion goals into a more comprehensive vision with the adoption of the Austin, Texas Zero Waste Strategic Plan in 2009 and departmental master plan in 2011. Zero waste is an integrated solid waste management strategy that reduces waste generation and recovers material resources through landfill diversion programs. The ARR Master Plan elaborates a roadmap to reduce the amount of solid waste destined for landfills or incinerators by 50 percent in 2015, 75 percent in 2020, and 90 percent in 2040.[4]

To meet these goals, ARR provides a range of solid waste management services, including trash, recycling, yard trimmings, brush, and bulk residential curbside collection. Residential ARR customers generate approximately 25 percent of all waste citywide. To achieve zero waste goals through city-service landfill diversion programs, the department is focusing on increasing its Single-Stream Recycling rate, offering citywide curbside organics collection, and public education and outreach.

In addition, ARR offers programs to encourage private sector landfill diversion. Sixty-eight percent of citywide waste generation originates from multi-family residential and commercial properties that are serviced by private sector waste collectors. To influence private sector landfill diversion, the City of Austin adopted the Universal Recycling Ordinance (URO) in 2010, which requires recycling and organics collection at multi-family and commercial properties. ARR offers technical assistance and landfill service diversion rebates to assist in compliance with the Universal Recycling Ordinance.

Despite sustained efforts, ARR has not met its ambitious zero waste goals. Leadership from management and effective managerial techniques will be critical to zero waste success. To that end, this report provides analysis of ARR's current management issues by discussing the agency's background, organizational management and culture, public policy environment, and offers recommendations to assist ARR meet its zero waste goals. Specifically, the report focuses on management issues as related to ARR's key performance measures in the Strategic Initiatives, Collections, and Safety Divisions, as well as analysis of ARR's cost of service.

[1] HDR, 2011.
[2] Environmental Protection Agency, 2016.
[3] Liss, 2008.
[4] HDI, 2011.

AGENCY BACKGROUND

Formerly known as Solid Waste Services, the Austin Resource Recovery Department changed its name and mission in 2011. Austin Resource Recovery's mission became "to achieve Zero Waste by providing excellent customer services that promote waste reduction, increase resource recovery and support the City of Austin's sustainability efforts".[5] Austin Resource Recovery provides collection of municipal solid waste as a public health and sanitation service. ARR provides residential curbside collection of trash, recycling, yard trimmings, brush, and bulky items, as well as drop-off collection of recyclables and household hazard waste. In addition, ARR provides street sweeping, illegal dump cleanup, dead animal collection, and brownfield redevelopment services. The Austin Resource Recovery Director reports to the Infrastructure Services Assistant City Manager, who report the City Manager (*Figure 10*). ARR is a City utility and enterprise department, which generates revenue that is transferred to the City of Austin General Fund.

Austin Resource Recovery is organized into ten divisions based on division duties. Divisions are responsible for a grouping of departmental functions that are related to one another. Division functions can be categorized by divisions providing operations service, business administration, and training or education. An additional organizational distinction can be conceptualized as services or programs. ARR services include curbside trash, recycling, yard trimmings, brush, bulk, and organics collection (*Figure 11*). ARR programs range from educational to technical assistance to brownfield remediation.[6] For the purposes of this report, the agency analysis will primarily focus on the management issues in the Strategic Initiatives, Collections, and Safety divisions. Strategic Initiatives manages zero waste implementation, business outreach, and public information and marketing (*Figure 11*). The Collection Services Division's function is to provide curbside trash, recycling and organics collection (*Figure 11*). The Safety Division is responsible for employee safety and technical training (*Figure 11*).

Additional divisions assist in organizational operations and business administration—Quality Assurance, Customer Service, Finance, Diversion Facilities, Litter Abatement/Operations Support, Chief Administrative Office, and Human Resources (*Figure 11*). The Safety Division,

[5] Austin Resource Recovery, 2016a.
[6] Austin Resource Recovery, 2016a.

Strategic Initiatives, Quality Assurance, and Customer Service report to the Assistant Director. Diversion Facilities, Litter Abatement/Operations Support, Collection Services, and the Chief Administrative Office report to the Deputy Director (*Figure 11*). The Deputy Director, Assistant Director, an Economic and Business Development Liaison, Finance, and Human Resources report directly to the department Director (*Figure 11*). The department employs 429 people and has an annual budget of approximately $82 million.[7]

ORGANIZATIONAL MANAGEMENT & CULTURE

The City Manager's goal is for Austin to be the best-managed city in the nation.[8] This leadership ethos permeates throughout the City of Austin organization to Austin Resource Recovery. ARR's Director, Bob Gedert, is considered a national zero waste leader. Previously, Director Gedert led the City of Frenso, California's residential and commercial recycling service.[9] He continues his local leadership through frequent public appearances at commission meetings and outreach events, as well as national leadership as the President of the National Recycling Coalition.[10] ARR has a talented management team of assistant directors and division managers, as well as committed operations and professional employees. Commitment to the zero waste philosophy and operational safety is prevalent throughout the organization. The department recognizes employees with rewards and recognition at public events. ARR's leadership has been recognized with awards from the State of Texas Alliance for Recycling, the Solid Waste Association of North America, and the International Economic Development Council.[11]

The department is responsive to customers' needs as expressed in its mission commitment to provide excellent customer service through resource recovery programs. ARR maintains higher levels of customer satisfaction as compared to national averages across services, although street sweeping and household hazardous waste services may be improved (*Figure 9*). The department responded to 73,004 customer service requests in 2014.[12] Austin Resource Recovery partnered

[7] Budget Office, 2016.
[8] Budget Office, 2016.
[9] Waste 360, 2016.
[10] National Recycling Coalition, 2016.
[11] Office of City Manager, 2015.
[12] Austin Resource Recovery, 2015a.

with the Office of Innovation to create a community engagement tool called 'Insights,' which received 1,525 responses.[13] ARR used the input to inform program decisions.

Austin Resource Recovery has six primary performance measures:[14]

1) Average Pounds of Recycled Materials Collected per Customer Account per Pickup
2) Average Pounds of Trash per Customer Account per Week
3) Average Pounds of Yard Trimmings/Organics Collected per Customer Account per Week
4) Percent of Waste Stream Diverted by ARR Residential Curbside, Reuse, and Household Hazardous Waste Operations
5) Lost Time Injury Rate per the Equivalent of 100 Employees.
6) Total Number of Contacts through Presentations and Events Promoting Zero Waste

The Collections Division is responsible for the performance of the first four measures. The Safety Division monitors the fifth performance measure. Lastly, Strategic Initiatives measures its performance through the sixth measure. Overall, Austin Resource Recovery's key indicators evaluates the department's culture of zero waste performance while improving employee safety.

PUBLIC POLICY ENVIRONMENT

Austin Resource Recovery operates in a public policy environment that is concerned with sustainability and affordability. The Austin City Council has adopted a number of policies that support ARR's zero waste goals, which support larger City sustainability goals. At the same time, both City Council and Austin citizens are concerned with affordability of the cost of living in the city, including rising municipal utility fees.

