





# Executive Summary



Since the early 1900s, managing streams of discards—especially from single-family homes in cities and towns—has been an essential responsibility of government. North Texans discard more than nine million tons of materials into area landfills each year and, according to state and regional data, recycle a mere 22%. The economic loss from this landfilling is tremendous; our region is literally burying tens of millions of dollars in easily recoverable materials each year. Additionally, landfilling organic waste creates significant levels of greenhouse gas emissions that contribute to climate change. Landfill methane pollution in the U.S. is second only to the oil and gas industry among human-made sources.

By reducing the volume of discards going into landfills in North Texas, we will not only save valuable resources and dollars, but we can also reimagine a more circular and efficient economy whose resources will be available for future generations.

This report updates the most recent research on discard streams in the North Texas region with case studies from local governments and individual businesses tackling the challenge of reducing and redefining waste. It serves as the latest snapshot of our region's efforts and lays out a roadmap to creating a regional Zero Waste economy.

## More Cities Seeking High Diversion Goals

Dallas became the first city in North Texas to commit to a Zero Waste Plan in 2013, setting goals to divert 85% of disposed materials from landfills by 2040. Recently, other cities have been exploring options for their long-range plans to include similar high-diversion goals and waste reduction programs.

The City of Fort Worth passed its 2017-2037 Comprehensive Solid Waste Management Plan in September 2017. The plan aims to divert 60% of discards from landfills by 2037 with a longer goal of diverting 80% by 2045. The City of Plano is working on a draft of its upcoming long-range plan, which is expected to include high-diversion goals. Previous short-term commitments have already set diversion goals as high as 50% in Plano. The City of Denton passed a long-range plan in 2016, which included a 5-year goal to reach 40% diversion. Significant changes in city staff and City Council in Denton have already led to changes in this plan, which might include long-term and more ambitious goals as a result.

Fort Worth passed a comprehensive recycling plan in September 2017 with a unanimous council vote



## Cities May Expand Commercial & Multi-Family Recycling



The Cities of Dallas, Fort Worth and Denton are working to expand recycling options for multi-family and commercial properties through public and private hauling arrangements.

All three cities have explored a commercial recycling service that provides the same recycling roll carts as those used to service single-family households. In Dallas, this program was successfully piloted in 2016 and is now being advertised to small businesses and multi-family dwellings throughout the city. The City of Fort Worth included a plan to start evaluating a “small commercial cart-based

recycling service” similar to Dallas in their Comprehensive Recycling Plan. The city began consulting with small businesses in late 2017.

The City of Denton offers recycling containers to businesses and has developed a system for billing small business customers on the Historic Denton Square. When multiple adjacent businesses apply for recycling services, the city will bill each customer a portion of the container volume. This system helps reduce the need for multiple roll carts and allows shared recycling for businesses with limited space.

These three cities are all working to provide comprehensive commercial and multi-family recycling through private hauling as well. Fort Worth is seeking to update its multi-family recycling ordinance to increase participation and reduce the number of exempt properties. Dallas and Denton are considering the implementation of similar universal recycling ordinances in the near future.

## Recycling Facility Infrastructure & Capacity is Increasing

Recycling continues to grow in residential and commercial sectors in DFW along with infrastructure and processing capacity. After a fire destroyed Republic Services recycling facility in Plano in December 2016, the city reached a new recycling agreement to construct a replacement facility with additional capacity. Balcones Resources made an announcement in early 2017 that they are building a new facility to process residential single-stream recyclables in DFW. Completion dates for both facilities are expected within two years.

The City of Dallas entered a 15-year contract to process their residential recyclables at the new FCC Environmental recycling facility at the McCommas Bluff Landfill in January 2017. FCC Environmental has already procured contracts with the Cities of Garland, University Park, Mesquite, and Rowlett as it works to add more processing volume and an additional 8-hour shift for its workers.

End markets for recyclables are continuing a trend toward localization which benefits job growth in DFW and throughout the state. CarbonLITE, a secondary plastics production company, opened a new facility in Dallas in January 2017. The company plans to process and convert up to 200 million pounds of post-consumer beverage

containers into new food grade plastics. While it is up to each recycling sorting facility to determine where to sell its secondary commodities, there are now options for most single-stream materials to be recycled in Texas. This includes many facilities in DFW. The general manager at FCC Environmental is committed to keeping commodity sales within the Southwestern U.S. as much as possible.



The new CarbonLITE facility in Dallas will be able to process up to 200 million pounds of PET plastic bottles each year, making it the second largest facility of its kind in the U.S.

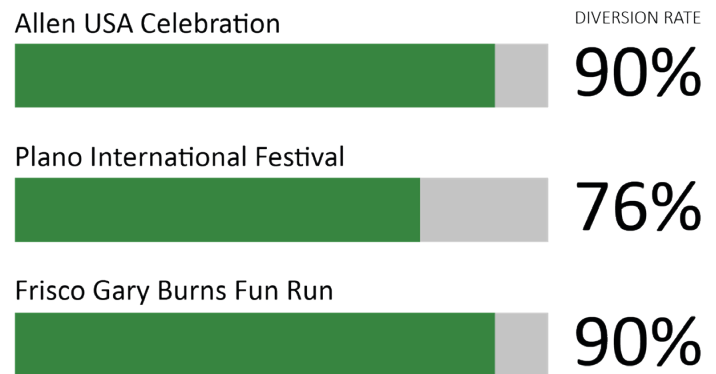
## Public Events Recycling Shows High Diversion Rates

Despite the unique set of challenges involved in organizing public events with effective recycling and composting programs, the Cities of Allen, Frisco, and Plano have organized highly successful annual zero waste events.

