EXECUTIVE SUMMARY

Purpose

The City of Dallas' (City) Local Solid Waste Management Plan Update (LSWMP Update) evaluates progress toward the goals and recommendations in the 2011 LSWMP adopted by City Council in February 2013. The purpose of the LSWMP Update is to identify current and future material management needs, evaluate programs, policies, and infrastructure options for meeting these needs, and to define a course of action for managing future waste generated in the City. The City and its consultant, Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell), developed the LSWMP Update by evaluating existing programs, policies and infrastructure and analyzing progress the City has made over the last decade toward the previously adopted goals and recommendations. The intent is to establish goals, objectives and recommendations that offer strategic direction for the City to establish a resilient material management system that provides the ability to continue advancing progress towards Zero Waste in alignment with the City's Comprehensive Environmental & Climate Action Plan (CECAP).

Stakeholder Engagement

The LSWMP Update development process engaged stakeholders from the community and multiple City departments. Community stakeholders included representatives from multiple generator sectors (sectors include single-family, multi-family and commercial and are further described in the Updated Goals and Objectives section) for the purpose of gathering insight and opinions regarding the current material management systems and needs for the future of the system. The City engaged multiple stakeholder groups throughout the LSWMP Update development process. Table ES-1 describes the City's engagement approach and stakeholders.

Table ES-1: Description of Stakeholder Engagement Approaches

Engagement Approach	Description	Stakeholders Engaged
Surveys	Developed and released two surveys to the public to gather initial feedback later to gather feedback on options and recommendations.	More than 5,500 survey respondents that included single-family, multi-family and commercial generators.
Interviews	Conducted informational interviews of key stakeholders to gather feedback on their perspectives around current and future material management.	Neighborhood associations, City departments, non-governmental organizations (NGOs), local chambers of commerce.
Educational Video	Worked with City's Communication Department to develop an educational video about the LSWMP Update.	Single-family, multi-family and commercial generators; City leadership (e.g., City Council members and staff).
Public Meeting	Held an in-person public meeting at the Latino Community Center with option to attend virtually.	Single-family, multi-family and commercial generators.
Public Comment Period	The City published the draft LSWMP Update for public comment in anticipation of presenting to City Council for adoption.	Single-family, multi-family and commercial generators.
Presentations to City Leadership	Presented to the Environmental and Sustainability Commission (formerly Environmental and Sustainability task force) and the City Council's Environmental and Sustainability sub-committee.	City leadership and staff.

The key takeaways from the comprehensive stakeholder engagement effort are incorporated throughout the LSWMP Update to inform the options and recommendations that have been developed. Further detailed information about the surveys, interviews, public meetings and presentations to City leadership is provided in Appendix A.

Updated Goals and Objectives

A key consideration of the updated goals and objectives is to balance the demand for resources to meet near-term goals that strategically position the City to make significant progress toward its long-term Zero Waste goal by 2060 as originally established as part of the 2011 LSWMP. The LSWMP Update has been developed to build on the 2011 LSWMP objectives and update them to:

1. Align with goals and objectives related to materials management adopted by the Comprehensive Environmental and Climate Action Plan (CECAP).
2. Acknowledge changes in the materials management landscape (e.g., recycling commodity markets, regulatory and policies adopted, technology innovations).
3. Incorporate the extensive system analysis and stakeholder engagement conducted as part of the LSWMP Update.

The following updated objectives are meant to guide policies, programs and infrastructure to support progress toward the City's near- and long-term goals.

1. Empower residents and businesses to reduce the amount of discarded material generated through proactive education, outreach and compliance efforts.
2. Establish and implement innovative operational best practices to provide efficient, cost effective, and environmentally responsible service.
3. Provide excellent customer service and support residents and businesses to maximize diversion from landfill.
4. Operate a clean, green and efficient waste system that seeks to generate energy from organics.