In 2005, the City of Austin signed the United Nations Urban Environmental Accords and joined cities across the world in recognizing urban areas' unique ability to influence global sustainability.[15] The resolution to adopt the accords included specific waste reduction goals, such as establishing a policy of zero waste sent to landfills and incinerators by 2040 and implementation of recycling and composting programs to achieve a 20 percent reduction in per

[13] Office of Innovation, 2016.
[14] Office of City Manager, 2015.
[15] Austin Chronicle, 2014.

capita waste sent to landfills or incinerators by 2012.[16] To that end, the City of Austin began its Single-Stream Recycling curbside collection program for residential customers in 2008 and adopted the Austin, Texas Zero Waste Strategic Plan in 2009.[17] The City also adopted the Universal Recycling Ordinance in 2010, which requires recycling and organics collection at multi-family and commercial properties, to promote landfill diversion at properties serviced by private sector waste haulers.[18]

In 2011, Austin Resource Recovery cemented its mission-shift to zero waste by adopting the Austin Resource Recovery Master Plan.[19] The master plan details the 30-year path of interrelated policy and program initiatives to achieve the ultimate zero waste goal of 90 percent landfill and incinerator diversion by 2040.[20] Specifically, the master plan called for expansion of recycling and organics city collection service, as well as increased landfill diversion at multi-family and commercial properties.[21]

The shift to sustainable materials management and a zero waste philosophy, changes traditional solid waste management emphasis on a linear, cradle-to-grave waste management, which the majority of waste material is destined for a landfill or incinerator. Instead, zero waste emphasizes an integrated approach to sustainable materials management. Materials are recovered by recycling or composting and are available as feedstocks for new products.

Austin Resource Recovery's public policy environment operates in two spheres—one sphere of direct control through city service provision and the other sphere of influence on the private sector through city ordinances.[22] ARR provides services to 193,000 customers representing approximately 25 percent of total citywide waste generation.[23] ARR's customers are single-family homes within the city's full jurisdiction and a small number of commercial properties.[24] However, 68 percent of total citywide waste is generated by multi-family and commercial

[16] Liss, 2008.
[17] Austin Chronicle, 2014.
[18] Austin Resource Recovery, 2014.
[19] Austin Chronicle, 2014.
[20] HDR, 2011.
[21] HDR, 2011.
[22] HDR, 2011.
[23] CB&I, 2015; HDR, 2011.
[24] HDR, 2011.

properties that are serviced by private sector waste companies.[25] ARR utilizes ordinances, such as the Universal Recycling Ordinance and Construction and Demolition Recycling Ordinance, as well as technical assistance and landfill diversion service rebates to encourage landfill diversion at multi-family and commercial properties. ARR's landfill diversion goals of 50 percent by 2015, 75 percent by 2020, and 90 percent by 2040 include all city waste generation, as collected by both the public and private sectors.[26]

A dynamic group of stakeholders are involved in Austin Resource Recovery's public policy process. Environmental advocates, private sector waste haulers, and private sector waste processors are consistently involved in the development of ARR's zero waste goals, services, and programs. ARR regularly conducts public processes with external and internal stakeholders to shape policy and the public consensus process often occurs at the Zero Waste Advisory Commission (ZWAC). ZWAC is comprised of citizens who provide policy recommendations on ARR matters to the Austin City Council. The ZWAC process is an important opportunity for the vetting of ARR policy by stakeholders prior to Council action. Austin City Council and the Mayor are generally supportive of ARR's services and efforts. However, no particular council zero waste champion has emerged.

Aspects of ARR's services are regulated by the Texas Commission on Environmental Quality. In particular, TCEQ requires that municipal solid waste by picked up at least once a week to minimize public health issues, such as pests and disease. In general, state-level oversight and legislature interest in ARR's activities is minimal. However, the 2015 Texas State Legislature recently considered overturning ARR's Single Use Bag Ban. Innovative or aggressive landfill diversion policies may attract the Legislature's attention.

CURRENT MANAGEMENT ISSUES

The most important administrative and management issues are aligned with ARR's key performance measures. These issues will be assessed by the six key indicators as managed by the respective organizational division, as well as cost of service. There are additional management issues, such as the sale of underutilized ARR land and the development of the [re]Manufacturing

[25] HDR, 2011.
[26] HDR, 2011.

Hub.[27] But, this report will focus on public and private sector collection landfill diversion efforts. Management efforts to address these issues will assist ARR in achieving its mission of providing excellent customers services that promote waste reduction, resource recovery, and city sustainability, as well as promoting employee safety.[28] In addition, new services and programs are being added to ARR's management responsibilities requiring thorough planning and effective implementation.

The Austin Resource Recovery Master Plan calls for improvement of existing services and additional services and programs necessitating additional management involvement and leadership. The Austin City Council and City Manager are exerting minimal pressure to improve landfill diversion performance by ARR beyond emphasizing proficient performance. However, both Council and the City Manager are concerned with the general affordability of the cost of living in Austin. Recently, ZWAC called for a cost of service third-party performance review of ARR services due to this concern.[29] Additionally, external stakeholders, such as environmental advocates and private sector waste companies, are exerting pressure on ARR to implement new landfill diversion services and programs.

Strategic Initiatives

The Strategic Initiatives Division promotes zero waste to ARR customers and private sector multi-family and commercial properties. Strategic Initiatives provides public education and outreach through innovative marketing campaigns and customer engagement. In addition, Strategic Initiatives supports private sector landfill diversion efforts and Universal Recycling Ordinance compliance through technical assistance and landfill diversion service rebates.

Strategic Initiatives' key indicator counts the amount of contacts made with residents and businesses. In 2015, Strategic Initiatives reported 1,687 individual contacts with residents and business.[30]However, ARR has not established accurate citywide landfill diversion performance measures, nor established a clear link between public education/outreach and increases in landfill diversion rates.

[27] Austin Monitor, 2014; Austin Monitor, 2015.
[28] Austin Resource Recovery, 2016a.
[29] Austin Monitor, 2016.
[30] Budget Office, 2016.

In 2015, ARR received annual diversion plans from 94 percent of properties affected by the Universal Recycling Ordinance.[31] The department is attempting to measure multi-family and commercial diversion rates through Hauler License tonnage reports and the Universal Recycling Ordinance data collection system.[32] But, ARR cannot accurately verify the amount of material landfilled or diverted.[33] In addition, the 2013 Zero Waste Audit found that ARR was inaccurately reporting waste diversion rates.[34] ARR was portraying the Single-Family Residential diversion rate as the citywide diversion rate.[35] The ARR Director pledged to more accurately portray this information.[36]

Collections

Landfill Diversion

ARR's service provision of curbside trash, recycling, yard trimmings, brush, bulk, reuse, and household hazardous waste collection constitutes city-serviced landfill diversion efforts. ARR did not reach its internal landfill diversion goals for the last six years (*Figure 1*). The following discussion of management issues will focus specifically on curbside trash, recycling, and yard trimmings/organics collection. There appears to be some customer dissatisfaction with household hazardous waste collection, most likely due to the operation of only one location in southwest Austin (*Figure 9*). In addition to yard trimmings collection, ARR plans to offer citywide curbside organics collection over the next four years.[37]

Trash Collection

As Austin grows, ARR's residential customer base also grows. This growth increases the overall generation of waste. While the average pounds of trash per customer account per week trend is declining, the average amount is declining less than performance targets (*Figure 2*). If ARR is not effective in reaching new customers with landfill diversion education and services, new customers may increase the amount of waste sent to a landfill. ARR uses a Pay-As-You-Throw

[31] Budget Office, 2016.
[32] Office of City Auditor, 2013.
[33] Office of City Auditor, 2013.
[34] Office of City Auditor, 2013.
[35] Office of City Auditor, 2013.
[36] Office of City Auditor, 2013.
[37] Austin Resource Recovery, 2015b.

rate schedule that is stratified based on the size of a customer's landfill cart.[38] All customers incur a base fee plus increasing fees based on the size of the landfill cart. Pay-As-You-Throw creates an economic incentive for customers to reduce the size of the landfill cart and divert materials to the Single-Stream Recycling blue bins.

Recycling Collection

Since the Single-Stream Recycling program's inception in 2008, the program has added new accepted materials and expanded educational campaigns. Yet, the average pounds of recycled materials collect per customer account per week has remained relatively constant hovering around an average of 22.5 pounds (*Figure 3*). The Single-Stream Recycling program has not achieved its diversion performance goals for the past five years (*Figure 3*).