Since 2009, the Allen USA Celebration event has attracted between 75,000 to 100,000 participants while maintaining a landfill diversion rate of 90%. The majority of the material is composted, while recyclables constitute a smaller share. The City of Frisco hosts the annual Gary Burns Fun Run, which consistently diverts over 90% of disposed materials with an average attendance of several thousand visitors and registered runners. The Plano International Festival averages about 20,000 visitors and generates the least amount of waste per person. The Plano event has an average diversion rate of 76% over of the last five years.

All three of these events use volunteers to monitor collection bins, distribute education materials, and strictly minimize the procurement of non-recyclable materials.

### Highest Diversion Events in DFW



Represents average diversion rate over the past 5-years of available data

## Opportunities for Growth in Organics Composting

Organics diversion is still an area with great opportunity for growth in DFW. The region has several composting facilities that accept landscaping and brush materials to create mulch, but has fewer composting facilities that are permitted to take a greater diversity of post-consumer food waste. Post-consumer composting facilities are often desirable for restaurants and cafeterias, since they are capable of accepting food waste, including compostable utensils and plates.

The City of Plano continues to collect compostable food scraps from commercial entities and hauls them to a facility in Melissa where it

is combined with residential yard trimmings to produce Texas Pure Products compost. The City of Fort Worth is scheduled to pilot residential food scraps collection program starting sometime in 2018.

Meanwhile, the City of Dallas and some smaller municipalities are commingling the collection of residential bulk and brush waste, a practice that complicates the separation of organic matter that could otherwise be diverted. Dallas officials have made recommendations to end commingled collection and begin composting organic brush material in the near future. This one service change would increase the residential diversion rate from 20% to 30% citywide.

## Addressing “Soft Recyclables”

Another category of discards that is often overlooked includes clothing, other textiles, mattresses, toys, and similar consumer goods that are not recyclable in single-stream facilities. These materials can be diverted through resale in second-hand stores or repurposed for other uses.

While second-hand stores have accepted many of these materials for years, more recent curbside collection of these materials is gaining traction in DFW. Several DFW cities like Aubrey, Little Elm, Corinth, The Colony, Lancaster, Bedford, Haltom City, Richland Hills, and most recently Plano have adopted curbside collection for textiles. The City of Fort Worth will be exploring the collection of “soft recyclables” as early as 2018 in one or more potential partnerships with contractors.



Some DFW cities have begun addressing textile recycling through private curbside collection services

Recent data from TCEQ suggests that 17,000 jobs are already supported by recycling and resource recovery operations statewide. Data from the Tellus Institute suggests that effective diversion programs could add 23,000 jobs in DFW alone.

## Recommendations

Zero waste policies and diversion programs hold real promise for North Texas. In addition to conserving natural resources and preventing pollution, recycling industries also create jobs and economic activity. The most recent data released in September 2017 from TCEQ suggests that 17,000 jobs are already supported by recycling and resource recovery operations statewide. Data from the Tellus Institute suggests that effective diversion programs could add 23,000 jobs in DFW alone.

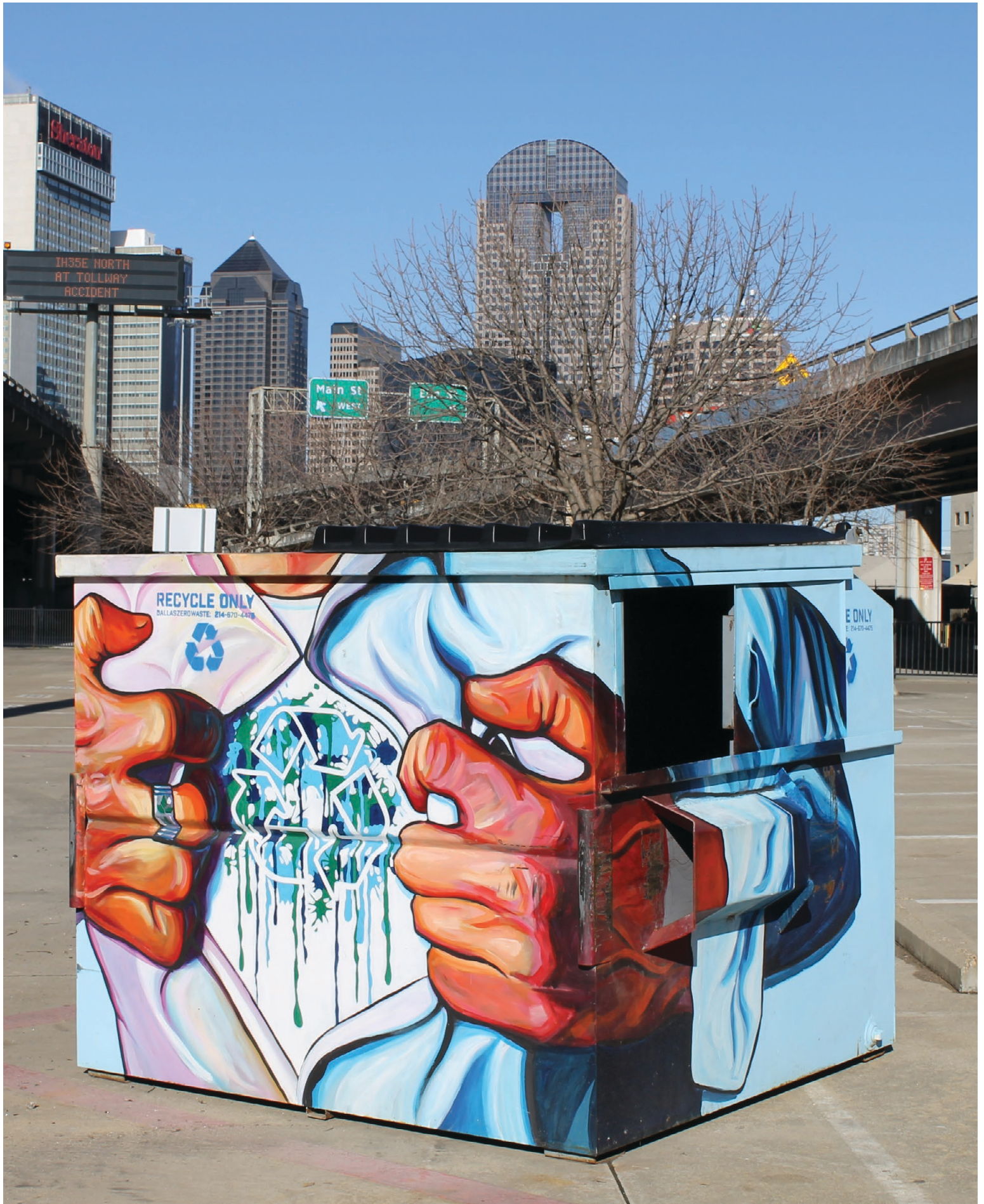
It is important for cities to move toward universal recycling and diversion programs in addition to improving their existing services in single-family neighborhoods. Cities in Texas are significantly