The level of direct control of a material stream determines the City's ability to increase the City's recycling rate and set realistic, achievable goals. The level of control varies by generator sectors including single-family (e.g., material generated by single-family detached households), multi-family (e.g., material generated by apartment complexes), and commercial (e.g., material generated by properties, facilities and business operations). The City has direct control over material generated by the single-family sector, because it collects, hauls, processes and/or disposes of this material on a daily basis. The City only has influence over material generated by the multi-family and commercial sectors supported by regular reporting requirements from private-sector haulers active in the City.

Figure ES-1 illustrates the level of control that the City has over the various material types and indicates the volume of material generated by that sector (circles are not to scale and are presented for informational purposes only).

Figure ES-1: Control of Material by Sector

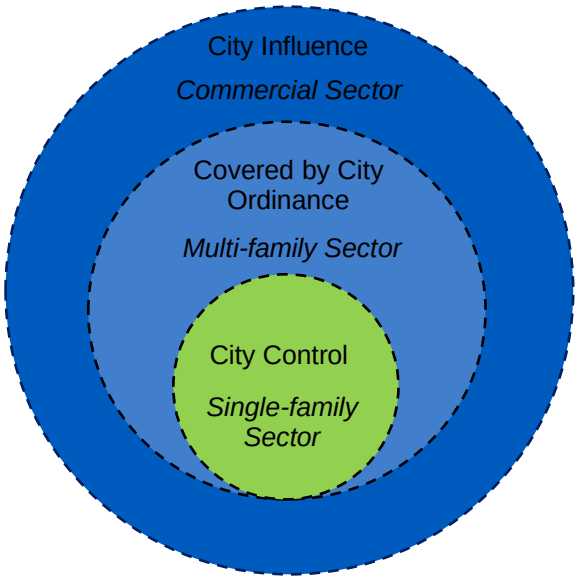

Table ES-2 shows the material management goals adopted by CECAP and how the LSWMP Update addresses them.

Table ES-2: Description of How LSWMP Update Addresses CECAP Goals

No.	Goal	Description of How LSWMP Update Addresses CEACP Goals
1	Actively promote source reduction, recycling and composting to the Dallas community.	Evaluates the City's education, outreach and compliance programs and provides recommendations on how to enhance its capabilities.
2	Develop a comprehensive green procurement plan.	Supports on-going cross-departmental efforts to develop a comprehensive green procurement plan by providing discussion about the impact of purchasing policy on source reduction efforts.
3	Improve solid waste, recycling and brush/bulky item collection frequency.	Evaluates the City's current brush and bulky item collection program and provides recommendations on approaches to scale separate collection on a City-wide basis.
4	Improve potential for electric waste collection vehicles.	Incorporates case studies on collection systems that have incorporated Battery Electric Vehicles (BEVs) provides considerations for implementing a BEVs on a pilot basis.
5	Update and implement the Zero Waste management plan.	Establishes realistic goals and metrics by sector (reference Table ES-3) and strategic approaches to achieve these goals.
6	Expand efforts to reduce illegal dumping by implementing recommendations identified in the Litter and Illegal Dumping Assessment Study.	Evaluates the City's Household Hazardous Waste (HHW) and electronics management programs, including a high-level evaluation of the progress made toward the recommendations of the Litter and Illegal Dumping Assessment Study.
7	Encourage the development of material markets focusing on creating new economic opportunities.	Interviewed the City's Economic Development Department and Chambers of Commerce as part of the stakeholder engagement effort and leveraged the statewide Recycling Market Development Plan (RMDP) to provide information on economic opportunities related to material markets.
8	Continue to capture gas and expand capacity from landfill for reuse and evaluate for City operations.	Evaluates the Landfill's gas collection system and provides recommendations to continue to expand capacity to beneficially reuse Landfill gas.
9	Adopt an ordinance to implement a City-wide organics management program.	In addition to the recommendations related to separately collecting brush and bulky items, the LSWMP Update evaluates the City's non-exclusive franchise ordinances and provides near- and long-term recommendations on increasing organics recycling from the commercial sector.

