



ENVIRONMENTAL COMMISSION AGENDA:

June 7, 2023

Municipal Building, 15 South College Avenue, first floor conference room

7:00 PM

Jon Ralinovsky, Chair

Chantel Raghu, Vice-Chair and City Council Representative

Jason Bracken, Planning Commission Representative

Justin Fain

Peggy Branstrator

Steven Elliott

Heather Barrett

David Treleaven, Environmental Specialist

Approval of Agenda

Approval of Minutes

1. Approval of Minutes from May 3, 2023 meeting

New Business

1. IES Professional Service Project: Investigation into Apartment Complex Recycling
2. Electrical Aggregation Contract Renewal
3. Ohio House Bill 507
4. Citizen's Climate Pledge
5. City Council, Planning Commission, Oxford Parking and Transportation Advisory Board, and Climate Action Steering Committee Activities

Old Business

1. Pilot Pollinator Garden and Praire Naturalized Areas at Oxford Community Park
2. Recycling Options for Oxford Public Events
3. Urban Forestry Updates



4. Monthly Monitoring of Closed Landfill Passive Gas Vent Emissions and Gas Flare Update
5. Agenda Items for Wednesday, July 5, 2023 Meeting

Adjournment

MINUTES: Environmental Commission

Date: May 3, 2023

Location: Municipal Building, 15 South College Avenue, first floor conference room

Time of Meeting: 7:00 p.m.

Members present: Environmental Commission members in attendance at the Wednesday, May 3, 2023 meeting were: Chair, Mr. Jon Ralinovsky; Vice-Chair and City Council Representative, Ms. Chantel Raghu; Ms. Heather Barrett, and Ms. Peggy Branstrator. A quorum was present. Mr. Steven Elliott had previously informed the Commission that he would not attend the May meeting.

Staff present: David Treleaven, Environmental Specialist, Staff Liaison

Public present: Mr. Jared Nally from the Miami University Institute for the Environment and Sustainability (IES).

Approval of Agenda

Motion: Ms. Barrett
2nd: Ms. Branstrator
Vote: Unanimous

Approval of Minutes for the April 5, 2023 Meeting

Motion: Ms. Barrett
2nd: Ms. Branstrator
Vote: Unanimous

Old Business: None

New Business:

A) IES Professional Service Project: Investigation into Apartment Complex Recycling

Mr. Nally provided a status update on the IES professional service project (PSP) entitled “Recycling Program Recommendations for Commercial Housing Properties in the City of Oxford.” The PSP student team had made its final presentation regarding the project on April 17, 2023. Mr. Ralinovsky and Mr. Treleaven were in attendance at the presentation. Mr. Nally indicated that the PSP team was still finishing the final report detailing the PSP. At the latest, the Environmental Commission should receive the final report by May 15, 2023. Mr. Nally indicated

that a municipal ordinance mandating apartment complex recycling appeared to be the primary mechanism that needed to be in place, based upon the case studies conducted by the PSP team. Education was a major component for the case study communities with successful apartment recycling programs, as were periodic waste audits, and public services by the communities to assist the property management. In addition to a mandating ordinance, the PSP is recommending Oxford increases public education and combines its public education with MU's on-campus recycling education, to create a continuity of the educational messages the students are receiving regarding recycling while on-campus.

B) Electrical Aggregation Contract Renewal

Oxford's existing electrical aggregation contract expires at the end of 2023. The contract (currently with Energy Harbor) allows citizens to purchase electricity from green, renewable sources, or opt out of the electrical aggregation program, and receive electricity generated from convention methods. Commissioners were curious if there were other criteria other than pricing that were considered when Oxford selects a provider of renewable electricity. Mr. Ralinovsky indicated that he would contact the City Manager, Mr. Doug Elliott, and offer the Commission's assistance in the aggregation selection process, as well as inquire about the selection criteria utilized. Ms. Raghu indicated she would first contact Mr. Elliott as a member of City Council, and alert him to the Environmental Commission's questions and offer of assistance.

C) United Nation's Climate Neutral Initiative

Ms. Branstrator had previously requested that the Commission consider the United Nation's Climate Neutral Now Program (the Program). Specifically, Ms. Branstrator was interested in the Program's component that allows individuals to voluntarily participate in personal efforts to assist in the development of a more sustainable world. Following additional research, Ms. Branstrator did not believe the Program (or any of the current UN climate-related programs) would be appropriate for the commission to recommend. Ms. Branstrator had subsequently utilized other climate and/or carbon pledges that she believed would be a better approach for individuals to consider to create an Individual Climate Pledge. Most recently, Ms. Branstrator revised her pledge based upon Commissioners' comments at the April Commission meeting. Ms. Branstrator believes the pledge can also be utilized to help educate the public with relatively simple efforts that could help reduce an individual's or family's carbon footprint. It was suggested that perhaps the Climate Action Steering Committee be brought into the discussion of utilizing the pledge into a public education program.

D) Ohio House Bill 507

During this year's EarthFest celebrating Earth Day on Saturday, April 22, 2023, Staff was approached by a citizen who asked that the Environmental Commission consider action(s) associated with Ohio House Bill 507, which was signed into law this past January. House Bill 507 initially concerned agricultural issues, but had amendments added to it, one of which regarded extraction of oil and natural gas from Ohio-owned lands. In 2011, the Ohio General Assembly

initially established the policy of leasing mineral rights from Ohio-owned lands. However, rules guiding this process have never been written. The leasing requirement contained within House Bill 507 was reportedly an effort to force the Ohio Department of Natural Resources' Oil and Gas Management Commission to finalize rules governing the leasing of these mineral rights. The citizen's concern was apparently related to the potential of fracking to recover the oil and gas reserves. Ms. Branstrator informed the Commission that several environmental groups were presently suing Ohio to prevent any extraction activities. Ms. Raghu indicated she would discuss this with other City Councilors to determine if they wished the Environmental Commission to make a formal Motion to City Council regarding House Bill 507.

Staff provided updates regarding the pilot pollinator garden and naturalized/prairie grass plots at the Oxford Community Park (OCP). Mr. Steve Ohl, the OCP Supervisor, had informed Staff that there are some grasses growing through the mulch at the prairie grass plot which would be sprayed with an herbicide later this week. Ms. Branstrator stated that the year-old plants were tentatively scheduled for delivery on May 15th, and that she has started other plants for the plots. Ms. Branstrator indicated the tentative planting schedule would be the week of May 15th, after the year-old plants had been delivered and after the end of the on-going soccer tournament at the OCP.

At past meetings, Commissioners had indicated that they would like to present the opportunity for the collection of food scraps and recyclables at public events. Staff presented a list of six scheduled, upcoming public events (through October 2023) where food trucks were anticipated. Ms. Raghu indicated she could assist in guiding the public in appropriate disposal at three of the events, and Ms. Branstrator and Ms. Barrett at one event each. Commissioners are also working on coordinating volunteers (presently, predominately from local Boy and Girl Scouts troops) to help provide public guidance for recycling and food scrap collection efforts. Given the recent (and historic) volume of food scraps at the residential drop-off program, Staff estimates that two of the six food scrap totes could be provided at these events without impacting available volume capacity for the residential food scraps drop-off. Commissioners discussed the preparation of some sort of a collection table or cabinet to hold trash, recycling, and food scrap containers. Ms. Raghu indicated she would contact Mr. John Buchholz, Oxford's Community Outreach Specialist, to get his input on such a feature and potential sources to obtain at least one.

Staff informed the Commissioners that the annual local Tree City USA awards ceremony was held in Fairfield, Ohio on Thursday, April 20, 2023. This was Oxford's 27th consecutive year as a Tree City USA community. The Memorial Tree Program's recognition ceremony occurred Friday, April 28, 2023 at the OCP. This past year, three trees (Swamp White Oak, Japanese Silk Lilac Tree, and Donald Wyman Crabapple) were planted in the OCP as part of the Memorial Tree Program. There was a good turnout for the event. Also on Friday, April 28th, the Arbor Day celebratory tree planting of a Burr Oak by the OCP Gazebo occurred.

Staff updated the Commission on the monthly emission monitoring event of the landfill's 23 passive gas vents. April's monitoring was the 31st monthly event. The estimated total carbon dioxide equivalent (CO₂e) for April was approximately 75 metric tons (MT). This was the fifth lowest monthly total observed during the 31 monthly monitoring events. In the last four months,

the monthly CO₂e have been markedly lower than the average monthly emissions on three occasions. The monthly total CO₂e values average is currently approximately 144 MT, down by 4 MT in the last month alone. The estimated total CO₂e emissions for 2023 are projected to be approximately half of the average annual emissions (954 MT for 2023 versus an annual average of 1,887 MT since 2020).

Since April, 2019, the residential food scrap drop-off program has collected approximately 156,666 pounds (78.3 tons) of material, averaging approximately 740 pounds per week. Thus far in 2023, approximately 11,000 pounds (5.5 tons) of food scraps have be collected, averaging approximately 650 pounds per week.

Approval of Adjournment:

Motion:	Ms. Barrett
2 nd :	Ms. Raghu
Vote:	Unanimous

Commissioners concluded discussions at 8:10 p.m. The next monthly Environmental Commission meeting is scheduled for 7:00 p.m. on June 7, 2023, in the Municipal Building's first floor conference room.