increasing their diversion rates by launching programs that expand recycling and composting into areas beyond single-family neighborhoods. DFW communities should learn from these policies and adopt the best programs to replicate these successes.

Municipalities in Texas have significant power in the arena of diversion, and so they have the ability to implement policies and programs that fit each region or locality. Ultimately, effective participation in changing the culture of wasting must involve education, good policy, and proper enforcement. It is essential that policy makers and advocates focus on addressing discards with a holistic approach.







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## More Cities Seeking High Diversion Goals

Around the time Dallas became the first city in North Texas to commit to a Zero Waste Plan, other cities started exploring more ambitious programs and policies to address the growing volume of materials going to area landfills. Some cities are implementing long-term solid waste management plans for the first time; others are revising and updating older plans with a stronger focus on resource conservation and diversion, rather than simply providing options to dispose of waste. This section will explore a few key cities that are seeking high diversion goals in North Texas.

### City of Fort Worth

After more than two years in development, the City of Fort Worth passed a 20-year resource conservation plan in September 2017. The plan contains similar timelines and diversion goals to the City of Dallas Zero Waste Plan. It aims to divert 60% of discards from landfills by 2037 with a longer goal of diverting 80% by 2045. The first five years of the plan are outlined with detailed policy goals, expenses, and timelines. Subsequent five-year plans will be outlined in detail, using input from city staff, residents, advocacy groups, and City Council, at scheduled five-year intervals.<sup>1</sup>

Short term policy measures in Fort Worth's 2017-2037 Plan include: starting a curbside composting pilot program for food-scrap and organic material, curbside collection for "soft recyclables" like clothing, furniture and toys, and the development of a universal recycling ordinance for commercial businesses. These initial policy goals would have an impact on the areas of greatest waste generation—namely, organic materials from households and recyclable materials from commercial businesses.

According to a Fort Worth waste characterization study conducted by GBB in 2014, up to 30% of residential trash, after recycling, is composed of compostable food scraps. Combined with other compostable materials, about half of all residential waste after recycling could be composted.<sup>2</sup> At present, Fort Worth residents have limited options for composting this category of material. Either residents must start a compost pile in their backyards or request a private hauler to collect the material. Only one private hauler, Cowboy Compost, is collecting organic material from single-family neighborhoods on a limited basis. The composting pilot, which is expected to begin in 2018, would test compost collection in a sample of neighborhoods to examine factors such as logistics, participation, and cost. The City plans to expand the pilot to a citywide or subscription service, barring any issues with the pilot program.



*Fort Worth passed a comprehensive recycling plan in September 2017 with a unanimous council vote*

### City of Plano

The City of Plano is working on a draft of its upcoming long-range plan, which is expected to include high-diversion goals. The city is working with a professor and zero waste advocate at the University of California, Los Angeles to draft the plan. While the specific contents of the upcoming recycling plan are unknown at the time of writing this report, the plan is expected to include strong diversion goals and programs, similar to past initiatives in the city.

Plano has already attracted major businesses and corporate headquarters that have strong environmental standards and objectives. One of the corporate institutions, Toyota America HQ, has expressed interest in helping the city create a more ambitious solid waste plan. According to city staff in Plano, Toyota approached them before the company's HQ relocation about collecting food scraps from local businesses with the intention starting an on-site composting project meant to supply hydrogen fuel for their fuel cell technology. This project is still awaiting funding and approval at the Toyota Headquarters, but this has not stopped the company from striving to divert as much waste as possible from its own operations. Toyota has recycling and composting bins throughout their massive campus and began tracking their diversion numbers in December 2017. The campus also touts a LEED Platinum certification and 99% of construction discards were recycled.<sup>3</sup>



*New Toyota Headquarters Campus in Plano is certified LEED Platinum. Construction for the project, pictured above, diverted 99% of discarded materials.*

### City of Denton

The City of Denton passed a long-range plan in 2016, under the leadership of its previous solid waste director. Significant changes in city staff and City Council in Denton have already led to changes in this plan, which might include more ambitious goals as a result.

In September, Denton City Council voted to discontinue a questionable program to mine the city's landfill, a major component of the long-range plan.<sup>4</sup> In November, Denton City Council held a work session meeting to discuss the possibility of expanding recycling to more multi-family and commercial businesses. City staff offered recommendations on research and policy action, which may include a universal recycling ordinance (see next section on pg 10). This policy objective was not included in the 2016 plan, which according to the new solid waste director, Ethan Cox, may be rewritten to reflect the city's new strategic objectives for resource management.



# Cities May Expand Commercial & Multi-Family Recycling

## City of Dallas

In 2016, the City of Dallas piloted a commercial recycling service that provides the same recycling roll carts as those used to service residents in single-family homes. The initial success of the pilot led to an expansion of the program in 2017, at which time the city started advertising the program to businesses through the mail. Commercial businesses can now sign up for both trash and recycling collection through the same bill as their municipal water service.<sup>5</sup> The program is offered to small commercial properties that need fewer than ten recycling roll carts per property and gives properties with limited space for containers to provide comprehensive waste diversion services.