The 2015 City-Serviced Residential Waste Characterization Study audited random loads of trash and recycling materials from city routes. The study confirmed that close to 90 percent of household waste can be recover through recycling or composting.[39] Yet, the study demonstrated that more recyclables (58,000 tons) are going to the landfill rather than to recycling facilities (55,000).[40] The study indicates deficiencies in ARR's educational, economic, and programmatic tools to encourage use of the Single-Stream Recycling service. Of materials thrown in the trash, organic waste and recyclable materials comprised 46 percent and 44 percent of the waste stream, respectively.[41] The study's authors concluded that the addition of curbside organics collection represents the greatest potential increase of city-serviced landfill diversion rates.[42]

Organics Collection

In 2013, ARR conducted a residential curbside organics collection pilot program to assess potential citywide curbside organics collection service. Organic materials include yard trimmings, food scraps, and food-soiled paper. The pilot program's goals were to assess program management, operation, customer participation, challenges, and processing capacity.[43] The pilot

[38] Austin Resource Recovery, 2016e.
[39] CB&I, 2015.
[40] CB&I, 2015.
[41] CB&I, 2015.
[42] CB&I, 2015.
[43] Austin Resource Recovery, 2013.

program followed similar best management practices for development of organics collection programs as prepared for the Houston-Galveston Area Council.[44]

The pilot program serviced 14,000 households in ten geographic areas representing the city's demographics.[45] The program provided pilot participants instructional and educational materials.[46] Pilot participants received a third 96-gallon cart for disposal of organic waste, including yard trimmings. Organic waste was collected as a part of existing weekly yard trimming routes.[47] Lastly, ARR evaluated the pilot program results in order to plan for citywide roll-out. Now, ARR is moving forward to provide residential curbside organics collection to all ARR customers over the next four years.[48]

The pilot revealed curbside organics collection program opportunities and challenges. The program results showed a 39 percent average increase of organic waste diversion.[49] Although, the pilot found that on average 9.94 pounds of organics per week per household was collected out of 12.5 pounds of potential weekly average organic waste generation.[50] The average set out rates of organics carts on the curb was 27.4 percent compared to the 55.4 percent average overall set out rate of trash, recycling, and organics carts.[51] In addition, a pilot waste stream audit documented a 12.9 percent contamination rate, as well as 10.7 percent of non-soiled paper in organics carts that could have been diverted to a higher and better use through recycling.[52]

The pilot also tested collection operations issues and found a need for semi-automated collection due to additional yard trimmings set out at the curb in paper bags.[53] In addition, the pilot showed the need for smaller and more numerous collection routes due to the volume of organics.[54] Lastly, the pilot demonstrated that customers have varied educational needs to encourage participation.[55]

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[44] RW Beck, 2009.
[45] Austin Resource Recovery, 2015c.
[46] Austin Resource Recovery, 2015c.
[47] Austin Resource Recovery, 2015c.
[48] Austin Resource Recovery, 2015c.
[49] Austin Resource Recovery, 2013.
[50] Austin Resource Recovery, 2015c.
[51] Austin Resource Recovery, 2015c.
[52] Austin Resource Recovery, 2013.
[53] Austin Resource Recovery, 2015c.
[54] Austin Resource Recovery, 2015c.
[55] Austin Resource Recovery, 2015c.

ARR is committed to accommodating alternative forms of organics landfill diversion through backyard composting and alternative collection. ARR plans to continue to encourage backyard composting through rebates and vouchers for backyard composting systems.[56] ARR is recommending administrative rules adoption to allow for alternative organics collection at city-serviced residential properties with less than five dwelling units that supports the community by encouraging community agriculture, as well as reduces the carbon footprint of collection.[57] Accommodating alternative forms of organics landfill diversion supports ARR sustainability goals. However, accommodation may create management issues regarding route efficiency and revenue generation.

Safety

Recycling and trash collection is a dangerous job that requires workers to enter and exit vehicles frequently and to work with hydraulic machinery.[58] The 2014 ARR Employee Safety Audit by the Office of the City Auditor found that ARR's employee injury rate increase in fiscal years 2012 and 2013 from the previous three years.[59] However, ARR implemented management changes to improve employee safety. ARR hired a new Occupational Safety Manger, now follows best practices as developed by the National Safety Council, and is developing a five-year safety plan.[60] These efforts appear to be working as the employee injury rate dropped to one in fiscal years 2014 and 2015 (*Figure 5*). ARR's employee safety key performance measure demonstrates ARR's cultural commitment to employee safety.

Cost of Service

In the last few months, the Zero Waste Advisory Commission has been concerned with ARR's cost of service compared to service performance. The Commission Chair expressed concern over incremental landfill diversion increases despite spending $20 million of ARR's reserve fund.[61] The Chair is particularly worried about new program costs and related landfill diversion performance.[62] For this reason, ZWAC recommended a third-party audit of ARR and an in-house

[56] Austin Resource Recovery, 2015c.
[57] Austin Resource Recovery, 2015c.
[58] Bureau of Labor Statistics, 2015.
[59] Office of City Auditor, 2014.
[60] Office of City Auditor, 2014.
[61] Austin Monitor, 2016.
[62] Austin Monitor, 2016.

performance and budget review by the Office of Performance Management.[63] The City Council Audit and Finance Committee declined to endorse ZWAC's third-party audit recommendation.[64] But, the Committee and the ARR Director endorsed the recommendation that the Office of Performance Management prioritize the review of ARR's performance and budget.[65]

In response to ZWAC's inquiries, the ARR Director wrote a memo in tandem with the City's Deputy Chief Financial Officer. The memo outlined the cost of service model that ties fees to the cost to provide specific services.[66] Costs of service are updated every year during annual budget preparation and cross-checked by the City Budget Office.[67] The department instituted a zero-based budgeting process and reduced costs by reducing route vehicle miles traveled and holding employee growth relatively constant.[68]

The Director confirmed the department's ongoing commitment to transparency regarding rate increases citing ZWAC's supportive participation of increasing landfill cart fees and widening the stratification of the Pay-As-You-Throw rate schedule.[69] ARR's cost of service is comparable to peer city costs based on the average 64-gallon landfill cart rate and recycling service costs less than landfill service (*Figure 7*).[70] It should be noted that the addition of curbside organics collection service will increase costs for customers unless customers downsize their landfill cart (*Figure 6*). Customers already using the smallest landfill cart size will see an increase in cost of service, regardless (*Figure 5*). The memo stated that ARR spends less than peer cities on public education and outreach—approximately $0.32 per month per household (*Figure 8*).[71]

MANAGEMENT RECOMMENDATIONS

The following recommendations are suggestions to management to address identified management issues. Each recommendation assesses the feasibility of implementation and discusses the advantages and disadvantages, as well as opportunities and barriers to the proposed

[63] Austin Monitor, 2016.
[64] Austin Monitor, 2016.
[65] Austin Monitor, 2016.
[66] Austin Resource Recovery, 2016b.
[67] Austin Resource Recovery, 2016b.
[68] Austin Resource Recovery, 2016b.
[69] Austin Resource Recovery, 2016b.
[70] Austin Resource Recovery, 2016b.
[71] Austin Resource Recovery, 2016b.

management strategy. The intent of recommendations is to assist Austin Resource Recovery better achieve its mission of excellent customer services, resource recovery, and sustainability.

Recommendations are categorized not by importance or timeframe, rather by organizational division with the addition of a cost of service category. Most of the recommendations require planning and medium-term implementation horizons. With that said, particular implementation focus should be paid to rolling-out residential curbside organics collection. Organics collection is the best opportunity for significant landfill diversion rate increases for city services.

Strategic Initiatives

Recommendation 1: Tailor and target education and outreach efforts in geographic areas with low recycling rates.

Strategic Initiatives aims to increase recycling rates with citywide programs, such as Recycle Right, Give Us 5 Austin!, and the Austin Recycles Pledge.[72] These programs target customers on a citywide basis and focus on incremental increases in landfill diversion. ARR may consider targeting specific geographic areas with low recycling rates with tailored education and outreach. For example, the Recycle Right Crews could focus their efforts in these areas.