Table ES-3 summarizes of the updated goals for each generator sector including the goal type and metrics (e.g., recycling rate, program participation, etc.) and organized by 2030 goals and long-term Zero Waste goals (e.g., 2060).

Table ES-3: Updated Goals by Sector

Generator Sector	Single-Family	Multi-family	Commercial
Goal Type and Metrics	Recycling rate, capture rate, disposal per capita.	Program participation; reporting compliance.	Program participation; reporting compliance.
2030 Goals	35% recycling of organic waste by 2030. 60% paper waste by 2030. 35% reduction in waste landfilled by 2030.	90% reporting compliance and verification of entities covered under the Multi-family Recycling Ordinance (MFRO).	Expand Green Business Certification to increase participants year-over-year. 90% reporting compliance and verification from non-exclusive franchise haulers.
Zero Waste Goals	80% recycling of organic waste by 2050. 90% paper waste by 2050. 45% reduction in waste landfilled by 2040.	Analyze data to establish goals consistent with future program in place.	Analyze data to establish goals consistent with future program in place.

Guidance for Reading the LSWMP Update

The LSWMP Update is organized into three overall sections: (1) introductory sections, (2) program, policies and infrastructure sections, and (3) appendices. The introductory sections provide key context about the LSWMP Update, materials management trends, regulations, projected material management needs, and regional facilities and infrastructure. Program, policies and infrastructure sections are dedicated to discussion of a specific aspect of the City's material management system where each has unique characteristics requiring a customized approach based on varying generators, material types and customers. The appendices provide detailed information compiled and analyzed throughout the LSWMP Update development process.

Each section of the LSWMP Update is intended to be structured consistently, but customized based on unique characteristics. The introductory sections are structured to provide more general information about materials management, material projections and composition profiles, and regional infrastructure. The program, policy and infrastructure sections each begin with a current system review, evaluation of the recommendations from the 2011 LSWMP, relevant case studies, an evaluation of options and key findings and recommendations. Relevant feedback from the stakeholder engagement efforts precedes the evaluation of options but may be incorporated in other locations throughout the LSWMP Update as appropriate. Table ES-4 indicates how the LSWMP Update is organized, listing each section with a brief description of the content included.

Table ES-4: LSWMP Update Section Organization and Description

No.	Title	Description
Introductory Sections		
1.0	Overview, Goals and Objectives	Describes the purpose, key terms, updated goals and objectives, and guidance for reading the LSWMP Update document.
2.0	Planning Studies, Regulatory and Trends Review	Includes applicable planning studies and regulations, roles of government entities in solid waste management, and current solid waste management industry trends.
3.0	Planning Area Characteristics	Reviews the planning area characteristics such as population, economic projections, and projected material management needs.
4.0	Facilities and Infrastructure	Review of material management facilities and infrastructure in the North Central Texas region and presents information on public-private partnership approaches.
Programs, Policies and Infrastructure Sections		
5.0	Transfer Station System	Review of the operational capacity of the program, policy and infrastructure and evaluation of options to support continued strategic usage to meet near- and long-term goals and objectives established by the LSWMP Update.
6.0	Refuse and Recycling Collection	
7.0	Brush and Bulky Item Collection	
8.0	Landfill Operation	
9.0	Recycling Processing	
10.0	Organics Management	
11.0	Multi-Family and Commercial Sector	
12.0	HHW and Electronics Management	
13.0	Public Education, Outreach and Compliance	
Appendices		
A	Stakeholder Engagement Summary	Provides data and results of the stakeholder engagement efforts.
B	Regional Facilities Map	Map of the materials management, processing and disposal facilities in the region.
C	Transfer Station System Evaluation	Detailed technical evaluation of the City's transfer station system, refuse and recycling collection, and Landfill programs and operations.
D	Refuse and Recycling Collection Evaluation	
E	Landfill Operation Evaluation	
F	Implementation and Funding Plan	Presents a detailed implementation and funding plan matrix that indicates the priority, funding mechanism, difficulty of implementation, and responsible party for each key recommendation of the LSWMP Update.