Still, many larger businesses and multi-family properties in Dallas lack adequate services for recycling. Gathering accurate data on the extent of this problem has proved difficult for city officials. TCE Fund's previous publication of this report used the only available data on recycling in Dallas multi-family properties and suggested that between 28 and 44 percent of properties had recycling services. However, low survey response rates and potential bias from unreliable and inconsistent methodologies put those results in question. In January 2017, the City of Dallas included a question

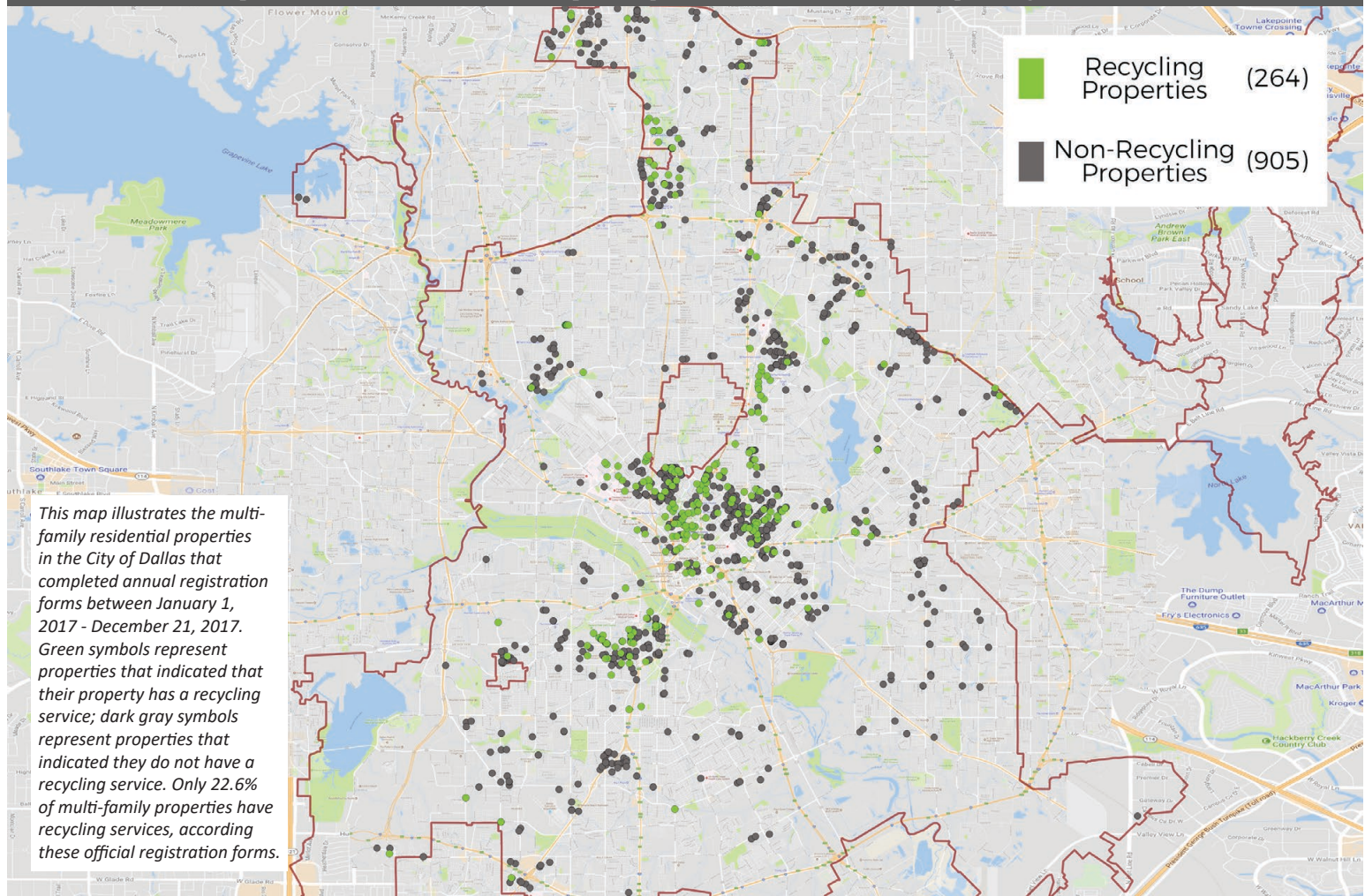
about recycling on all annual registration forms for multi-family properties to get a better picture. Of 1,170 multi-family properties in Dallas that submitted annual registration forms in 2017, only 22.6% indicated they had a recycling program. This new data suggests that far fewer multi-family properties are recycling than the city officials thought previously. The map below illustrates the properties that do and do not offer recycling services, according to code compliance registration forms submitted in calendar year 2017.

City staff are preparing for the introduction of a Universal Recycling Ordinance that would require all businesses and multi-family properties of a certain size to provide recycling services. This proposed ordinance has gathered increasing momentum with council members and Dallas residents. Local television and print news sources have pointed out that nearly five years have passed since the city adopted its Zero Waste Plan and only a few improvements have been made to raise commercial recycling participation.<sup>6,7,8</sup> The recycling ordinance will likely go before City Council in early 2018.

## City of Fort Worth

The City of Fort Worth included a plan to start evaluating a "small commercial cart-based recycling service" similar to Dallas in their

### City of Dallas Multi-Family Properties Access to Recycling Services





## Cities May Expand Commercial & Multi-Family Recycling

Comprehensive Recycling Plan by the end of 2017.<sup>9</sup> Since the plan passed in September, city staff visited a handful of small businesses that already receive roll-cart trash services to discuss options for recycling. The city will need to pass an ordinance to begin providing recycling services to these businesses.