Recommendation 2: Link public education and outreach performances measures to landfill diversion rates.

Strategic Initiatives measures performance by quantifying the number of contacts made with residents and businesses regarding zero waste.[73] It is unclear how these efforts affect landfill diversion. To more effectively link Strategic Initiatives performance and landfill diversion, ARR may consider tracking a sample of resident and business contacts' landfill diversion changes.

Recommendation 3: Improve performance measurement of the Universal Recycling Ordinance.

Currently, ARR cannot verify landfill diversion rates at multi-family and commercial properties serviced by the private sector.[74] ARR collects data on private sector landfill diversion through Hauler License tonnage reports and Universal Recycling Ordinance Annual Diversion Plans.

[72] Austin Resource Recovery, 2016a.
[73] Budget Office, 2016.
[74] Office of City Auditor, 2013.

However, Hauler License tonnage is reported as aggregated data and Annual Diversion Plan tonnage reporting is voluntary. Private sector haulers are hesitant to provide tonnage information to the City due to concerns about competition and multi-family and commercial properties do not have an accurate way to report tonnage.

ARR may consider selecting a representative random sample of properties types for reporting. ARR could focus its reporting efforts on a smaller subset of properties to minimize the difficulty of data collection. ARR may consider offering incentives, such as service rebates, to businesses in order to encourage participation in tonnage reporting. While not a complete data set, sample reports could be projected to a citywide basis for landfill diversion rates and targeted outreach.

Recommendation 4: Expand URO Business Outreach Team staff and budget resources.

To reach city-wide zero waste goals, ARR needs to effectively encourage landfill diversion at multi-family and commercial properties. URO Business Outreach Team staff and budget resources should be expanded to provide technical assistance and rebates to such properties.

Collections

Recommendation 5: Roll-out citywide residential curbside organics collection.

The Austin City Council and City Management should support citywide organics collection in order to reach City of Austin zero waste goals. The pilot program effectively assessed citywide program planning, management, and financial viability. On average, households increased the curbside organics collection rate by 39 percent—demonstrating significant participation in the program.[75] Residential curbside organics collection represents the largest potential landfill diversion increase for city service.[76]

Recommendation 6: Conduct an analysis of each collection route throughout the City.

ARR may conduct an analysis of each collection route in order to assess individual route landfill diversion rates and route efficiencies. Individual route landfill diversion rates will allow ARR to target under-recycling routes with education and outreach, as well as determine if high-recycling

[75] Austin Resource Recovery, 2015b.
[76] CB&I, 2015.

routes would benefit from weekly recycling collection. The analysis may also consider if a routing optimization is necessary to reduce route carbon footprint and costs.

Recommendation 7: Focus on landfill diversion economic incentives.

Customers who may not be swayed by educational campaigns, may see the economic benefit of landfill diversion. To that end, ARR may consider further stratifying the Pay-As-You-Throw rate schedule to encourage downsizing of landfill carts by expanding the cost differentials between the smallest and largest landfill carts. In addition, public education and outreach should emphasize landfill diversion economic incentives at least to an equal degree as environmental stewardship appeals. However, caution should be paid to cost of service, as recommended below.

Safety

Recommendation 8: Continue employee safety efforts and finalize the five-year safety plan.

ARR should continue to build its culture of employee safety through planning, education, training, and personal protective equipment.

Cost of Service

Recommendation 9: Continue to work with ZWAC on cost of service issues.

There seems to be a communication issue between ARR and ZWAC regarding cost of service and landfill diversion performance. ARR should continue to engage with ZWAC on these issues, as well as fully support the performance and budget review by the Office of Performance Management.

Recommendation 10: Revise billing statements to include more information regarding trash, recycling, and organics costs and benefits.

ARR may consider revising its fee structure and billing statements to show customers line item costs of landfill, recycling, and organics collection service. This information may more effectively communicate to customers the cost of landfill service in relation to recycling and organics collection. Thus, customers may reduce solid waste service costs by reducing landfill cart sizes.

Recommendation 11: Incentivize landfill diversion by providing landfill diversion credits.

Currently, all trash, recycling, and organics collection is reported in the aggregate based on individual vehicles. Residential waste is not weighed by household, rather it is comingled with other customers' waste in the collection vehicle. ARR may further incentivize landfill diversion by providing landfill diversion credits to customers on the basis of the weight of materials diverted. ARR may consider outfitting collection vehicles with scales on the mechanical collection arms. The scales could measure individual household landfill diversion and aggregate the information by household for monthly utility bill credits. The amount of credit could be determined by a cost of service and revenue generation model. ARR may consider operating a pilot program to test the effect of this management strategy.

Recommendation 12: Balance affordability with curbside organics collection service.

Customers with the smallest landfill cart will see an increase in fees for residential curbside organics collection (*Figure 5*). To mitigate this cost, ARR may target backyard composting rebates and vouchers outreach to 24-gallon customers. ARR should allow backyard composters to opt-out of curbside organics collection and to receive a rebate on their utility bill.

CONCLUSION

Overall, Austin Resource Recovery is a well-managed organization. Yet, the department has not been able to meet performance goals. The gap between performance and achievement is due in part to the nature of very ambitious zero waste goals. In addition, the State of Texas regulatory environment limits the department's ability to leverage additional policy tools, such as expanded private sector collection franchise districts, financial penalties low landfill diversion rates, and landfill bans on recyclable and compostable materials. Innovative policy efforts and citywide residential curbside organics collection for city customers will help narrow the gap. Despite collection, educational, and regulatory challenges, Austin Resource Recovery's management structure, culture, and craft is well-prepared for rapid performance improvement towards its ultimate mission of zero waste.

APPENDIX: Austin Resource Recovery Fact Sheet

Vision: "To be the national Zero Waste leader in the transformation from traditional integrated waste collection to sustainable resource recovery."[77]

Mission: "To achieve Zero Waste by providing excellent customer services that promote waste reduction, increase resource recovery and support the City of Austin's sustainability efforts."[78]

Governing Bodies: Austin Resource Recovery reports the City Manager, who reports to Austin City Council. Austin City Council sets ARR policy and approves administrative rules. In addition, Austin Resource Recovery seeks recommendations from the Zero Waste Advisory Commission. The Commission provides non-binding recommendations to City Council on ARR agenda items.