Professional Service Project 2022-2023 Report



COLLEGE OF ARTS AND SCIENCE
*Institute for the Environment
and Sustainability*

Recommendations for The City of Oxford: *Commercial Household Recycling Access*

Prepared May 15, 2023

Client: City of Oxford

Representatives:

David Treleaven, Environmental Specialist and
Staff Liaison to the Environmental Commission

Jonathan Ralinovsky, Chair of the City of Oxford's Environmental Commission

Project Team Members:

Master of Environmental Science (M.En.) Students:

Anna Abey, Emily Anzalone, Katie Lockhart, Jared Nally,
Sam Schultheis, & Madalyn Warnimont

Project Advisors:

Kate Moran, Adjunct Professor

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EXECUTIVE SUMMARY

This report summarizes the research, planning, and recommendations completed by Master of Environmental Science (M.En.) graduate students (PSP team) from Miami University's Institute for the Environment and Sustainability (IES) as part of the Professional Service Project (PSP) program (IES 610).

The project aims to assist the City of Oxford with its request to:

- Determine the current availability of recycling for commercial households, and
- Review case studies to identify successful commercial household recycling programs from other communities by researching what does or does not work in communities similar to the City of Oxford^{1,2}.

The PSP team established the following goal and objectives from the City's request.

Goal: Make recommendations for implementing effective recycling programs for commercial households in Oxford

Objectives:

1. Determine recycling participation for Oxford commercial housing properties
2. Determine success rates and diversion statistics to establish base level(s)
3. Assess current recycling opinions and practices of property managers
4. Assess the feasibility and value of surveying tenants' interests
5. Assess current demographics and programs in Butler County, Ohio
6. Assess attributes that have made commercial housing recycling programs work/not work
7. Evaluate the costs, drawbacks, and benefits of each case study practice
8. Summarize findings and make recommendations to the City of Oxford

This report uses commercial households to denote multi-family households/units that fall under a commercial billing class. In the City of Oxford, multi-family complexes with five or more units are classified as commercial under commercial billing class 5F, while single-family and multi-family properties with four or fewer units are classified as residential (Oxford, Codified Ordinances § 931.01, 2000). This billing class distinction is reflected in the City's recycling ordinance, which mandates residential recycling through a

¹ City of Oxford Environmental Commission, email to Miami University, August 30, 2022. (Appendix A)

² David Treleaven, email message to author, November 3, 2022.

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non-subscription utility fee but does not require commercial housing properties to participate (Oxford, Codified Ordinances § 931.12, 2000).

To help the City of Oxford reach its goal of expanding recycling availability to more comprehensively include commercial households, the PSP team evaluated current participation rates using public records, evaluated property manager attitudes and interests using surveys and interviews and researched ordinances and programs adopted by other communities targeting commercial households.

To make a recommendation to the City of Oxford, case study research was grouped into five mechanisms, these mechanisms can be used to increase commercial household recycling availability — ordinances, financial incentives, education campaigns, public services, and auditing/assessment — with the most successful programs utilizing multiple mechanisms. The final recommendations evaluated each mechanism or combination of mechanisms by prioritizing minimal implementation costs, the potential to increase commercial household recycling availability, and community likeness to the City. That research and decision-making process led to the following recommendations, numbered in order of actions to be taken:

Recommendations:

- **Recommendation 1: Implement a yearlong community-wide education initiative involving commercial household programming.** The campaign should prepare property owners to provide on-site recycling to tenants. During this campaign, the PSP team recommends connecting on-campus culture to off-campus culture by working with Miami University campus organizations. This will promote a positive recycling culture that students will take with them off campus. The team also recommends using recognizable branding across all participant populations. Because of the high resident turnover of a university town, it is recommended that new tenant recycling orientation be mandated.
- **Recommendation 2: Work with Butler County Recycling & Solid Waste Management District to increase access to public recycling facilities.** A product of this report is a map of commercial household recycling access (Appendix G). The City of Oxford should work with the Butler County Recycling & Solid Waste District (SWMD) to ensure current public access sites serve commercial households and evaluate if additional facilities need to be created.
- **Recommendation 3: Pass an ordinance mandating that property managers provide on-site recycling to tenants.** Expanding the current residential non-subscription recycling service mandate to include commercial households would increase the potential access for Oxford residents to recycling to 100 percent. The ordinance should have a staggered implementation starting with larger complexes and moving toward smaller complexes over the scale of years. It should also include education, evaluation, and enforcement mechanisms.

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- **Recommendation 4: To track the progress and success of diversion rates, the City should perform recycling audits.** This would include reports on continued education initiatives by property managers, regular unannounced waste audits, and Rumpke annual reporting for commercial households. Annual reporting specifics would need to be included in the next contract made with Rumpke Waste & Recycling.

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GLOSSARY

Term	Definition
Auditing/Assessment	A category of program mechanism used in this report to describe the inclusion of waste/recycling information gathering efforts by case study populations to change recycling behavior.
Commercial household	This report uses “commercial household” to describe commercially operated multi-family properties. In the City of Oxford, properties with five or more units are billed as class 5F and are considered commercial (Oxford, Codified Ordinances § 931.01, 2000).
Direct access	Direct access describes on-site recycling access where the recycling pickup location and the property address are the same.
Diversion rate	The portion of total waste/refuse that is diverted from landfills by being recycled.
Education campaign	A category of program mechanism used in this report to describe organized information or outreach efforts by case study populations to change recycling behavior.
Financial incentive	A category of program mechanism used in this report to describe either a monetary benefit or penalty enacted by case study populations to change recycling behavior.
Multi-family	"Multi-family" refers to properties with two or more units. However, multi-family may also refer to a commercial billing class for recycling services which specifies a specific unit amount. <i>See commercial household.</i>
Ordinance	A category of program mechanism used in this report to describe either an ordinance or other legal means used by case study populations to change recycling behavior.

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Participation rate	A measure of the portion of the total population that participates in a program. This report looks at the participation rate of commercial households offering on-site recycling.
Pay-as-you-throw	“Pay-as-you-throw” is a unit-based waste-disposal pricing system that encourages waste diversion/recycling as a cost-saving alternative. (The Recycling Foundation, n.d.)
Program mechanism	Method by which a case study population seeks to change recycling behavior (e.g., ordinances, financial incentives, education campaigns, public services, and auditing/assessment).
Public access	“Public access” describes access to recycling infrastructure through public facilities such as drop-off recycling locations.
Public service	A category of program mechanism used in this report to describe public services (excluding education) used by case study populations to change recycling behavior.
Recycling	“‘Recycling’ means converting solid waste that would otherwise be disposed and returning the converted material to commerce as a commodity for use or exchange in an established and legitimate market. Recycling is not reuse, storage, disposal, or transfer.” (Ohio Admin. Code § 3745-27-01, 2019).
Shared access	“Shared access” describes when access to recycling facilities is provided to properties through a shared pickup location in the same complex or an adjacent property under shared ownership. This is not to be confused with theft of services.
Single-stream recycling	“... [A] system in which all paper fibers, cardboard, plastics, metals, and other containers are mixed for collection” (Resource Recycling Systems 2018).

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Solid waste	“Solid waste” is both garbage (all putrescible waste, except sewage and body waste) and refuse (all nonputrescible wastes) produced by a population (Oxford, Codified Ordinances § 931.01, 2000).
Waste audit	A formal process to quantify the amount and types of wastes being generated (City of Huntington Park, n.d.).
Waste stream	The life cycle of solid waste — from waste generation to recycling or landfill pickup to energy production and the reuse of recycled materials (Waste Management, n.d.).
5F property	“5F property” is a billing class for multi-family properties with 5 or more units, which are billed for utilities as commercial properties, rather than residential (Oxford, Codified Ordinances § 931.01, 2000)

CHAPTER 1: BACKGROUND

To make recommendations for the City of Oxford to further implement recycling at commercial household properties, it was important to establish the background and history of recycling for the state of Ohio, Butler County, and the City of Oxford. The following sections include the development of Ohio recycling programs, City of Oxford waste and recycling ordinances, and past and current efforts to expand commercial household recycling access.

1.1 Development of Ohio Recycling Programs

In the 1960s, the US Federal Government implemented policies and programs calling for changes within state and local governments to address solid waste management (US EPA 2014). The Solid Waste Disposal Act passed in 1965, was the first major federal law designed to address significant environmental and public health issues caused by solid waste (Solid Waste Disposal Act 79 Stat. 992, Pub. L. 89-272). Provisions in the Solid Waste Disposal Act established minimum safety standards for U.S. landfills (US EPA 2014), and amendments, in 1976, responded to a national increase in municipal and industrial waste, addressing shortfalls in previous legislation and transforming the law into what is now called the Resource Conservation and Recovery Act (RCRA) (US EPA 2014). These laws were echoed at the state level; the state of Ohio created a solid waste regulatory program in 1967 and adopted regulations in 1976 in response to RCRA (Ohio EPA 2017a). The timeline of events leading to Ohio recycling programs can be seen in Figure 1.