The Fort Worth Recycling Plan also calls for updating the city's multi-family recycling ordinance that went into effect in January 2014. Areas for improvement include: reducing the number of properties that opt-out of providing recycling through exemptions, assisting with recycling education, and including properties with fewer than eight units.<sup>10</sup> The city plans to explore a universal recycling ordinance for non-residential commercial properties in 2018.

### City of Denton

The City of Denton also offers recycling containers to businesses and multi-family complexes. Unlike the program in Dallas, this one includes servicing of businesses of all sizes with recycling carts and dumpsters. In order to address recycling for smaller adjacent properties, such as those on the Historic Denton Square, the city developed a system for billing customers a portion of a shared container's volume. This system helps reduce the need for multiple roll carts and allows shared recycling for businesses with limited space. At present, about 42% of apartments in Denton have recycling, while about 5% of non-residential businesses have the service.

As mentioned in the previous section, Denton City Council is con-

sidering options for expanding these services more universally. On September 11, 2017 the Denton City Council Committee on the Environment met with Solid Waste staff to discuss the city's solid waste ordinances and policies.<sup>11</sup> During this meeting, the council committee recommended that staff update the Denton Development Code to require future commercial development to have recycling access. The committee also expressed interest in developing a universal recycling ordinance to apply to existing properties.

During a public City Council meeting on October 17, Council Member Keely Briggs motioned to hold a work session meeting on commercial and multi-family recycling, citing written correspondence and interest from her constituents:

"I received... citizen letters encouraging our recycling programs and asking us to include businesses and multi-family [properties]... We have been talking about that in the Committee on the Environment and I would like to request a work session [on that issue] for council."

- Keely Briggs, Denton City Council on October 17, 2017<sup>12</sup>

The work session meeting was held on November 6, and city staff outlined potential policy steps and research. Within a few weeks, the City released an online survey to residents regarding the city's Sustainable Denton Plan, which included questions on recycling. The city plans to finalize updates to their 2030 Development Code in February 2018, which will likely include on-site recycling requirements for new commercial and multi-family properties.<sup>13</sup>

## Private Industry Driving New Technology

As local policies and market forces drive more recycling in the commercial sector, private businesses are investing in technology to gain a competitive edge.

For example, RoadRunner Recycling, a private waste reduction firm, is working to expand its business in DFW. The company works in several U.S. states to help small and medium sized businesses reduce the amount of waste they are generating, sets them up with appropriate source-separated recycling, and then utilizes crowd-sourcing and sharing economy principles to match businesses with a network of trucks already on the road. GPS-based logistics services have boomed in popularity for ride-sharing and delivery industries. These services may hold promising results for waste reduction and recycling efforts in DFW.

Some recycling sorting facilities have installed new robotic technology on their sorting lines to help separate materials. The new FCC sorting facility in Dallas uses "optical sorters," robotic machines with sensors that detect specific properties of plastic materials and use a burst of air to separate materials that pass along conveyor belts.<sup>14</sup> FCC Environmental was awarded "Best Recycling Facility of the Year" in October 2017, thanks in part to technological innovations that enabled the facility to accept additional types of materials and produce higher quality secondary commodities.<sup>15</sup>

Similar innovations in technology at the Republic recycling facility in Fort Worth allow for recycling new products like aluminum foil and



New recycling sorting technology, similar to the robotic machine pictured above, is being used to help sort materials at the new MRF in Dallas.

beverage cartons.<sup>16</sup> Area sorting facilities are still working to address the "Amazon effect," a growing issue in which small cardboard shipping boxes are incorrectly combined with mixed-paper. This reduces the value of mixed paper bales, and simultaneously prevents sorting facilities from selling these boxes along with other cardboard, a much more valuable commodity, without additional labor.<sup>17</sup>

# Despite Challenges, Recycling Infrastructure & Capacity is Increasing

## New Single-Stream Sorting Facilities

The recycling industry in DFW is supported by a growing number of local sorting and processing facilities. The resiliency of the industry was tested in December 2016, after a fire destroyed Republic Services recycling facility in Plano. The city was able to restore residential recycling services within two weeks by sending materials to a nearby facility in Garland. This year, Plano reached a new recycling agreement with Allied Waste Services to construct a replacement facility that will have additional processing capacity for more volume.<sup>18</sup>

Balcones Resources made an announcement in early 2017 that they are building a new facility to process residential single-stream recyclables in DFW. Balcones operates one facility in Dallas that takes commercial material; the new facility will be their first to accept a greater diversity of residential materials in DFW. Completion dates for both of these new facilities are expected within two years.



*The new FCC Environmental recycling facility in Dallas processes all materials in the Southeastern United States as much as possible.*

The most recent recycling sorting facility in DFW finished construction in December 2016, just one year after the City of Dallas signed a contract to enter a 15-year public-private partnership with the Spanish firm, FCC Environmental. The firm constructed a new facility with state-of-the-art recycling technology, and they began accepting all single-family residential recyclables from the City of Dallas in January 2017. Additional recycling capacity at the FCC facility is being filled by neighboring cities, like Garland, Rowlett, University Park and Mesquite. The facility is expected to process 80,000 tons in its first year, but it can double its capacity when it fulfills its goals to increase the volume of collected materials, along with operating hours and employment.<sup>19</sup>

## Localizing the Recycling Process

The Chinese Government is working to implement new, more restrictive import policies, called National Sword, for recyclable materials. This move is sending signals to U.S. recycling markets

that they may soon reject an overwhelming majority of recycled fiber and plastics that do not meet very high standards. China has not renewed licenses to import paper and cardboard products, and recycling markets in the U.S. and Texas are already responding to these uncertainties. For example, many regional paper mills that process paper and cardboard from the DFW area have reached capacity as sorting facilities are seeking alternatives to shipping overseas. Lower than average prices continue to plague certain materials, especially low grade “mixed paper” and plastics.<sup>20</sup>

Material recovery facility operators are working simultaneously to curb contamination and find ways to keep their baled materials moving out the door to processors. Some facilities are planning to revisit their municipal contracts upon expiration to better share responsibility of keeping the materials clean. One method of doing this would be to increase the fee on cities to process each ton of material, while giving cities a larger share of the revenue from sold materials.<sup>21</sup> This incentivizes cities to educate residents to recycle correctly in order to maximize the revenue they earn from recycled material. The cities of Plano and Fort Worth are undergoing contract changes within the next year and city officials have expressed concerns that new processing and revenue-sharing agreements may be less profitable.