Department Director: Robert Gedert

Department Website: www.austintexas.gov/department/austin-resource-recovery

Full Time Employees[79]: 429

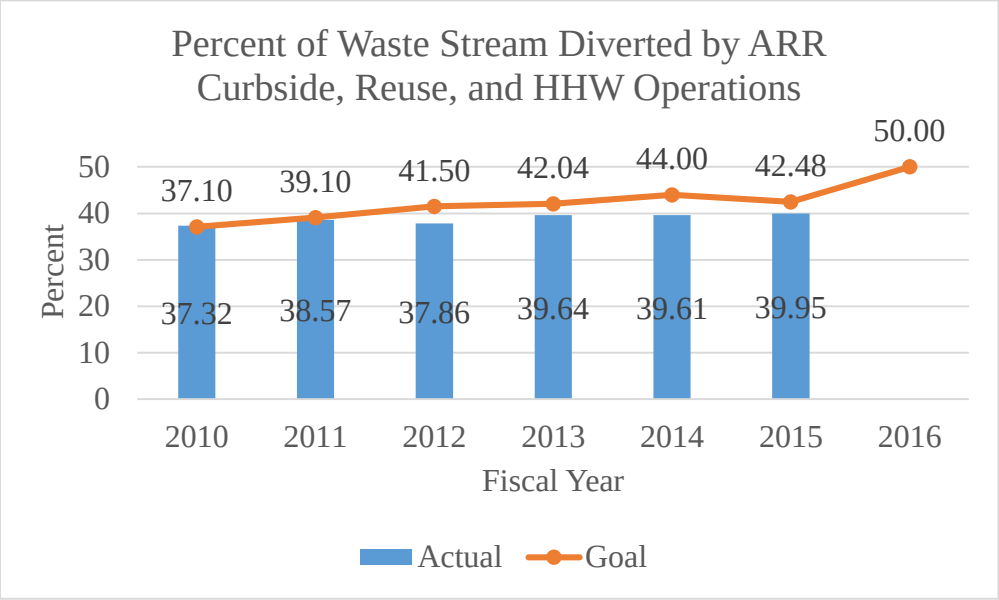
Approved Budget[80]: $89,631,799

Department Programs & Selected Departmental Activities[81]		
Activity	Approved Amount	Approved FTE
Collection Services Program	$34,247,346	239.25
Trash Collection	$13,787,196	103.5
Recycling Collection	$11,305,945	55.5
Organics Collection	$6,589,969	53.75
Bulk Collection	$2,564,236	26.5
Waste Diversion Program	$5,410,420	30.83
Zero Waste	$3,366,412	17.33
Diversion Facilities	$2,044,008	13.5
Litter Abatement Program	$5,522,820	55.5
Operations Support Program	$4,675,946	36.0
Remediation Program	$1,618,294	8.75
Support Services Program	$9,355,869	

[77] Austin Resource Recovery, 2016a
[78] Austin Resource Recovery, 2016a
[79] Budget Office, 2016
[80] Budget Office, 2016
[81] Budget Office, 2016

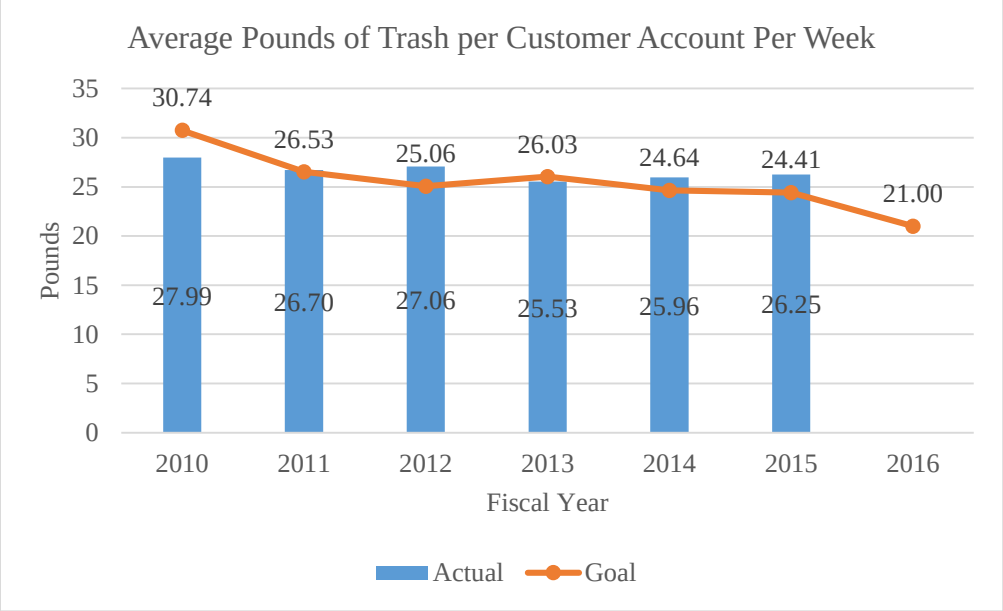
Key Performance Measures:

Figure 1:



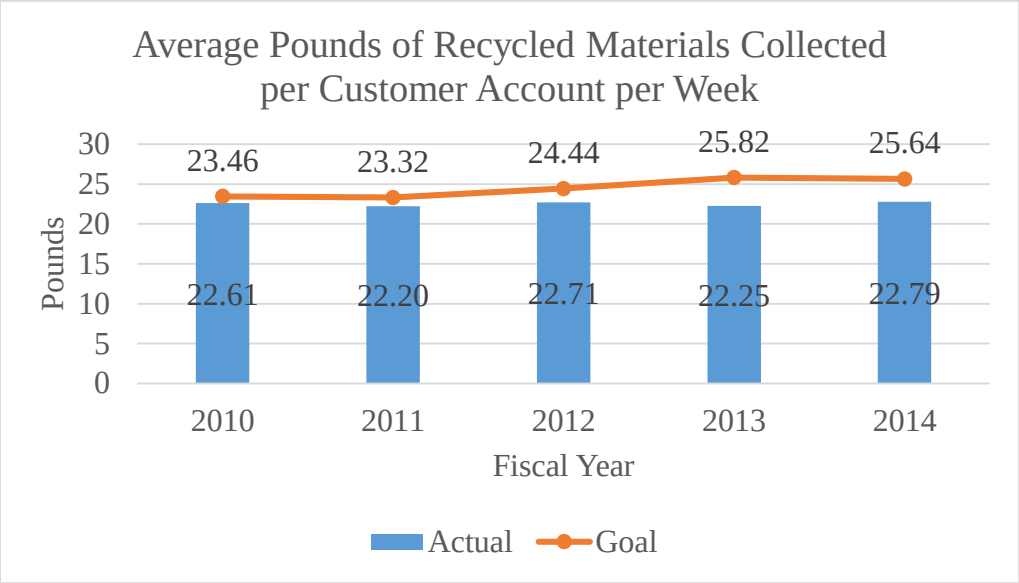
Source: Budget Office, 2016.

Figure 2:



Source: Budget Office, 2016.

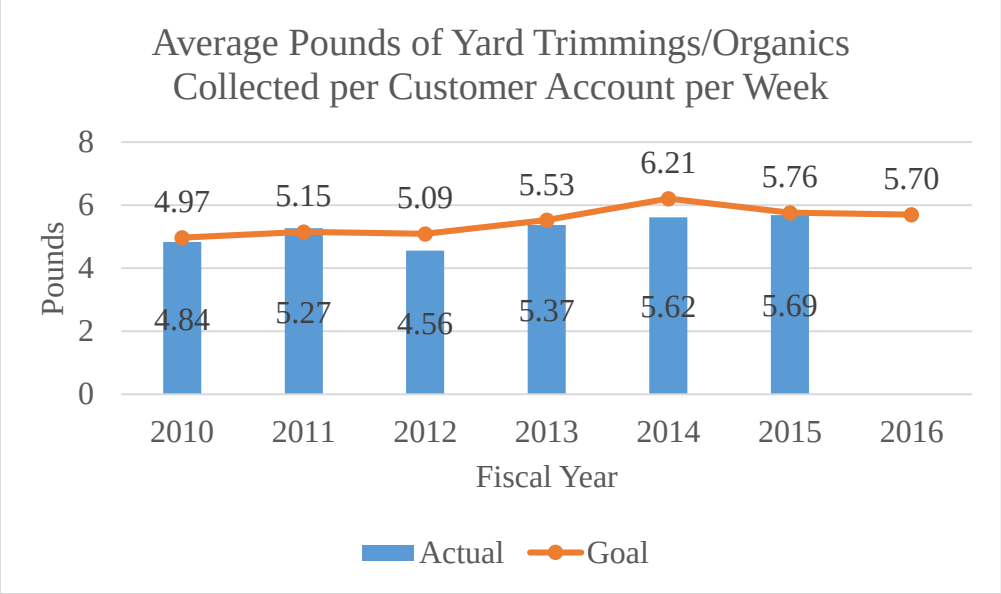
Figure 3:



Note: 2015 and 2016 data is excluded because performance metrics in chart from the 2014 COA Performance Measure Report were not compatible with Performance Measures on the City website.