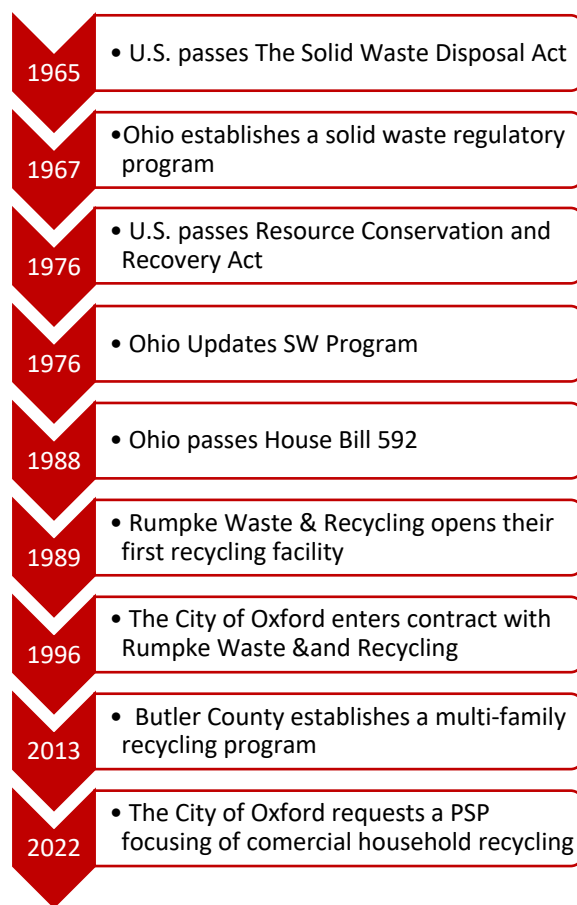


Figure 1. Timeline of events leading up to recycling programs being established within the City of Oxford

Despite these legislative actions, by the mid-1980s, Ohio faced rapidly declining waste disposal capacities (Resource Recycling Systems 2018). Poor planning led to groundwater contamination, methane explosions, and a need for new disposal facilities (Ohio EPA 2017a). To address these concerns, [Ohio passed House Bill 592](#) (HB592) in 1988, providing new comprehensive regulations and a goal to reduce landfill dependence (Ohio EPA 2017a; Resource Recycling Systems 2018). This new goal spurred the development of recycling programs in Ohio to divert solid waste from landfills (Ohio EPA 2017a; Resource Recycling Systems 2018).

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HB592, and later revised codes, provided local control to manage solid waste and recycling programs and established fifty-two solid waste districts throughout Ohio; this included the Butler County Recycling & Solid Waste District, which serves the City of Oxford (Ohio EPA 2017a; Ohio EPA 2017b). Waste contractors responded to local changes in waste management. In 1989, after HB592 was passed, Rumpke Waste & Recycling opened its first recycling facility in Circleville, Ohio (Rumpke Waste & Recycling 2016). Rumpke Waste & Recycling now serves dual roles for the City of Oxford as both the waste and recycling contractor (Oxford, Ohio Codified Ordinances § 931.01(j), 2021).

1.2 City of Oxford Waste and Recycling Ordinances

The City of Oxford mandates non-subscription recycling services for Oxford residents, not including commercial households (Oxford, Codified Ordinances § 931.12, 2000). The City's recycling program is a single-stream recycling service that does not require residents to sort their recyclables. In 2020, amendments to the City's contract with Rumpke Waste & Recycling increased bin sizes from 18 gallons to

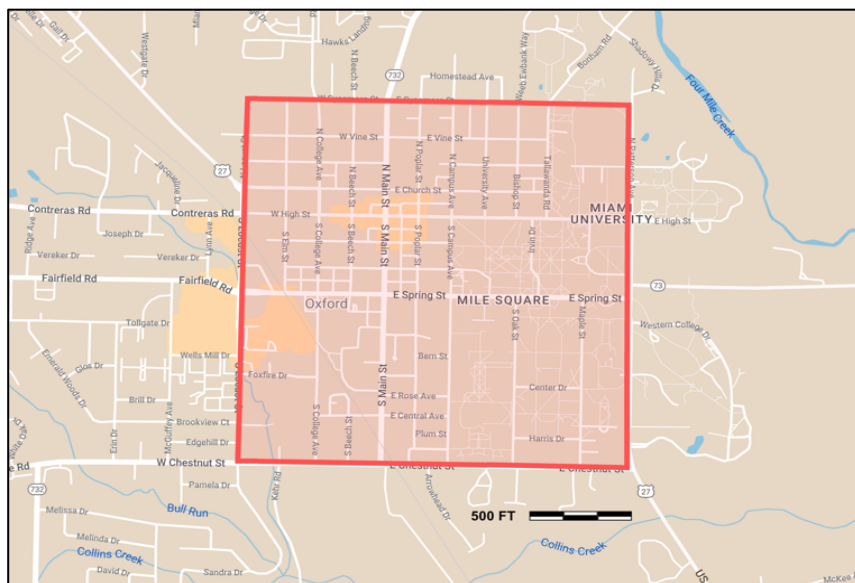


Figure 2: Map of Oxford, OH featuring the Greater Mile Square Area in Red.

65-gallon carts in the greater mile square area shown in figure 2 (Vianello 2020). The update was part of a plan to increase waste diversion by providing bigger containers to residential accounts (Vianello 2020). This update did not include commercial accounts, and currently, the City of Oxford is interested in expanding its recycling program to more comprehensively include commercial households (Appendix A).

1.3 Efforts to Expand Commercial Household Recycling Programs

Commercial housing properties are less likely to participate in recycling programs due to differences in collection services, lack of awareness from property management, and local challenges (The Recycling Partnership 2021). In 2013, the Butler County Recycling & Solid Waste District (SWMD) established the Multi-Family Recycling Program to address these challenges (Ohio EPA 2015).

The program remains the only multi-family recycling case study published by the Ohio Environmental Protection Agency (EPA) (Ohio EPA, n.d.). The case study report outlined that the program provided one year of free service and consultation to Butler County

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multi-family complexes. The program was funded in its first year through the Ohio EPA's 2013 Glass Recycling Initiative (Resource Recycling Systems 2018). The pilot year saw immediate success onboarding twelve apartment complexes in Oxford and one in Hamilton (Ohio EPA 2015). Plans to continue the program targeting different Butler County communities every other year remain part of the Butler County Solid Waste Management Plan 2018-2032 (Resource Recycling Systems 2018). However, in the absence of service funding, Butler County Recycling & SWMD has focused on informational outreach, such as their 2021 "Recycle Right" magnet campaign, where 5,000 informational magnets were produced for dorms and apartments³.

The City of Oxford is interested in the continued participation of commercial housing properties in the local recycling program and recruitment of new properties to provide recycling access to tenants. To help the City establish the best mechanisms to grow its commercial household recycling program, the PSP team set the following goal and objectives:

Goal: Make recommendations for implementing effective recycling programs for commercial households in Oxford

Objectives:

1. Determine recycling participation for Oxford commercial housing properties
2. Determine success rates and diversion statistics to establish base level(s)
3. Assess current recycling opinions and practices of property managers
4. Assess the feasibility and value of surveying tenants' interests
5. Assess current demographics and programs in Butler County, Ohio
6. Assess attributes that have made commercial housing recycling programs work/not work
7. Evaluate the costs, drawbacks, and benefits of each case study practice
8. Summarize findings and make recommendations to the City of Oxford

³ Anne Fiehrer Flaig (Executive Director of the Butler County SWMD) in an email with the author, April 2023.

CHAPTER 2: OXFORD COMMERCIAL HOUSEHOLD RECYCLING PARTICIPATION

In 2021, the City of Oxford recycled [16.18 percent](#) of solid waste by weight — the highest rate in Butler County (Butler County Recycling & Solid Waste District, n.d.). Yet the City trails the [2018 EPA national average of 23.6 percent](#) (US EPA 2020).⁴ Commitments by the Butler County Recycling & SWMD, the City of Oxford and its Environmental Commission to increase recycling participation have resulted in a focus on the potential expansion of commercial household recycling.

The City of Oxford's solid waste and recycling ordinances have separate provisions for residential and commercial properties. Residential properties, which include single-family and multi-family households with four or fewer units, are subject to mandatory non-subscription recycling fees as part of a combination utility service (Oxford, Codified Ordinances § 931.01, 2000). However, properties with five or more units (commercial households of 5F properties) are not required to purchase recycling services as they are categorized as commercial properties, along with commercial businesses. Past efforts by the Butler County Recycling & SWMD have aimed to increase the participation of commercial housing properties. However, the differences in recycling participation between residential and commercial households have remained unquantified. To understand the state of commercial household recycling in Oxford, the PSP team estimated the current recycling participation level, investigated the long-term success of the Multi-Family Recycling Program initiative, and conducted interviews and surveys with commercial household property owners.

2.1 Quantifying Commercial Household Recycling Participation Rates in Oxford

To quantify the current recycling participation rate of Oxford commercial households, the PSP team relied on commercially billed recycling pick-up addresses provided by the City of Oxford, addresses billed as 5F properties identified using [BS&A Online](#)⁵ — a website for municipal public records searches, and the total number of Oxford households from the U.S. Census Bureau 5-year estimates (2022). A list of these properties is included in Appendix B.

Of the 6,170 total households in Oxford (U.S. Census 2022), an estimated 43 percent (or 2,663) of Oxford households are part of commercial housing properties (BS&A Online, n.d.) (figure 3). After reviewing the commercially billed recycling pick-up addresses provided by the City of Oxford and 5F properties identified using BS&A Online, it was

⁴ U.S. EPA reported a 32.1 percent recycling and composting rate in 2018. The rate was adjusted to identify a 23.6 percent recycling diversion rate by excluding composting (US EPA 2020).

⁵ The PSP team manually reviewed 4,987 rental properties for multiple units at a single property address before verifying 5F status. Estimates may therefore exclude 5F properties where each unit has a separate address, for example Campus Commons. It is unlikely to have a significant impact on the estimates.