While these challenges are certainly testing the resilience of recycling markets locally and nationally, they are also creating new opportunities for localized processing. End markets for recyclables are continuing a trend toward localization which benefits job growth in DFW and throughout the state.

CarbonLITE, a secondary plastics production company, opened a new facility in Dallas in the Summer of 2017. The company plans to process and convert up to 200 million pounds of post-consumer beverage containers into new food grade plastics. This facility effectively doubles the capacity for the largest plastics processor in the country.<sup>22</sup>



*The new CarbonLITE facility in Dallas can process up to 200 million pounds of PET plastic bottles each year, making it the second largest facility of its kind in the U.S.*

While it remains to be seen how tighter regulations in China will ultimately affect the industry, there are now options for most single-stream materials to be recycled in Texas. This includes many facilities in DFW with which many regional sorting facilities are doing business.



## Public Events Recycling Shows High Diversion Rates

Despite the unique set of challenges involved in organizing public events with effective recycling and composting programs, the Cities of Allen, Frisco and Plano have organized highly successful annual zero waste events. All of these events use volunteers to monitor collection bins, distribute education materials, and strictly minimize the procurement of non-recyclable materials.

### Allen USA Celebration

Since 2009, the Allen USA Celebration event has attracted 75,000 to 100,000 participants while maintaining a landfill diversion rate of 90%. The majority of the material is composted, while recyclables constitute a smaller share. Composting in public spaces presents a unique challenge, since contamination must remain very low for the material to be useful and marketable. Event organizers have worked to keep out the most likely contaminants, like plastic utensils, by planning and working with vendors to restrict the introduction of single-use products. The private solid waste company, Community Waste Disposal, sponsored the event by providing the collection services and compostable materials for vendors.<sup>23</sup>

Successful zero waste events often rely on the labor of volunteers or event staff to provide constant education and monitoring of contamination. The Allen USA Celebration organizers trained 75 volunteers to work in shifts in 2017. These volunteers incentivized “good recycling behavior” by distributing small giveaways and Recycling Ranger badges to attendees; they also collected litter and sorted recycling and compost containers as necessary.



Allen USA Celebration is the largest annual zero waste event in the State of Texas

### Plano International Festival

The Plano International Festival has averaged a diversion rate of 77% over the last six of its thirteen years. Annual attendance can range from 8,000 to 23,000. The event has several food truck vendors, music and dance performances, and many participating organizations that host family activities.



Plano International Festival celebrates cultural diversity, music, art, dance and food. For several years, the event has been highly successful in reducing waste.

Similar to the Allen USA Celebration, the success of zero waste efforts at the annual Plano event is supported by partnerships with the City and a recycling company, rigorous education and planning with vendors, restrictions on single-use plastic and non-recyclable materials, and the engagement of many volunteers to keep track of contamination and to educate attendees.

In 2016, the event reached its highest diversion rate of 86% with about 20,000 attendees. On average, each attendee generated about 1.2 pints of discards, of which 73% and 13% was recycled and composted, respectively.

The Plano International Festival was awarded the 2009, 2011, 2012, and 2015 City of Plano Environmental Star or Excellence Award, Second Place for the Keep Texas Beautiful 2012 Civic Organization Award, Green Source DFW Environmental Leadership Award 2012 Finalist recognition, and the 2014 Community Diversity Leadership Award.<sup>24</sup>



Plano International Festival “Zero Waste Ambassadors” are the volunteers that help educate attendees on waste reduction each year. Photo credit: Andrew Sethi.



(Continued)

## Public Events Recycling Shows High Diversion Rates

### Gary Burns Fun Run in Frisco



The Gary Burns Fun Run in Frisco is an annual fundraiser and zero waste event organized by the City of Frisco's Environmental Services. The community race benefits the Frisco Education Foundation, a nonprofit that awards scholarships to graduating Frisco ISD students every year.<sup>25</sup>

Similar to the events in Allen and Plano, the Frisco event enlists volunteers to supervise containers for discards (known as Zero Waste stations) and educate visitors during the event. Since 2012, the event has successfully diverted more than 90% of discards through recycling and composting programs. The event averages a registered attendance of 4,000 participants in the race, with many more visitors and bystanders.

The most recent event in 2017 saw a drop in diversion rates. According to an event organizer, this was largely the result of vendors that did not conform to the event's zero waste policies. Many of them introduced non-recyclable materials, including food samples that were not readily compostable.

Organizers from all three of the events shared a common sentiment that vendors must be held to strict standards with regard to the products and packaging they introduce to zero waste venues. Providing opportunities for vendors and securing their commitment to zero waste can often be the most challenging aspect of organizing these events. The Gary Burns Fun Run organizers are working to incorporate changes to their planning and outreach to maintain the highest diversion rates of any public event in North Texas.