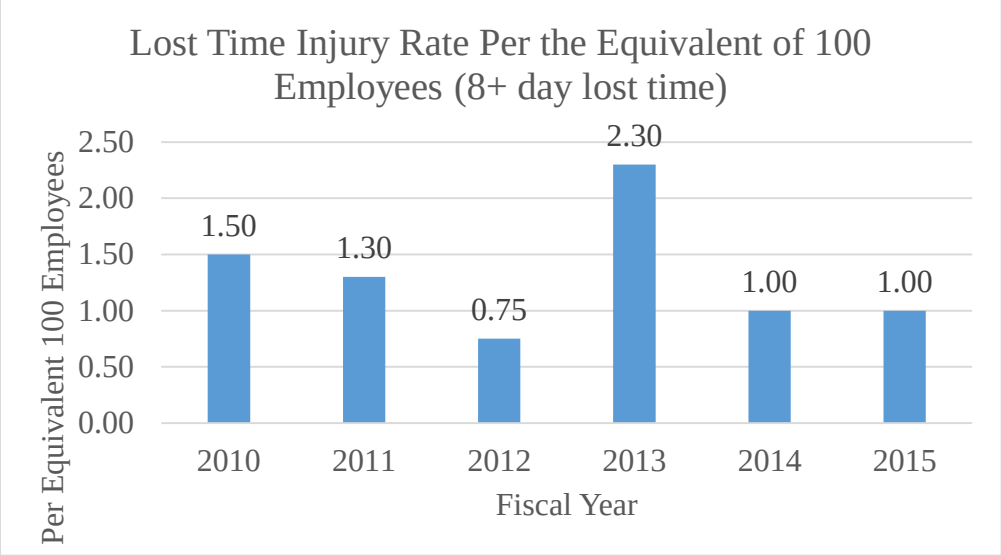
Source: Budget Office, 2015.

Figure 4:



Source: Budget Office, 2016.

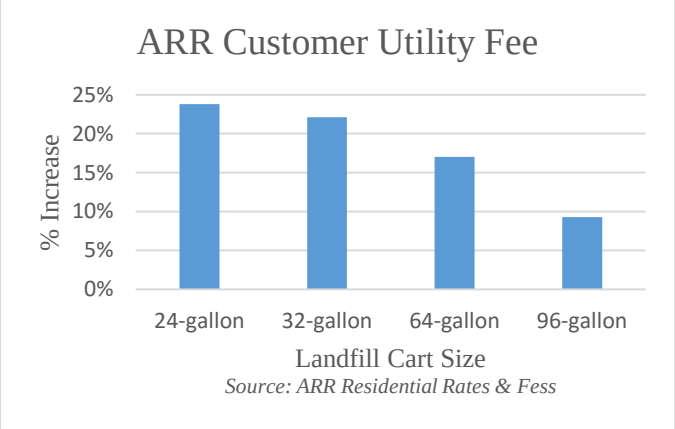
Figure 5:



Source: Office of City Auditor, 2014; Budget Office, 2016.

Cost of Service:

Figure 5:



Source: Texas Campaign for the Environment, 2016; ARR, 2016e.

Figure 6:

		Monthly Cost	Cart Size Change			
			24-gallon	32-gallon	64-gallon	96-gallon
Cart Size	24-gallon	$ 16.90	$ -	$ 1.25	$ 6.40	$ 24.95
	32-gallon	$ 18.15	$ (1.25)	$ -	$ 5.15	$ 23.70
	64-gallon	$ 23.30	$ (6.40)	$ (5.15)	$ -	$ 18.55
	96-gallon	$ 41.85	$ (24.95)	$ (23.70)	$ (18.55)	$ -

Source: ARR, 2016e.

Figure 7:

Average Monthly Curbside Cost of Service / Household FY 2016	
Trash Collection & Landfill Disposal	$11.06
Recycling Collection with Processing	$7.46
Yard Trimmings & Brush Composting	$5.34
Bulky Waste Pickup	$1.28
Total "Average" Cost of Current Services	*$25.14*

Source: ARR, 2016b.

Figure 8:

Average Monthly Programs Cost of Service / Household FY 2016	
Litter Collection & Dead Animal	$1.54
Street Sweeping	$0.89
Landfill Closure	$0.41
HHW Collection & Resource Recovery Center	$0.63
URO Implementation	$0.43
ZW Education & Outreach	$0.32
Brownfields Redevelopment	$0.15
Total Monthly Programs Cost of Services	*$4.37*

Source: ARR, 2016b.

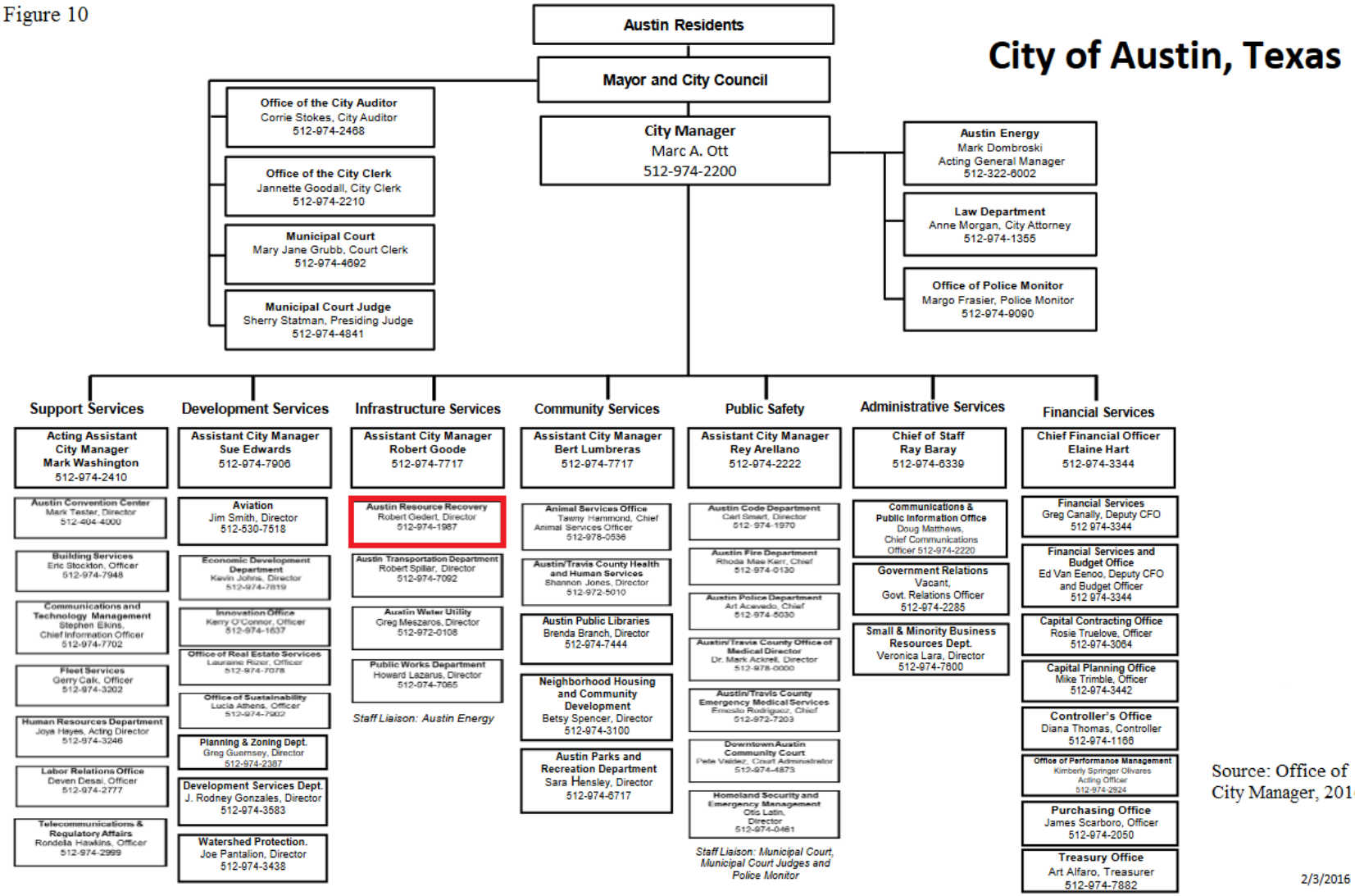
Customer Satisfaction Measures:

Figure 9:

Customer Satisfaction		
City Service	City of Austin	National Average
Trash Collection	87%	80%
Recycling Collection	86%	73%
Yard Trimmings Collection	81%	72%
Bulky Items Collection	76%	64%
Street Sweeping	69%	59%
Household Hazardous Waste	53%	54%

Source: ARR, 2015; ETC Institute, 2015.