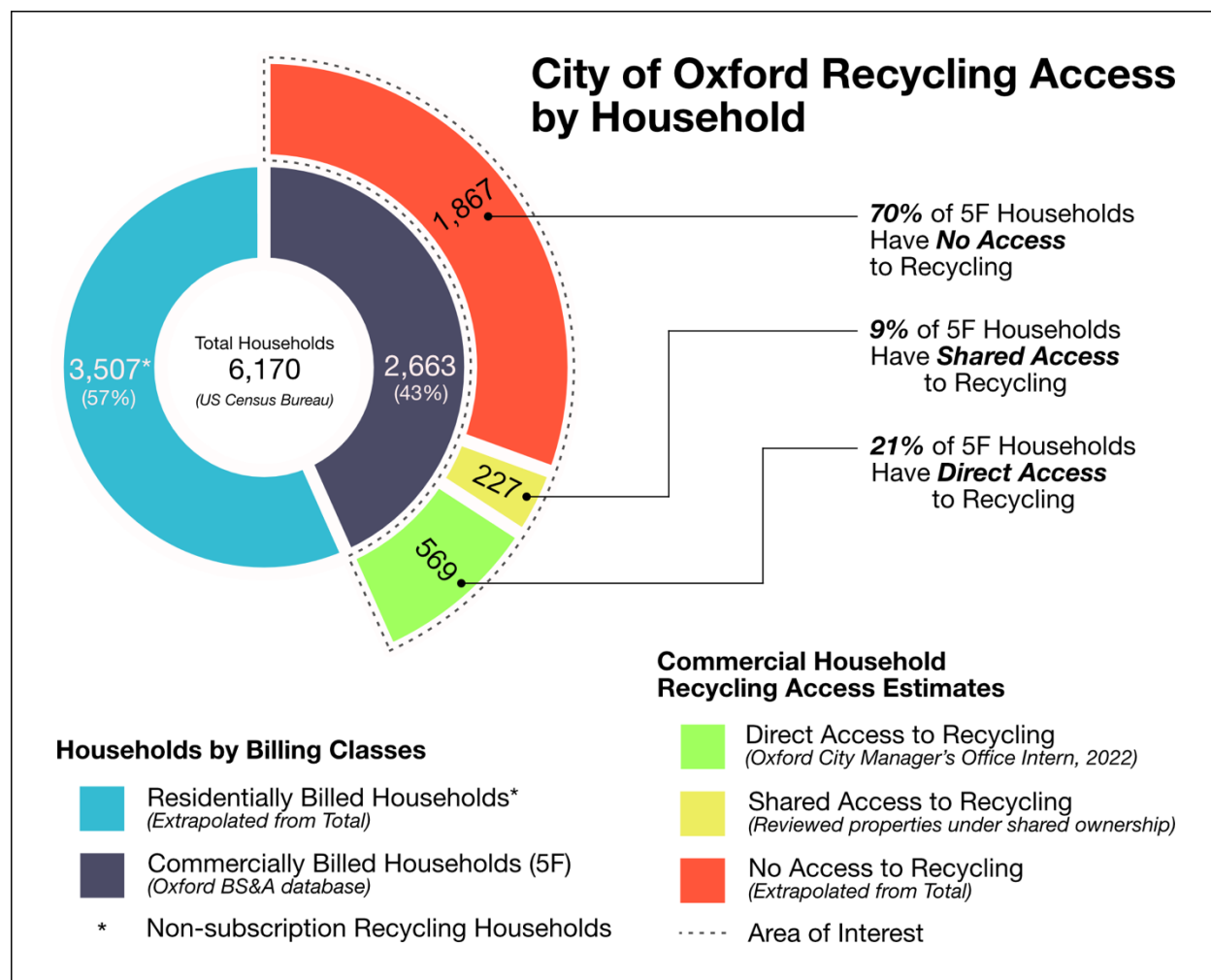


Figure 3 Recycling Access Estimates for Oxford Households by billing class.

determined that 569 out of 2,663 5F commercial households had recycling pickup locations listed at their address (BS&A Online, n.d.) (figure 3 and figure 4), which would provide tenants with direct access to on-site recycling.⁶ Two hundred and twenty-seven commercial households were evaluated as having shared access to recycling services through adjacent properties with direct access under shared ownership by the same individual or company or belonging to the same apartment complex⁷. For example, the Courtyards of Miami is comprised of five 5F property addresses (62 units) that likely have shared access to a commercially billed recycling pick-up location listed for only one of the addresses on Main Street. By accounting for these shared property services, it is estimated that 30 percent of commercial households have some level of access (direct

⁶ Direct access means tenant addresses and service location are the same.

⁷ Shared access means tenants likely have access to recycling services via an adjacent property with direct access under the same ownership. The PSP team visually verified that indirect access properties had recycling containers in a location likely accessible to all shared ownership properties.

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or shared) to on-site recycling services. The remaining 70 percent of commercial households are assumed to have no on-site access.

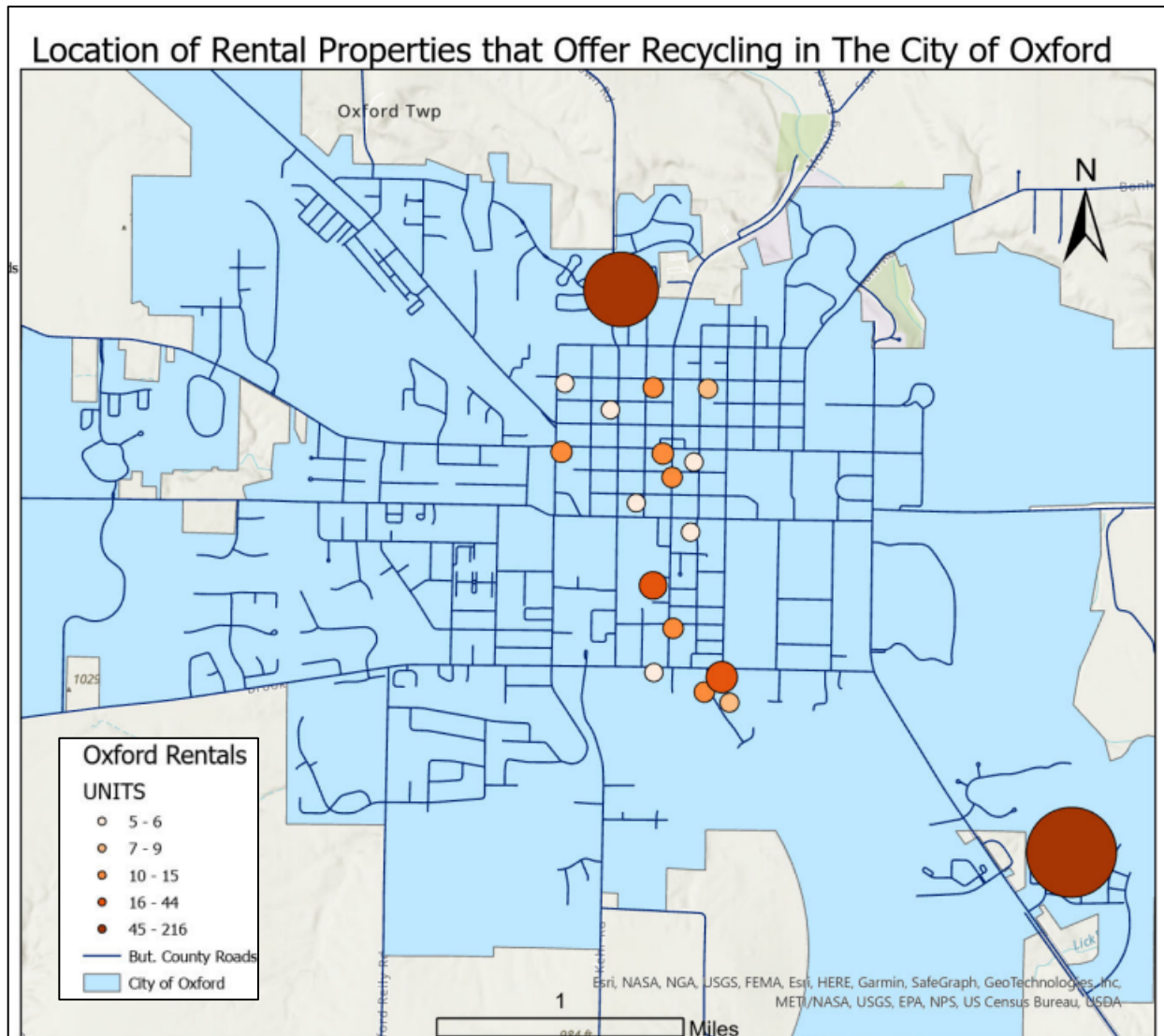


Figure 4: Map of commercial 5F properties that offer to recycle shown by property size (unit count).

The number of commercial households was then compared to total household estimates from the US Census Bureau (2022), and total residential households were extrapolated by subtracting 5F properties identified using BS&A Online. Since residential households are billed for non-subscription recycling services as part of their city utility bill, they were assumed to have 100 percent access to recycling. Combining the two data sets allows a community-wide estimate of recycling access. When considering both residential and commercial household community access, 66 percent of Oxford households have access to on-site recycling, 4 percent have indirect access to on-site recycling, and 30 percent have no on-site access to recycling. All deficiencies in direct access are attributable to commercial households.

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In addition, the PSP team found that recycling access was correlated with property ownership rather than by management company. In other words, property owners likely make decisions to participate in recycling more so than property management companies. This was determined by the fact that recycling participation was not consistent at the property management level but was consistent at the ownership level. Many property management companies oversee properties from various owners, so it was not uncommon for one owner's property(s) to offer on-site recycling while another property managed by the same company did not. However, the possibility of property management companies being part of the decision to provide recycling services to tenants or not cannot be ruled out(see section 2.3).