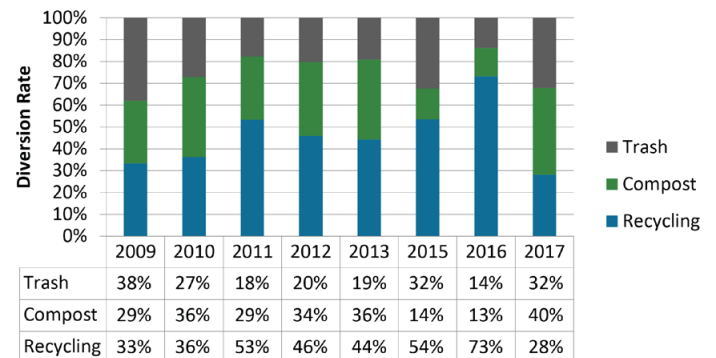


Trained volunteers are essential in making the Gary Burns Fun Run a zero waste event each year.

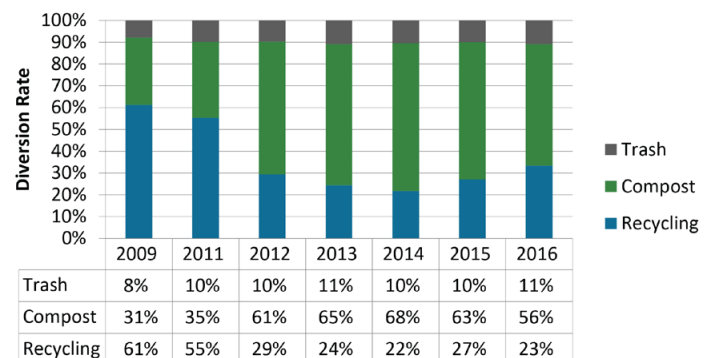
### Comparing High Diversion Events in DFW

The three charts below illustrate the self-reported diversion data from the three highest diversion events in DFW. Event organizers provided as much data as possible from each annual event. Texas Campaign for the Environment Fund compiled this information in the following charts.

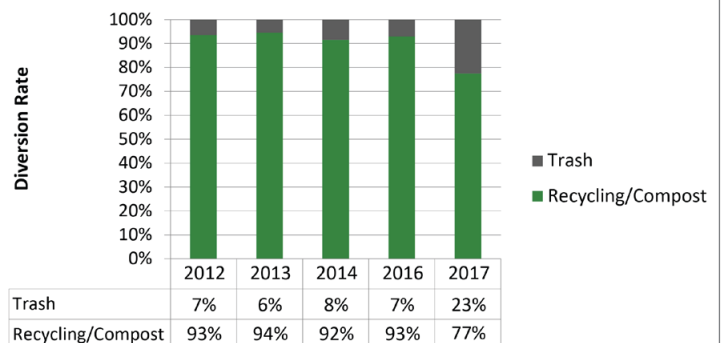
#### Plano International Festival Diversion Rate



#### Allen USA Celebration Diversion Rate



#### Frisco Gary Burns Fun Run Diversion Rate





## Opportunities for Growth in Organics Composting

Organics diversion is still an area with great opportunity for growth in DFW. The region has several composting facilities that process brush, yard trimmings, and manure, but fewer facilities that are permitted to take a greater diversity of organic materials, including food waste. Some regional composting facilities have state registration to work with preconsumer food waste generators, including food distributors and groceries stores. Other facilities have undergone a longer state permitting process to accept all types of food waste, including food from restaurants, public events, and other post-consumer food waste sources. As with recycling, composting programs require education and enforcement to be successful.

Facilities that only compost vegetative material, clean wood, paper, and manure are exempt from TCEQ permit, registration, and notification requirements.<sup>26</sup> These facilities can process the region's largest diverted feedstocks of organic materials, much of which is supplied through municipal arrangements to collect residential brush and yard trimmings.

Composting facilities can produce a variety of products using different combinations of materials and feedstocks. For example, mulches can be created from brush and yard trimmings. Different sizes, colors, and qualities of mulches can be created depending on the equipment, materials, and colorants used. When mulch is combined with more nitrogenous material—often food scraps, animal manure, or even sewage waste—microorganisms can produce the beneficial soil amendment commonly referred to as compost. When added to soil, compost can greatly increase carbon sequestration and water conservation.<sup>27</sup>



Living Earth HQ facility in Dallas composts massive piles of food and brush. Compost piles are “turned” every few days to speed up decomposition. Photo Credit: TCE.

Many large cities in DFW, including Plano, Fort Worth, McKinney, Richardson, Denton, and Frisco, have programs to collect and divert brush and yard trimmings materials from residential neighborhoods. One notable exception is the City of Dallas, which commingles the collection of residential bulk and brush waste, a practice that complicates the separation of organic matter that could otherwise be diverted. Dallas officials have made recommendations to end commingled collection and begin composting organic brush material in the near future. This service change would increase the

residential diversion rate from 20% to 30% overall. It is also estimated to save the city between \$2.2 and \$3.9 million and divert up to 90,000 tons of material annually.<sup>28</sup>



Large machines are used in “wind row” style composting at the Texas Pure Products facility in Melissa. Photo credit: GreenSource DFW.

Food scrap collection is an emerging market in DFW that has great potential for growth. The City of Plano continues to collect compostable food scraps from commercial entities and hauls them to a facility in Melissa where it is combined with residential brush materials to produce Texas Pure Products compost.<sup>29</sup> Large volumes of low-contamination food scraps can be collected from preconsumer generators, and the state registration process for preconsumer composting facilities is relatively simple and inexpensive. For these reasons, preconsumer food composting is considered the “low-hanging fruit” for composters.