Figure 10



Source: Office of City Manager, 2016.

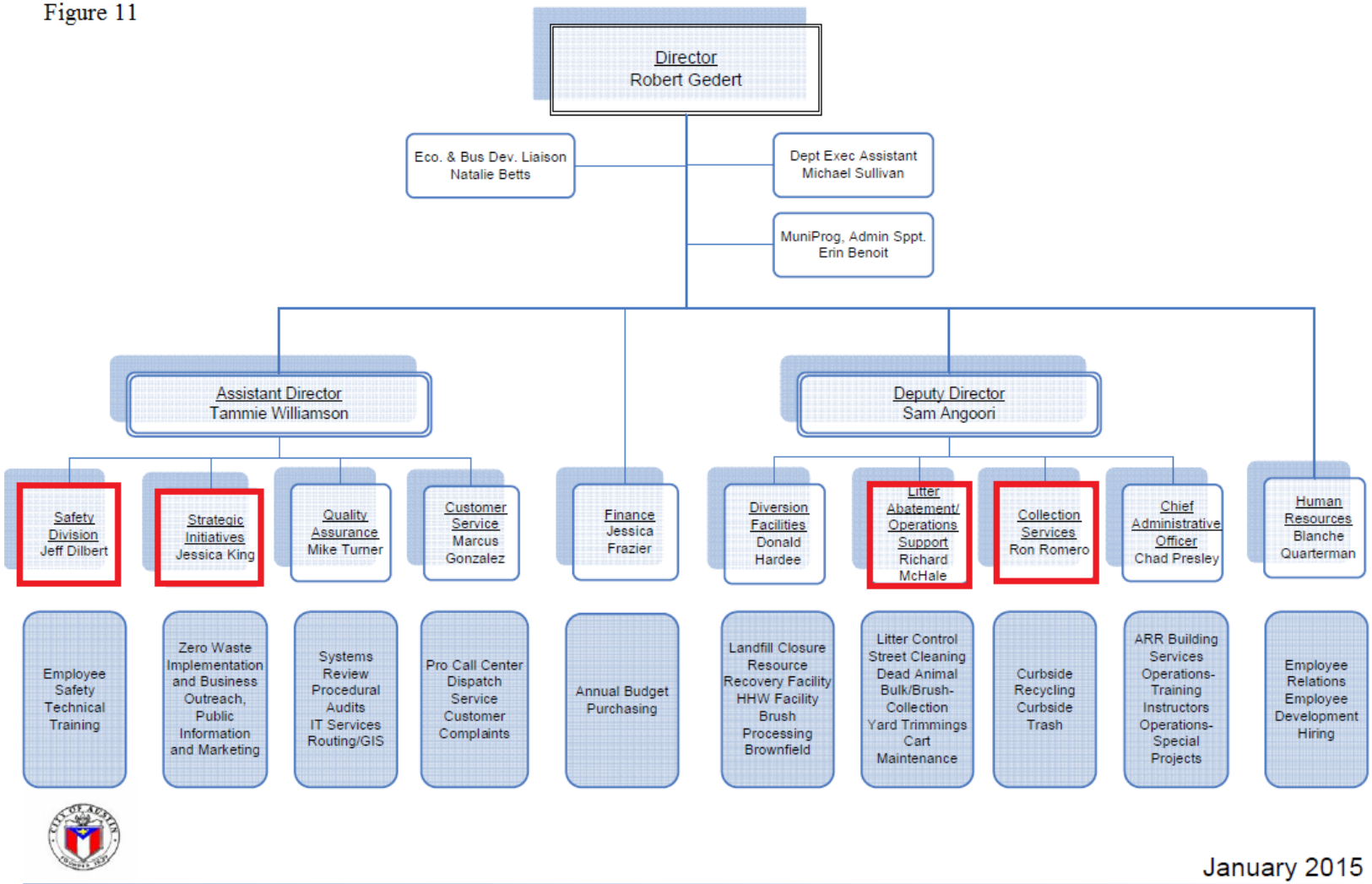
2/3/2016

City of Austin, Texas

Austin Resource Recovery Department

Organizational Structure

Figure 11



January 2015

Source: ARR, 2015d.

COURSE CONCEPTS

Human rights: Human rights is an expansive philosophical view and legal framework that any human being is entitled to certain rights in any context regardless of immutable characteristics, as well as citizenships status. The United Nations Universal Declaration of Humans Rights established the human rights legal framework and detailed a list of fundamental human rights.

Civil rights: Civil rights is a more narrowly construed philosophical view and legal framework that citizens have certain rights pertaining to political and social equality. Civil rights is often associated with the U.S. civil rights movement that culminated in landmark civil rights legislation.

Citizen: A citizen is a person who has legal rights to democratically determine the structure, representation, and functioning of their government.

Government Constitutions and Charters: Federal, state, and municipal constitutions and charters establish governmental sovereignty by democratic consent. Constitutions and charters are the fundamental legal frameworks that establish governmental powers, duties, rules, and citizen consent. Public managers operate in the context of and must abide by these government frameworks.

Branches of Government: Constitutions and charters establish separation of powers between the executive, legislative, and judicial branches of government. The executive branch implements legislation passed by the legislative branch and the judicial branch interprets the meaning of legislation. It is important for public managers to understand the governmental process, relationship between the branches, and executive management role. In particular, managers need to understand the development and implementation of legislation, such as city ordinances and administrative rules. Managers must interpret legislation appropriately and sometimes creatively, as well as develop and implement effective, efficient, and equitable administrative rules.

Bureaucracy: Bureaucracies are organizations of unelected professionals who administer and manage governmental agencies. Public managers work in bureaucracies and need to develop skills to effectively manage bureaucracy policy, programs, and personnel. Bureaucracies offer advantages of professional governmental administration, but also have management challenges, such as inefficiencies and ineffectiveness.

Public Management: Public management can be distinguished from public administration. Public administration places emphasis on public service and the basic functioning of government. Public management places more emphasis on the business processes of government and borrows management concepts and techniques from the private sector, such as leadership, performance management, and non-traditional budgeting. Public management is more focused on economical, effective, and equitable governmental services. The use of public management techniques is considered best management practice.

Ethics: Ethics are a set of beliefs regarding what is right and wrong. In the public management context, ethics involves a more philosophical approach of doing what is right for the public, organization, and employees. Ethics can also be a set of practices in the context of influence, corruption, disclosure, and conflicts of interest. Ethical leadership involves making ethical decisions consistently and respecting the value of others in the organization. Managers are often guided by a code of managerial ethics in their decision-making and interactions with employees.

Leadership: Leadership is an attitude and set of behaviors that encourage others to follow the example or vision of a leader. There are many different theories and styles of effective leadership, but many involve the setting of vision and goals, consensus-building, encouragement, and implementation. Leadership can occur at any organizational level and often the most effective organizations encourage all employees to be leaders in their own areas of responsibility. Often times, the most effective leadership requires involvement of multiple leaders from different areas of the organizations and external stakeholders.