2.2 Butler County Recycling & SWMD Multi-Family Recycling Program

By estimating the City of Oxford's commercial household recycling participation, the PSP team was also able to evaluate the long-term success of the Butler County Recycling & SWMD Multi-Family Recycling Program. It is important to evaluate this program's success to see if past recycling efforts were effective or not. Table 1 represents Oxford commercial housing properties that were provided funded services and consultation with the Butler County Recycling & SWMD and Rumpke Waste & Recycling. The table shows how many units each property has and if they currently offer recycling services.

Table 1: Multi-Family Recycling Program Long-term Evaluation

Complex Name	No. Units	Currently Offers Recycling? Y/N
Oxford Commons	80	N
Hawks Landing	170	Y
Courtyards of Miami	62	Y
South Campus Quarter*	12	N
Fox & Hounds	107	N
Level 27	216	Y
Sundance Apartments (124 E)	18	N
Sycamore Apt – (216 E)	18	N
Elmwood Apt Building	18	N
306 N. Main St.	18	N

* South Campus Quarter has three units per building at four property addresses. Only properties with 5 or more units at the same property address were considered for commercial household recycling estimates which excludes this property, and other properties like this.

Table 1: Long-term evaluation of the Butler County Recycling and Solid Waste Management District's Multi-Family Recycling Program in Oxford.

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The PSP team determined that 70 percent of the properties/apartment complexes no longer offered recycling services⁸. However, the properties that continued to offer recycling make up over half of the direct and shared access households currently providing recycling services to their tenants.

2.3 Oxford Commercial Household Surveys and Interviews

The PSP team conducted interviews and distributed surveys to evaluate property managers' attitudes and interests regarding on-site recycling. Property management companies were identified through public records searches of 5F properties using the BS&A Online database under "responsible party" data from 5F rental certificates. Property managers were then contacted for email addresses to send surveys. Additionally, five properties were contacted to conduct interviews. The research plan was reviewed and approved by the Miami Research Ethics and Integrity Office.

2.3.1 Property Manager Survey

The PSP team sent thirty-eight survey emails to commercial household property managers and received nine responses (a full response report can be found in Appendix C). A summary of the survey results is presented below:

- 2 of the 9 responses indicated that the managed properties offer recycling services.
- 7 of 9 responses report that no recycling services are offered, but nearly half (3) plan to or desire to offer recycling services in the future.
- The two most common response to why recycling services are not provided is that there is not enough space and/or the cost is too high.

2.3.2 Tenant Survey

The PSP team evaluated the feasibility of conducting a tenant survey and determined the survey to be outside the scope of the project. The scope of the project is limited to increasing commercial household property participation rather than tenant participation. However, surveys with property managers indicate that tenant participation, and in particular, tenant contamination rates impact whether properties offer tenants recycling. As such, future research on tenant participation should be examined by the City of Oxford. Examples of tenant survey questions are included in Appendix D.

⁸ Only the names of 10 Oxford complexes that participated in the Multi-Family Recycling Program were provided by the Butler County Recycling & Solid Waste District despite reports that the program served 12 Oxford complexes (Ohio EPA 2015). This could significantly impact assessment of the program's success.

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2.3.3 Interviews

Five commercial housing complexes were selected for interviews based on recommendations by the City of Oxford. Two property management companies agreed to the interviews but will remain unnamed in the report.

- **PROPERTY MANAGER #1** — This company previously offered recycling but no longer does. The company was frustrated by the contamination rate, which required the property manager to schedule additional trash services when the recycling contractor would refuse to collect recycling because of contamination. The company felt the recycling contractor would not pick up the recycling even if it were only slightly contaminated. It was considered difficult for the property manager to get a trash truck to pick up the contaminated recycling container because solid waste is contracted through the City, and the manager had to contact the City to schedule the waste truck.
- **PROPERTY MANAGER #2** — This company had previously not offered recycling, but the property manager thought the implementation of recycling on their property would go over well. They stated that they knew many individuals who collected recyclables and took them to the public drop-off location and so they believe that having a recycling bin on the property would increase the number of residents who recycle. However, the property manager believed that due to the corporate nature of the apartment complex's ownership, it would be difficult to get approval for a recycling bin/dumpster.

CHAPTER 3: Case Study Research

The PSP team examined eighteen case study populations with recycling ordinances or programming targeting commercial households. This included four Ohio communities. These populations were identified through either (a) search results from research databases and search engines, (b) city-specific inquiries, (c) or direct recommendations by the City of Oxford. For each of these communities, the PSP team evaluated the following five program mechanism categories:

- **Ordinances** — A category describing either an ordinance or another legal means used by case study populations to change recycling behavior.
- **Financial Incentives** — A category describing either a monetary benefit or penalty enacted by case study populations to change recycling behavior.
- **Education Campaigns** — A category describing organized information or outreach efforts by case study populations to change recycling behavior.
- **Auditing/Assessment** — A category describing the inclusion of waste/recycling information-gathering efforts by case study populations to change recycling behavior.
- **Public Services** — A category describing public services (excluding education) used by case study populations to change recycling behavior.

Table 2: Case Study Populations and Commercial Household Recycling Mechanisms

Program Mechanism \ Case Study Population	Arlington Co., VA	Aurora, OH	Austin, TX	Boston, MA	Chicago, IL	Cuyahoga Falls, OH	Dallas, TX	Kent, OH	Los Angeles, CA	Montgomery Co., MD	Orlando, FL	Oxford/Butler Co., OH	San Francisco, CA	San Marcos, TX	Seattle, WA	Washington, D.C.	Florida	Michigan
Ordinance	X	X	X	X	X		X	X	X		X		X	X	X	X		
Financial Incentives		X				X												
Education Campaigns	X		X	X	X		X			X		X	X		X		X	X
Auditing/Assessment			X	X			X						X					
Public Services											X	X	X					

Table 2: Case Study Populations, and Commercial Household Recycling Mechanisms.

3.1 Ordinances and Legislation

Ordinances provide municipalities with direct measures to expand commercial household recycling programs by requiring that commercial complexes provide tenants with access to recycling services. The PSP team reviewed 13 case studies with commercial housing ordinances.

Many ordinances require provisions for enforcement, often inspections and fines, although some case studies are not as clear. In addition to enforcement, many of the most robust ordinances require additional program mechanisms (e.g., education). The following case studies illustrate how different communities have enacted ordinances, including a detailed overview of the City of Kent, Ohio, recycling program and ordinance.

3.1.1 Case Study Ordinances

Various methods were used to implement commercial household recycling ordinances. Methods range from simple statutes to multi-year staggered implementation. Many ordinances also mandate other program mechanisms to be implemented in conjunction with an ordinance, such as education and auditing/assessment.

- **ARLINGTON CO., VA** — Arlington County, Virginia, requires recyclable materials to be collected at commercial properties (Arlington County, VA, Arlington County Code, § 10-32 through 34). The ordinance also requires properties to create recycling plans and educate tenants and on-site staff (§ 10-33 through 34). The ordinance includes provisions for enforcement/fines and includes a yearly fee for multi-family properties based on unit count (§ 10-37 through 39).
- **AURORA, OH** — The City of Aurora, Ohio, mandates residential recycling through the City's contractor, while commercial households shall subscribe to any recycling service licensed by the County Board of Health (Aurora, Codified Ordinances § 929.03, 1997).
- **AUSTIN, TX** — The City of Austin, Texas, implemented a staggered approach to mandating commercial household recycling. The mandate took immediate effect in 2012 for premises with 75 or more units and annually, over four years, included smaller and smaller properties (Austin, Code of Ordinances § 15-6-91). Properties were required to divert waste, create annual diversion plans, and provide tenants with recycling education (§ 15-6-92 through 101). The ordinance includes provisions for active monitoring and fines (§ 15-6-125 through 133).
- **BOSTON, MA** — In 2003, the City of Boston, Massachusetts, mandated that "Large Residential Buildings" (more than 6 units) provide recycling access to residents (Boston, City of Boston Municipal Code § 7-13A.3). The ordinance requires that Recycling Guides are provided to tenants and has provisions for inspection, enforcement, and penalties (§ 7-13A.5 through A.6).