Key Findings and Priority Next Steps

The following summarizes the most salient key findings and recommendations related to reaching the City's 2030 goals and long-term Zero Waste goals.

- **Continued Population Growth Strains Landfill Capacity and Emphasizes the Importance of Zero Waste Infrastructure.** The continued population growth of the Dallas-Fort Worth Metroplex area will continue to strain the materials management infrastructure and facilities in the region including landfills, Material Recovery Facilities (MRFs) and organics processing facilities (e.g., composting, anaerobic digestion). As landfills continue to fill at an accelerated rate and the regional disposal capacity declines, tonnages to the McCommas Bluff Landfill (Landfill) will likely increase and make the Landfill's airspace an increasingly valuable commodity for the City.

  These same regional market dynamics will correspondingly increase the importance to divert material from disposal through single-stream recycling and organics processing, as well as reuse and source reduction. Currently, the existing recycling capacity can handle the amount of material processed for recycling, but as recycling quantities increase from the single-family, multi-family and commercial sectors, there will be a need for additional infrastructure development throughout the region. Similarly, as diversion of organic material increases, there will be a need for the City to increase processing capacity via public-private partnerships.
- **Upgrade Critical Processing and Disposal Infrastructure.** To achieve the near-term 2030 goals and long-term Zero Waste goals, the City must upgrade its transfer station system to manage multiple material streams, engage in a long-term planning effort to maximize Landfill capacity, expand its organics processing capacity, and increase accessibility to HHW and electronics recycling locations.
- **Adjust Collection Vehicle Fleet Routing, Fuel Mix, and Fueling Infrastructure.** The City is in the process of developing a comprehensive re-route of collection vehicles to provide refuse and recycling collection service more efficiently and is considering expanding the use of natural gas vehicles (e.g., Compressed Natural Gas (CNG), Renewable Natural Gas (RNG)). To support these efforts, the City must expand the available fueling infrastructure for the collection vehicle fleet to support more natural gas vehicles. Additionally, the City should evaluate on consider piloting Battery Electric Vehicles (BEVs) as part of its collection fleet and evaluate the needs to provide the charging and maintenance requirements associated with these vehicle types.
- **Near-term Focus on the Single-Family Sector to Achieve 2030 CECAP Goals.** Since the City directly manages single-family sector materials, the LSWMP Update is able to establish specific

actions for the City to achieve the 2030 CECAP goals. To meet the 2030 goals and progress toward Zero Waste, the City must include organics in its recycling rate and make significant efforts to increase the amount of material recycled under its direct control (e.g., single-stream recycling, yard trimmings, brush). The City must implement separate collection of brush and bulky items to increase its recycling rate and leverage cross-departmental collaboration to expand education, outreach and compliance efforts to increase the capture rate of single-stream material (e.g., scaling the "Take-a-Peek" program City-wide).

- **Implement Mandatory Programs in the Long Term to Continue Progress Toward Zero Waste.** When voluntary programs have been shown to drive up the capture rate from the single-stream recycling program, the City should implement mandatory programs such as material bans and residential recycling requirements to increase the capture rate of single-stream recyclables from 60 to 80 percent. Mandatory programs should be considered after the City successfully implements voluntary approaches.
- **Renew Interlocal Agreement (ILA) with Dallas County to Support HHW and Electronics Management**. The City should extend the current agreement in a similar structure to the existing ILA on a one-year basis with multiple available extensions to ensure that the short-term needs of the City will be met but provides the flexibility to explore other options to minimize future costs as the City continues to grow. As the City considers options for the future of the Household Chemical Collection Center (HCCC) and Battery Oil Paint and Antifreeze (BOPA) programs, working with Dallas County to provide an outlet for HHW and electronics serves to minimize the amount of litter, illegal dumping, and prohibited set outs (e.g., tires) critical to sustaining public health and community cleanliness.
- **Maintain the Multi-family Recycling Ordinance (MFRO) and Continue to Increase the Percentage of Covered Entities in Compliance Year-Over-Year.** The City should continue to implement and increase the compliance from generators and haulers as part of the MFRO, monitoring new developments that come online and continuing to support affected entities with education and outreach. the City must leverage its cross-departmental permit review process to ensure new developments provide access to recycling.
- **Adjust Existing Requirements on Non-Exclusive Franchise Haulers.** Material generated by multi-family and commercial sectors represents the next major opportunity for the City to make progress toward Zero Waste. In the near-term the City should adjust franchise and permitted recycling hauler reporting requirements to include more comprehensive tonnage data reports including refuse, recycling and other divertible tonnages currently collected and the location with they are processed and disposed. After the requirements of franchise hauler reporting has been