Stakeholders: Stakeholders are individuals and organizations that are affected by and/or interested in governmental policies and programs. Stakeholders can be internal to an organization, such as governing bodies, agencies, and staff, or external, such as citizens, advocacy groups, and labor representatives. Public managers often engage stakeholders to solicit input and investment in governmental policies and programs.

Management Structure: Management structure is the legal, administrative, and organizational framework of public agencies. Legal structures determine the bounds of management action within legislative policy. Administrative structure establishes the procedures of agency management. Organizational structure defines decision-making delegation, duties delegation, and communication flow, often by an organization chart. Public managers need to understand management structure to accomplish an agency mission.

Management Culture: Management culture is workplace atmosphere and attitudes. Workplace atmosphere determines if an organization's environment is tolerant, hard-working, and ethic, among other values. Workplace attitudes are organizational orientations and individual behaviors that makeup an organization's perspective on the agency's work. Workplace atmosphere and attitudes influence each other. Sometimes management culture can have negative aspects, which necessitates management involvement to change those negative aspects. Public managers play a large role in creating management culture through leadership, policies, and procedures.

Management Craft: Management craft is the deployment of management culture within the context of management structure. Craft is the way an organization conducts its business. Craft influences organizational effectiveness and efficiency. Many public managers are turning to public management craft concepts, such as performance management and non-traditional budgeting, to improve organizational effectiveness, efficiency, and equity.

Performance Management: Performance management focusing on improving organizational effectiveness through systematized performance measures. Organizations collect data on programs and create performance measures. Management analyzes performance measures to improve the ability of an organization to accomplish its mission.

Non-Traditional Budgeting: Traditional budgeting incrementally increases budget line items from the baseline of the prior year's budget. Non-traditional budgeting approaches include performance budgeting and zero-based budgeting. Performance budgeting links an organizational output to its input and bases funding levels on organizational outcomes. Zero-based budgeting starts budget line items at zero and assumes that all funding levels must be justified.

BIBLIOGRAPHY

City of Austin Sources:

Austin Resource Recovery. (2016a). *About Austin Resource Recovery*. Austin, TX. http://www.austintexas.gov/department/austin-resource-recovery/about

Austin Resource Recovery. (2016b). *ARR Budget and Cost of Service Memo*. Austin, TX. http://www.austintexas.gov/edims/document.cfm?id=251768

Austin Resource Recovery. (2016c). *Directors Report*. http://www.austintexas.gov/edims/document.cfm?id=251767

Austin Resource Recovery. (2016d) *Intent Document Organics Collection and Management Programs*. http://www.austintexas.gov/edims/document.cfm?id=228583

Austin Resource Recovery. (2016e). *Residential Rates & Fees*. Austin, TX. http://www.austintexas.gov/department/residential-rates-fees

Austin Resource Recovery. (2015a). *Austin Resource Recovery Annual Report 2014*. Austin, TX. http://austintexas.gov/sites/default/files/files/ARR_Annual-Report15_10x8_WEB Final.pdf

Austin Resource Recovery. (2015b). *Curbside Organics Collection Pilot*. Austin, TX. https://austintexas.gov/austincomposts

Austin Resource Recovery. (2015c). *Organics Collection Discussion*. http://www.austintexas.gov/edims/document.cfm?id=226030

Austin Resource Recovery. (2015d). *Organization Chart*. Austin, TX. https://www.austintexas.gov/sites/default/files/files/ARR_Organizational_Chart_1-15.pdf

Austin Resource Recovery. (2014). *Universal Recycling Ordinance No. 20140612-010*. Austin, TX.https://www.austintexas.gov/sites/default/files/files/Resource_Recovery/URO_Adopted_06-12-14.pdf

Austin Resource Recovery. (2013). *Organics Collection Pilot Program 6 Month Update*. http://www.austintexas.gov/edims/document.cfm?id=198628

Budget Office. (2016). *Performance Measures*. Austin, TX. http://www.ci.austin.tx.us/budget/eperf/index.cfm?fuseaction=home.Department&DEPT_CD=SWS&CFID=51793032&CFTOKEN=deecb0afa5665788-AF6A9771-C39C-6222-A54D0C63898F68B7

Budget Office. (2015). *Austin, Texas 2013-2014 Annual Performance Report*. Austin, TX. https://assets.austintexas.gov/budget/13-14/downloads/2013-14_Austin_Annual_Performance_Report_web.pdf

Office of City Auditor. (2014*). Austin Resource Recovery Employee Safety Audit*. Austin, TX. http://www.austintexas.gov/sites/default/files/files/Auditor/au14110.pdf

Office of City Auditor. (2013*). Zero Waste Audit*. Austin, TX. http://www.austintexas.gov/sites/default/files/files/Auditor/au13017.pdf

Office of City Manager. (2016). *City Organizational and Department Chart*. Austin, TX. http://www.austintexas.gov/sites/default/files/files/Communications/Web_Content/2016/Current_2016_Org_Chart_2_3_2016.pdf

Office of City Manager. (2015). *Year in Review*. Austin, TX. http://www.austintexas.gov/sites/default/files/files/City_Manager/YIR_2015-FINAL-online-ver1.pdf

Office of Innovation. (2016). *Insights: Help us Increase Austin's Recycling*. Austin, TX. http://insights.austintexas.gov/v/index.html#/Austin/recycling

Other Sources:

Austin Chronicle. (2014). *Significant Dates in Austin Zero Waste History*. Austin, TX. http://www.austinchronicle.com/news/2014-11-14/significant-dates-in-austin-zero-waste-history/

Austin Monitor. (2016*). No third-party audit likely for Resource Recovery*. Austin, TX. http://www.austinmonitor.com/stories/2016/04/no-third-party-audit-likely-for-arr/

Austin Monitor. (2015*). Sale of city land divides city interests*. Austin, TX. http://www.austinmonitor.com/stories/2015/11/sale-city-land-divides-city-interests/

Austin Monitor. (2014*). Plan for local recycled product market advances*. Austin, TX. http://www.austinmonitor.com/stories/2014/12/plan-local-recycled-product-market-advances/

Bureau of Labor Statistics. (2015). National Census of Fatal Occupational Injuries in 2014. Washington, D.C. http://www.bls.gov/news.release/pdf/cfoi.pdf

CB&I Environmental & Infrastructure, Inc. (2015). *City-Serviced Residential Waste Characterization Study*. Austin, TX. http://austintexas.gov/sites/default/files/files/Final_Report_-_Austin_City-Serviced_Waste_Characterization_Study_2015-04-14.pdf

Environmental Protection Agency. (2016). Recycling Basics. https://www.epa.gov/recycle/recycling-basics

ETC Institute. (2015). *2014 City of Austin Community Survey*. Olathe, Kansas. https://assets.austintexas.gov/budget/14-15/downloads/2014_AustinDF_Final_Report.pdf

Gary Liss and Associates. (2008) *Austin, Texas Zero Waste Strategic Plan*. Austin, TX. https://austintexas.gov/sites/default/files/files/Trash_and_Recycling/Zero_Waste_Plan_-_full_version_-_Council_Adopted_w-resolution.pdf

HDR and Austin Resource Recovery. (2011). *Austin Resource Recovery Master Plan*. Austin, TX. https://www.austintexas.gov/sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf

National Recycling Coalition. (2016). *NRC Board and Staff*. http://nrcrecycles.org/about/nrc board/

RW Beck. (2009). *Organic Waste Best Management Practices*. Houston-Galveston Area Council. https://www.h-gac.com/community/solid-waste-management/documents/organics-bmp_study.pdf

Texas Campaign for the Environment. (2016) *Budget for composting in Austin Petition*. https://www.texasenvironment.org/petition/budget-for-composting-in-austin/

Waste360. (2016). *Author Bio: Bob Gedert*. http://waste360.com/author/bob-gedert

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