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- **CHICAGO, IL** — The Chicago Municipal Code requires commercial household property owners to contract a private hauler to provide tenants with recycling services (Chicago, Municipal Code of Chicago § 11-5-030). They must also maintain an ongoing education program to communicate with residents, tenants, and employees and post common-use signs about recycling (Chicago Department of Streets and Sanitation, n.d.).
- **DALLAS, TX** — Property owners within the City of Dallas, Texas, were required to provide single-stream, dual-stream, or valet service recycling to commercial household residents by 2020 (Dallas, Dallas City Code § 18-5.1). Property owners are required to provide annual recycling plans to the City each year and are subject to inspections (§ 18-5.1). In addition, property owners are required to provide tenants education in the form of posters or other infographics in common spaces and information about proper recycling practices and how to report problems to the City of Dallas (§ 18-5.1).
- **KENT, OH** — The City of Kent, Ohio, requires that property owners privately contract recycling services for commercial household tenants (Kent, Codified Ordinances of Kent, OH § 935.18). Section 3.1.2 examines the legal implications of the City of Kent's ordinance, which was of interest to the City of Oxford.
- **LOS ANGELES, CA** — California Assembly Bill 341(AB-341) mandates commercial and multi-family recycling throughout the state. In the City of Los Angeles, California, multi-family properties are charged fees for each dwelling to provide recycling services to each residence that receives refuse services (Los Angeles, Los Angeles Municipal Code § 66.41, 2008).
- **ORLANDO, FL** — As of April 1, 2023, all commercial households in the City of Orlando, Florida, are required to have recycling services (Orlando, Code of Ordinances § 28.15). The City staggered the implementation of the ordinance, first starting with complexes with 250 or more units, then more than 75 units, and finally 4 or more units (§ 28.15).
- **SAN FRANCISCO, CA** — California Assembly Bill 341(AB-341) mandates commercial and multi-family recycling throughout the state. The City of San Francisco, California, requires that property owners provide adequate recycling services to commercial households (San Francisco, San Francisco Environment Code §1904). In addition, property owners must educate new tenants and staff and re-educate them every year (§1904). Property owners must also work with on-site janitors to create effective refuse separation programs and periodically inspect their recycling to inform staff about contamination (§1904).
- **SAN MARCOS, TX** — The City of San Marcos, Texas, charges both a single-stream and a recycling center service fee to the billpayer of multi-family dwellings (San Marcos, Code of Ordinances § 66.028). The property owner is responsible for providing containers on the premise (§ 66.032).

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- **SEATTLE, WA** — The City of Seattle, Washington, requires that residents, including multi-family residents, separate their refuse and recycling (Seattle, Municipal Code § 21.36.083). These can be deposited through paid services or drop-off and transfer locations. Exceptions are made for those in multi-family buildings that are deemed to not have adequate storage, although efforts to evaluate the feasibility of shared services through contiguous properties are first considered (§ 21.36.083).
- **WASHINGTON, D.C.** — Within Washington D.C., commercial properties, including multi-family dwellings with four or more units, are required to offer recycling (D.C. Department of Public Works, n.d.). Properties may be fined if they do not comply.

3.1.2 Legal Overview of Kent, Ohio Multi-Family Dwelling Recycling Ordinance

The City of Oxford identified Kent, Ohio as a community of interest in its request to expand commercial household recycling access⁹. In particular, the City of Oxford was interested in the legal status of Kent's ordinance after allusions to lawsuits were made. The importance of investigating Kent was to identify the potential effects of imposing a commercial household recycling ordinance in Oxford. The following timeline was established:

Timeline

- **1992** — Ordinance 1992-27 (Passed 5-6-92) required multi-family building units to have recycling bins. These were charged through Kent's contract with Portage County SWMD.
- **2012** — The Portage County Solid Waste Management Plan failed to be ratified at the district level over community opposition (Portage County SWMD 2019).
- **2015** — The Ohio EPA prepared a Solid Waste Management Plan for the Portage County SWMD, which converted communities to single-stream recycling, closed the District Recycling Center, and allowed municipalities to contract with private haulers for recycling (Portage County SWMD 2019).
- **Mar. 20, 2019** — Kent passes an emergency measure to approve the 2019 Solid Waste Management Plan as required by the revised code (Kent, Ordinance No. 2019-23).
- **Nov. 18, 2020** — Kent passes an emergency measure (Kent, Ordinance No. 2020-110) to extend their contract with Portage County SWMD as a response to potential dumping cost increases due to multi-family

⁹ David Treleaven, email message to Suzanne Zazycki, September 7, 2022

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contamination issues. The emergency ordinance alludes to requiring multi-family dwellings to obtain private contracts.

- **Dec. 21, 2020** — Local paper, *Record-Courier*, published a story about how multi-family dwellings must contract private haulers for recycling. The article mentions that eight multifamily residences no longer offer recycling due to contracts and court orders, which account for roughly ¼ of the multi-family dwelling in Kent (McGarvey 2020).
- **Aug. 18, 2021 - current** — Kent passes an ordinance specifying that multi-family dwellings shall use private haulers effective Jan. 1, 2022. This ordinance remains in effect (Kent, Codified Ordinances of Kent, OH § 935.18).

The PSP team attempted to contact the City of Kent to clarify questions about potential lawsuits. Kent replied on January 31, 2023, indicating that the 2021 ordinance was still in effect but did not address any legal questions. Further requests for communications were ignored. Based on the timeline above, Kent has successfully mandated recycling at multi-family dwellings for over 30 years. Shifts to single-stream recycling and the closure of the District Recycling Center likely led to increased dumping costs for the City, which was exacerbated by contamination rates at multi-family dwellings. It is likely that any legal problems or “court orders” were the result of an incomplete emergency ordinance in 2020 that did not specifically mandate the use of private haulers. This was likely rectified when the August 2021 ordinance was passed.

3.2 Financial Incentives

Many programs using financial incentives have been tried to modify the public's behavior and increase recycling participation in communities. Some of these financial incentives include Pay-as-you-throw (PAYT), bottle/container deposits, and fines and discounts.

3.2.1 Pay-As-You-Throw

PAYT programs are designed to encourage recycling by charging residents based on their trash's weight or volume. In 2006, 23 percent of Ohio cities had PAYT programs; however, the City of Oxford is not among them (U.S. EPA 2006). These programs have been linked to increased recycling participation and reduced waste generation (U.S. EPA 1997). There are several methods used to calculate rates and facilitate waste pickup. These include proportional pricing, where each container costs a set amount (i.e., price per bag, bin, etc.); variable rates, where residents subscribe to a certain container size, then pay additional fees for any additional waste; and multi-tiered pricing, where there is a set utility cost and additional fees if there is any overage (U.S. EPA, n.d. a). No case studies were found that utilize PAYT specifically for commercial households. This is likely because refuse collection is most often done through a common dumpster preventing mechanisms to enforce or charge individual tenants (U.S. EPA, n.d. b).

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- **AURORA, OH** — The City of Aurora, Ohio, offers a multi-tier residential PAYT program. Residents can choose between “Super Service” (unlimited trash pick-up), “60-Gallon Service” (limited to 60 gallons per week), and “Minimum Service” (limited to special bags purchased by the resident from Rumpke) (Rumpke 2011).
- **CUYAHOGA FALLS, OH** — The City of Cuyahoga Falls, Ohio, offers two tiers of waste service. Limited service is \$16.90/month for a 65-gallon cart and includes recycling. Full service is \$22.40/month for a 95-gallon cart and does not include recycling. A \$2 recycling credit is applied to the full-service price if included, which brings the total down to \$20.40/month (City of Cuyahoga Falls, n.d.).

3.2.2 Bottle/Container Deposits

Bottle/container deposit recycling programs pay individuals directly for dropping off their recycling at transfer or recycling centers. While it has been shown to decrease waste disposal by up to 30 percent, it is rarely used and varies widely (Container Recycling Institute, n.d.). States collect deposits on the sales of beverage containers and refund individuals when the containers are recycled. There are currently ten states with some version of a beverage container deposit law; however, Ohio is not among them (National Conference of State Legislatures 2020). One limitation of beverage container laws is they appear to only be effective at the state level. No cases were found at a local level. An additional concern is interstate bottle redemption fraud, where individuals bring containers from states without beverage container deposit laws to collect deposits. This would likely be an even greater barrier to implementing a local deposit law.

3.3 Education

Education campaigns provide people with the answers to questions of how, what, and why they should recycle. Examples of recycling campaigns include increasing signage, recycling recognition, implementing mascots, hosting recycling competitions and trivia competitions, and creating magnets, door hangers, etc.

End Market Awareness as Part of Education

End market awareness should be part of education campaigns to provide information about what happens after recyclables are placed in bins. However, information needs to be accessible and engaging. Rumpke Waste & Recycling currently provides several videos on their website ranging from 1 minute to over 11 minutes in length (Rumpke Waste & Recycling, n.d.).

Miami University recently published a 2-minute video succinctly covering the process to better serve its community (Meikle 2023). This demonstrates the need to take generalized information provided by recycling contractors and present it to communities in ways that better serve their interests and needs.

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3.3.1 Commercial Household Campaign Case Studies

When it comes to commercial household recycling programs, education often plays a secondary role in increasing participation. High contamination rates can be costly for property managers or cities who pay additional fees or fines when recycling is refused (Kent, Ordinance No. 2020-110). This can lead to properties that do not offer recycling to avoid additional costs, as seen in the Oxford Property Manager Survey (Section 2.3). By including education as a supplementary mechanism, many case studies have been able to implement successful commercial household recycling programs. The following case study examples:

- **ARLINGTON CO., VA** — Arlington County requires that properties educate tenants and on-site staff (§ 10-33 through 34).
- **AUSTIN, TX** — Properties in Austin, Texas, are required to divert waste, create annual diversion plans, and provide tenants with recycling education (§ 15-6-92 through 101). An example of a tenant letter is included in Appendix E.
- **BOSTON, MA** — The Boston, Massachusetts, ordinance requires that Recycling Guides be provided to tenants (Boston, City of Boston Municipal Code § 7-13A.5 through A.6).
- **OXFORD/BUTLER COUNTY, OH** — Butler County Recycling & SWMD created magnets as an education campaign focused on dorms and apartments. The Butler County Recycling & SWMD worked with the Miami Office of Off-Campus Student Affairs to create magnets with recyclable materials and information to help educate residents on how to recycle¹⁰. These were put in students' off-campus apartments on their appliances with a note to leave for the next residents. There is no information on the outcome of this program.
- **CHICAGO, IL** — Chicago, Illinois, commercial housing properties must maintain an ongoing education program to communicate with residents, tenants, and employees and post common-use signs about recycling (Chicago Department of Streets and Sanitation, n.d.).
- **DALLAS, TX** — Property owners in Dallas, Texas, are required to provide tenants education in the form of posters or other infographics in common spaces and information about proper recycling practices and how to report problems to the City of Dallas (Dallas, Dallas City Code § 18-5.1).
- **MONTGOMERY COUNTY, MD** — Montgomery County, Maryland, created a resource guide to onboard commercial household properties after passing a mandate. The packet discusses the benefits of offering recycling, what

¹⁰ Anne Fiehrer Flaig, email to author, April 12, 2023.