implemented and analyzed, the City will determine the requirements for haulers to offer diversion services to customers and establish the enforcement mechanisms to ensure that this maintains a level playing field among franchise haulers. The City should consider incentivizing haulers to recycle by providing credits on franchise fees for haulers that recycle single-stream and/or organic materials.

- **Long-term Implementation of Commercial Recycling Requirements to Position the City for the Development of an Exclusive or Zoned Franchise System.** As a long-term consideration after adjusting the franchise and permitted recycling hauler requirements and ensuring that the available recycling processing capacity supports increased tonnage, the City should implement requirements to contract with franchise haulers to recycle based on the levels of material generation quantity, facility size (square footage) or business size (number of employees). Targeted commercial recycling requirements should be rolled out in a phased approach and would position the City establish an exclusive or zoned franchise system in the future.

The implementation and funding plan (reference Appendix F) prioritizes recommendations and next steps developed as part of the LSWMP Update. Table ES-5 presents the highest priority next steps for the City to continue working toward Zero Waste on a sector-by-sector basis for near-, mid- and long-term considerations. For the purposes of the implementation and funding plan, near-term is zero to three years, mid-term is four to eight years (e.g., through 2030), and long-term is eight years and beyond.

Table ES-5: Priority Next Steps by Sector

Timing	Infrastructure	Single-Family	Multi-family	Commercial
Near-term	• Upgrade transfer stations to separately manage organics and maintain high level of service for residential customers. • Develop composting facility as part of public-private partnership. • Develop long-term Landfill master plan to maximize site life.	• Increase capture rate from blue roll-cart program by enhancing education, outreach, and compliance efforts. • Implement separate collect and process yard trimmings and brush. • Renew interlocal agreement with Dallas County on short-term basis.	• Increase MFRO compliance from covered entities year-over-year. • Continue to support covered entities with education and outreach.	• Expand Green Business Certification Program • Leveraging cross-departmental efforts to provide technical assistance. • Require submission of more comprehensive and verifiable data including refuse, recycling and other tonnages including the location with they are processed and disposed.
Mid-term	• Explore purchase of additional CNG/RNG vehicles. • Install additional natural gas fueling stations. • Explore electric solid waste collection vehicle pilot project.	• Establish more convenient HHW and electronics collection • Work with County to develop permanent or satellite facility in southern areas of City.	• Monitor new multi-tenant developments that come online. • Leverage permit review process to ensure new developments provide accessibility to recycling.	• Adjust non-exclusive franchise ordinance to require haulers offer key services. • Implement targeted commercial recycling requirements in a phased approach.
Long-term	• Increase CNG/RNG electric vehicle fueling capacity.	• Implement mandatory recycling program (e.g., material bans, recycling requirements) to further increase capture rate. • Evaluate feasibility to expand capabilities of BOPA collection program.	• Continue implementation efforts and support haulers and apartment managers to increase compliance year-over-year.	• Implement zoned or exclusive franchise system with compliance mechanisms to ensure that this maintains a level playing field among franchise haulers.