Post-consumer composting presents a different set of challenges for the industry. Plastic and glass contaminants are the biggest concern, especially thin-film plastic bags and plastic cutlery. A successful post-consumer composting program must include education and thoughtful participants to prevent contamination. The City of Fort Worth is scheduled to pilot residential food scraps collection program starting sometime in 2018.<sup>30</sup> Citywide expansion of the program will depend on success of the initial pilot. While more challenging than preconsumer composting, citywide residential programs can also be successful as indicated by the Cities of Austin, San Antonio, and scores of cities across the U.S.<sup>31 32</sup> According to a national survey from December 2017, more than 5.1 million U.S. households have access to curbside food composting.<sup>33</sup>

Two private companies partnered in Fort Worth this year to test compost material collected from residents and small businesses at the city's Southeast Landfill (SELF). Living Earth, a composting and mulching company with several locations in DFW, already operates a large-scale residential mulching operation at the landfill. The company is experimenting with material brought in by Cowboy Compost, a small business startup that collects food scraps and compostable material in small buckets from a growing list of clients in Fort Worth.<sup>34</sup>

## Addressing “Soft Recyclables”

Materials such as clothing, other textiles, mattresses, toys, and similar consumer goods are not recyclable in single-stream facilities. Often, these materials are incorrectly included in single-stream collection, which leads to contamination and loss of profit. These materials, referred to as “soft recyclables,” can be diverted through resale in second-hand stores or repurposed for other uses.



While second-hand stores have accepted many of these materials for years, more recent curbside collection of some of these materials has been franchised in Aubrey, Little Elm, Corinth, The Colony, Lancaster, Bedford, Haltom City, Richland Hills, and most recently Plano through a company called Simple Recycling.<sup>35</sup>

In its first year doing business in Plano, Simple Recycling averaged monthly collections of 10,000-20,000 pounds of textiles, shoes, and other items from residents each month. The free service provides residents with orange bags, that can be filled with assorted recyclables and set out for curbside collection. The City of Fort Worth will be exploring the collection of “soft recyclables” as early as 2018 in one or more potential partnerships with private contractors.<sup>36</sup>

End markets for soft recyclables depend on the material type and quality. For example, higher quality textiles are sorted and sold to resale stores, while lower quality materials may be cut up and used as rags in auto shops or mining operations.

## Recycling Advocates Pushing Elected Officials

Grassroots advocacy has been a critical strategy to expand recycling programs in DFW since the very first municipal programs in Dallas and Arlington were approved. Recycling advocates, including staff members with Texas Campaign for the Environment, helped generate over 90,000 petition signatures to Dallas and Arlington officials in the early 1990s, encouraging officials to provide curbside recycling programs to residents.<sup>37</sup> After both cities implemented successful recycling programs, many other cities began to follow suit. Now, residential curbside recycling programs exist in almost every city in the DFW region.

Grassroots advocacy played a role in directing Dallas and Fort Worth officials to create the most ambitious recycling plans in the region. Organizers with Texas Campaign for the Environment, Greater Fort Worth Sierra Club, and Zero Waste Fort Worth have contacted tens of thousands of area residents to help advance multi-family and commercial recycling.

While most of these advocacy efforts have worked to advance new recycling programs, one campaign in the rural City of Lucas is working to reestablish a curbside recycling program after it was cancelled in October 2017.

Barnes Waste Disposal, the private company that provided optional curbside recycling as well as trash services to residents since 2003, notified Lucas officials in early 2017 that they were planning to cancel the recycling service. City officials considered a handful of other private hauling companies, but decided to sign a contract with Barnes as their trash hauler, despite losing their curbside recycling service. The new contract included a provision that Barnes would provide a once-a-month drop-off at City Hall for recycling, instead of the more convenient, weekly curbside collection.

When Lucas residents received a letter from Barnes about the loss of service, one concerned resident, Victoria Howard, began



*Photo of Save Lucas Recycling event in which organizers for Texas Campaign for the Environment trained high school students how to canvass their neighborhoods.*

researching options to bring back a similar service. After a couple failed appeals to City Hall and Barnes, Howard started a local advocacy group, Save Lucas Recycling, to apply pressure to her city officials.

Howard reached out to Texas Campaign for the Environment to learn about grassroots organizing and door-to-door canvassing tactics. The groups co-hosted a couple of training seminars to teach residents and students from the local high school environmental club how to distribute a petition and create a letter-writing campaign to city officials.

In their on-going campaign, canvassers and volunteers continue to collect hundreds of petition signatures towards their goal. They aim to not only to reinstate curbside recycling, but to actively improve the contamination issues prevalent in their community’s recyclables. Save Lucas Recycling volunteers strive to speak and help educate local students in effective ways to recycle, limit contamination, and reduce landfill waste.



## Recommendations

The most recent state data on recycling supports the assertion that waste diversion programs and policies contribute positively to economic and job growth in Texas. At present, 17,000 jobs are supported by recycling and resource recovery operations statewide.<sup>38</sup> This figure is expected to grow considerably as recycling programs continue to expand and divert greater volumes from waste streams.<sup>39</sup>

Municipalities in Texas have significant power in the arena of diversion, and so they have the ability to implement policies and programs that fit each region or locality. It is essential that cities move toward universal recycling and diversion programs in addition to improving their existing services in single-family neighborhoods. Regional data indicates that commercial, multi-family, and construction and demolition discards account for about two-thirds of landfilled materials in the region. Convenient options to recycle these materials are still in their infancy, but promising policies and incentives have proven effective in diverting these highly-recyclable discard streams.

Many municipalities are missing opportunities to divert recyclable

and compostable resources that nearby cities have already addressed. DFW communities should learn from these policies and adopt the best programs to replicate these successes.

Particular areas for improvement include construction and demolition diversion programs, universal recycling requirements for businesses and multi-family properties, composting programs for residential brush and commercial landscaping materials, composting programs for pre- and post-consumer food scrap materials, and convenient options for diverting “soft recyclables.” Programs and policy actions like these would help spur capital investment to address a large majority of the estimated nine million tons of wasted materials that end up in area landfills each year.

Ultimately, effective participation in changing the culture of wasting must involve education, good policy, and proper enforcement. This cultural shift—from a linear to a more circular consumption model—has and should continue to involve policy makers, advocacy groups, businesses, and recycling industry representatives to maximize the economic and environmental benefits of a Zero Waste economy.



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