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materials can be recycled, and the property manager's responsibilities under the ordinance (Montgomery County 2022). Montgomery County commercial households make up 36 percent of the community compared to Oxford, which has 43 percent (Montgomery County 2022).

- **SAN FRANCISCO, CA** —Property owners must educate new tenants and staff and re-educate them every year (San Francisco, San Francisco Environment Code §1904).

3.3.2 Community Recycling Campaign Case Studies

A robust community-wide recycling campaign often serves a dual role of providing community-wide and commercial-household recycling education.

- **FLORIDA** — The Florida Department of Environmental Protection and its sponsors Waste Management; Single Stream Recyclers, LLC; MARPAN; and Waste Connections provides a state-wide [education campaign](#) that focuses on reducing recycling contamination. The campaign provides media toolkits for sharing branded materials. An example of a branded slogan is “When in doubt — throw it out!” which encourages Floridians to only recycle materials they are familiar with in efforts to reduce the state’s contamination levels (FDEP, n.d.).
- **MICHIGAN** —A statewide campaign created by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). The campaign is centered around the “recycling raccoon squad” (Michigan n.d.). EGLE created the raccoon mascots for their recycling program to educate residents about what and how to recycle (Michigan n.d.). There are six raccoons, each named after types of recyclables (i.e., Gladys Glass, Precious Metale, etc.). They have a dedicated and easy-to-use [website](#) where each raccoon has a “profile” with the rules for recycling their type of material, along with humorous and informative videos, quizzes, and to Spotify playlists to get people engaged (Michigan n.d.). The campaign provides a media tool kit to allow local municipalities to take advantage of the branded materials (Michigan n.d.). A mockup of a similar local campaign is included in Appendix F.

3.4 Waste and Recycling Program Audits/Assessments

Recycling program audits are assessment tools to evaluate both diversion and contamination rates and can be used to measure program success. A waste audit surveys trash to analyze and collect data on what recyclables are being thrown away, whereas a recycling audit analyzes what is being recycled and can give your insight on what are common contaminants in the recycling. For both audits, individuals list the materials found and record the quantity by volume or weight.

3.4.1 Recycling Program Inspections

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Inspections for mandated recycling programs is a form of auditing/assessment that allows a community to legally enforce recycling ordinances and it often involves fees for violations. While most ordinances have enforcement mechanisms such as fees, fewer outline inspections as a standard practice to enforce fees. The following case studies include enforcement of their ordinances.

- **SAN FRANCISCO, CA** — To enforce and determine the efficacy of San Francisco's [Refuse Separation Compliance Law](#), an audit of “Large Refuse Generator” properties, those that produce more than 40 cubic yards a week, must take place once every three years (San Francisco Environment Department, n.d.). Non-compliant properties which exceed contamination levels may be fined.
- **AUSTIN, TX; BOSTON, MA, DALLAS, TX** — Inspections are also required in the cities of Austin, Texas (Code of Ordinances § 15-6-125 through 133), Boston, Massachusetts (City of Boston Municipal Code § 7-13A.5 through A.6), and Dallas, Texas (Dallas, Dallas City Code § 18-5.1).

3.4.2 Evaluation

Along with serving as enforcement mechanisms, audits are often utilized by cities and businesses to evaluate waste streams (Great Forest 2012). Audits can provide information to use in education, such as explaining potential cost savings to property managers, and they also provide information on the success of recycling programs (Great Forest 2012).

- **GREAT FOREST** — The Great Forest, a consultant in zero waste and hauling company, who is a leader in waste audits, global team conducted waste audits at over 100 buildings across the US and internationally, analyzing over 170,000 pounds of waste. The findings revealed that 62 percent of what a typical commercial building usually throws out as trash is recyclable (Great Forest 2012). By evaluating what ends up in the trash, waste audits help to determine potential financial savings through the reduction of waste and an increase in recycling (Great Forest 2012). The Great Forest identified a potential savings of up to 33 percent (Great Forest 2012).
- **EMERSON COLLEGE, BOSTON, MA** — A waste audit was conducted in 2016 in Emerson College, Boston residence halls where the garbage was collected and weighed (Berkley Beacon 2016). The audit team sorted landfill waste from recyclables by hand (Berkley Beacon 2016). The results revealed that nearly half of the material in waste bins was disposed of incorrectly (Berkley Beacon 2016). The poor outcome of the waste audit exhibited the need for recycling and waste containers, clear signage, and further education about the importance of recycling (Berkley Beacon 2016).

3.5 Public Services

Local governments may provide public services to increase commercial household participation. Examples of these services include consultations and increased public access. Both services provide governments with direct ways to engage publics regarding options and access to recycling services.

3.5.1 Consultation Case Studies

Consultations allow programming to be tailored to individual property needs (SFED 2023). These needs may be informed by other mechanisms such as auditing/assessment and education campaigns. However, consultation services provide individualized approaches to onboarding commercial housing complexes (Ohio EPA 2015). The following case studies illustrate the implementation of consultation services.

- **OXFORD/BUTLER CO., OH** — The 2013 Multi-Family Recycling Program, Butler County Recycling and Solid Waste District partnered with Rumpke Waste & Recycling to provide consultation services to property owners to choose either full-size recycling bins or rolling carts, depending on the needs and physical layout of the property (Ohio EPA 2015).
- **ORLANDO, FL** — The City of Orlando, Florida, provides free consultations to help property owners start recycling (City of Orlando, n.d.). Property owners fill out an online form, which asks the type of property and the number of tenants, to provide the consultant initial information before meeting (City of Orlando, n.d.). During the consultation meeting, the City will help the property owner determine the pickup schedule for recycling, the sizing of the container/s, and the best location of the container/s (City of Orlando, n.d.). By providing these free consultations, the City of Orlando ensures that the property owners have the best chances of their tenants to recycle properly and easily (City of Orlando, n.d.).
- **SAN FRANCISCO, CA** — San Francisco requires that commercial household properties either hire or work with a Zero Waste Facilitator (SFED 2023). This position is “a qualified person(s) who serves exclusively in helping a property comply with adequate refuse separation” (SFED 2023). The City has an updated list of known Zero Waste facilitators for property owners to contact and work with (SFED 2023). SFED also provides a job description for any properties that may hire their own facilitator (SFED 2023). This requirement in the ordinance forces the properties to recycle/compost properly because there is someone hired to ensure it is separated properly (SFED 2023).

3.5.2 Public Access

Public drop-off locations provide additional opportunities for communities to recycle (Resource Recycling Systems). In Oxford, public drop-off locations likely serve as the

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only recycling access tenants have if their apartment complexes do not provide on-site recycling services based on access assessments in section 2.1. While public access does not provide a mechanism to increase commercial housing property participation, it does provide opportunities for tenants to recycle. As such, the PSP team has included a section on public access since it is the primary mechanism in place for a majority of Oxford 5F households.

- **OXFORD/BUTLER CO., OH** — The City of Oxford has two public drop-off locations; one located in the Ditmer Field parking lot and another behind TJ Max (Enjoy Oxford, n.d.). These locations are maintained by the Butler County Recycling and Solid Waste Management District (Resource Recycling Systems 2018). Neither of these locations are located within the greater mile square area (See Appendix G.).

CHAPTER 4: RESEARCH SUMMARY AND RECOMMENDATIONS

After completing the research, objectives one through six have been met. The following lists the objectives and key finding of each objective:

1. **Objective One** — Determine recycling participation for Oxford commercial housing properties
 - Finding: Participation rates for Oxford commercial households has been completed using public records – Section XX outlines these rates
2. **Objective Two** — Determine success rates and diversion statistics to establish base level(s):
 - Finding: The City of Oxford's base diversion rate was found to be 16.8 percent. Success for commercial household recycling is currently being viewed as participation/access rather than specific diversion rates.
3. **Objective Three** — Assess current recycling opinions and practices of property managers
 - Finding: Property manager opinions and recycling practices were determined through surveys and interviews, and determined there were mixed opinions on implementing recycling programs on their properties
4. **Objective Four** — Assess the feasibility and value of surveying tenants' interests
 - Finding: The feasibility of a tenants' survey was evaluated and determined to be outside this project's scope.
5. **Objective Five** — Assess current demographics and programs in Butler County, Ohio
 - Finding: Sizes of complexes, locations, and past programs targeting commercial households were determined to access current demographics. Past programs show some continued success within Butler County.
6. **Objective Six** — Assess attributes that have made commercial housing recycling programs work/not work
 - Finding: Mechanisms that made commercial housing recycling programs work/not work were evaluated through case study research, finding that a combination of multiple mechanisms tended to be the most effective approach when implementing a recycling program

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To complete the goal of making recommendations for implementing effective recycling programs for commercial households in Oxford, the following sections have been created to meet Objectives 7 (Evaluate the costs, drawbacks, and benefits of each case study practice) and 8 (summarize findings and make recommendations to the City of Oxford).

4.1 Research Summary

The City of Oxford is interested in expanding commercial household recycling. Seventy percent of 5F commercial households do not have on-site access to recycling services, as determined through analysis completed by evaluating BS&A data. Surveys and interviews with property managers identified that space, cost, and contamination were main factors as to why their properties did not offer recycling to tenants. Out of the properties that do provide recycling, nearly 50 percent were part of the original Butler County Recycling & SWMD's Multi-Family Recycling Program and received free consultation services and a year of free service. To increase recycling participation, the PSP team evaluated commercial household recycling case studies from other communities and identified five categories of program mechanisms that used to increase commercial household recycling participation.

- **Ordinances** increased recycling access to 100% by requiring that commercial housing properties participate in recycling services. These ranged from requiring services through either the city or a private contractor to charging fees per dwelling. Various methods of implementation and enforcement were also included, such as staggered implementation and inspections and fees. What was common to many ordinances was the inclusion of other mechanisms within the ordinances, such as requiring education.
- **Financial Incentives** motivate property managers to participate in recycling programs by making it more cost-effective for properties to separate their garbage and recycling. This is primarily because of PAYT systems which price refuse by either volume or weight, making it cheaper to divert waste through recycling. Throughout the PSP team's case study research, PAYT and other financial incentives do not yet seem to be practicable for commercial households due to common dumpsters/receptacles.
- **Education Campaigns** provide property owners, tenants, and employees with information about how, what, and why they should recycle. Many ordinances require education as part of city mandates for commercial household recycling. While education does not appear to increase commercial household participation on its own, it does target consumer behavior that can decrease contamination rates which the PSP Team's survey identifies as a challenge with implementing programs in Oxford, OH.

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- **Waste and Recycling Audits/Assessments** provide tools to evaluate program effectiveness and provide information about local recycling behaviors. These, in turn, can inform other program mechanisms. For example, auditing is often a form of inspection that allow cities to enforce ordinances. In addition, they can inform education campaigns and determine program success based on findings.
- **Public Services** support community efforts to recycle. Free consultation services provided by cities allow for commercial housing properties to best design and implement a program specific to their tenants. Additionally, public services can make up for the lack of properties offering recycling by providing public drop-off locations which may be the only access to recycling tenants have.

4.2 Analysis for Recommendation

To reach a recommendation, the PSP Team prioritized minimal implementation costs, the potential to increase commercial household recycling availability, and community likeness to the City.

- An ordinance has the greatest potential to increase recycling access. In theory, it would require no or low implementation costs. However, various case studies included provisions in their ordinances that required staffed positions or personnel for inspections, recycling plan review, additional tenant education, etc. If an ordinance is to be recommended, it should minimize personnel to prioritize low costs to the city. Based on additional case studies from Ohio communities, it would be appropriate to implement in Oxford, OH.
- Financial Incentives do not seem effective in increasing 5F commercial household access due to common collective sites. The PSP team could not find effective implementation in commercial properties and will not recommend this mechanism.
- Education was a significant part of many ordinances. In addition, the community feedback from surveys and interview illustrates a need for better education to prevent contamination which is a main barrier to implementing a proper recycling program, along with the cost, for properties to offer to recycle. The PSP team feels the strongest example of a cohesive campaign is Michigan's EGLE recycling education campaign. Education campaigns often serve both commercial households and the greater community. Several case studies illustrated education campaigns specifically for commercial households.
- Audits/Assessments would provide information on the kinds of contamination that commercial housing properties are experiencing, which can better inform education campaigns. Since the PSP team is not recommending hiring personnel for the City, inspections are not recommended as a form of auditing/assessment.

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- Public services can be provided for absences in on-site access. Since 70 percent of commercial households in Oxford do not have onsite access to recycling, the two drop-off locations can provide public access for these communities. However, their efficacy, specifically for commercial households, is not known. Additionally, the Butler County Recycling & SWMD Multi-Family Recycling Program was viewed as successful and included consultation services. Providing one-time consultation services could limit expenses to the City while providing the guidance necessary for the long-term success of properties adopting recycling services.

4.3 Final Recommendations:

After completing the analysis, the PSP team came to the following recommendations:

- **Recommendation 1: Implement a yearlong community-wide education initiative involving commercial household programming.** The campaign should prepare property owners to provide on-site recycling to tenants. During this campaign, the PSP team recommends connecting on-campus culture to off-campus culture by working with Miami University campus organizations. This will promote a positive recycling culture that students will take with them off campus. The team also recommends using recognizable branding across all participant populations. Because of the high resident turnover of a university town, it is recommended that new tenant recycling orientation be mandated.
- **Recommendation 2: Work with Butler County Recycling & Solid Waste Management District to increase access to public recycling facilities.** A product of this report is a map of commercial household recycling access (Appendix G). The City of Oxford should work with the Butler County Recycling & Solid Waste District (SWMD) to ensure current public access sites serve commercial households and evaluate if additional facilities need to be created.
- **Recommendation 3: Pass an ordinance mandating that property managers provide on-site recycling to tenants.** Expanding the current residential non-subscription recycling service mandate to include commercial households would increase the potential access for Oxford residents to recycling to 100 percent. The ordinance should have a staggered implementation starting with larger complexes and moving toward smaller complexes over the scale of years. It should also include education, evaluation, and enforcement mechanisms.
- **Recommendation 4: To track the progress and success of diversion rates, the City should perform recycling audits.** This would include reports on continued education initiatives by property managers, regular unannounced waste audits, and Rumpke annual reporting for commercial households. Annual reporting specifics would need to be included in the next contract made with Rumpke Waste & Recycling.

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APPENDICES

APPENDIX A: Letter from City of Oxford Environmental Commission

Email copy from the City of Oxford Environmental Commission to Miami University's Institute for the Environment and Sustainability outlining the request for a Professional Service Project (PSP).



Memo **Service Department** **Environmental Affairs Division**

TO: Miami University's Institute for the Environment and Sustainability

FROM: City of Oxford Environmental Commission

RE: Description of a Recycling Professional Service Project

DATE: August 30, 2022

The City of Oxford (Oxford) Environmental Commission would like to request a Professional Service Project to be undertaken by students of Miami University's Institute for the Environment and Sustainability to investigate recycling programs for multi-family housing complexes.

The PSP is envisioned to consist of two sub-groups of investigation. One would be collecting information to determine current availability of recycling at multi-family housing, with potential interviews of property managers to assess how any existing programs operate, and issues that have been encountered. The other sub-group would research case studies of other communities to determine existing/past efforts for multi-family residential unit recycling across the nation to try and determine what did or did not work, what is needed to have the recycling program succeed, and finding successful programs in communities similar to Oxford.

Oxford City Council has expressed interest in expanding recycling efforts within the community, and past surveys indicate the desire of tenants for recycling opportunities at multi-family residential complexes. At present, Oxford does not know with certainty the extent or lack of complexes that offer recycling for their tenants. The case study research is intended to identify successful recycling programs elsewhere, allowing Oxford to incorporate their components, as well as identifying potential complications encountered by other recycling programs so that Oxford might avoid repeating these mistakes.

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APPENDIX B: List of 5F Properties Indicating Recycling Access

A spreadsheet that includes all the 5F rental properties pulled from the BS&A Online database. The spreadsheet groups properties by property owner and indicates whether properties were determined to have direct access, shared access, or no access to on-site recycling. The spreadsheet reflects the final access categorization, as some properties were removed from the direct access/shared access categories when the PSP team conducted a visual confirmation. For example, Oxford West had one property billed for recycling services, but it was determined to be for the rental office, and as such, the properties are listed as no-access.

5F Property Recycling Access		
	■ = Direct Access ■ = Shared Access with 5F property ■ = Shared Access with CommercialBusiness ■ = No Access	
Property Owner	Address	Number of Units
16 S POPLAR LLC	16 S POPLAR ST	6
BDL III ASSOCIATES LLC	9 W HIGH ST	15
COURTYARDS APARTMENTS LLC	3 E CENTRAL AVE	12
	5 E CENTRAL AVE	12
	7 E CENTRAL AVE	12
	709 S MAIN ST	12
	715 S MAIN ST	14
EVR INVESTMENTS LLC	241 EISENHOWER WAY	12
	251 REAGAN PL	10
	261 EISENHOWER WAY	12
	271 REAGAN PL	11
	311 THATCHER LOOP	12
	431 CHURCHILL TRL	12
FIRST CLASS LLC	518 S MAIN ST	33
GROVE STREET PROPERTIES LLC	325 W HIGH ST	14
MAM-OXFORD LLC	5262 BROWN RD	170
PARK PLACE WEST HOLDINGS LLC	11 W CHURCH ST	6
PEP OXFORD OH LLC	3770 SOUTHPOINTE PKWY	216
RODBRO & RODBRO INVESTMENTS LLC	111 E CHURCH ST	6
	215 N POPLAR ST	9
	112 N COLLEGE AVE	6
SZ ARROWHEAD APARTMENTS LLC	201 E CHESTNUT ST	44
	900 ARROWHEAD DR	12
	910 ARROWHEAD DR	12
	920 ARROWHEAD DR	12
	930 ARROWHEAD DR	12
	950 ARROWHEAD DR	12
	960 ARROWHEAD DR	12
	970 ARROWHEAD DR	12
TJ SPRING STREET LLC	331 W VINE ST	6
TRES WALNUT LLC	28 W WALNUT ST	6
WAYPOINT STUDENT LIVING	945 ARROWHEAD DR	8
	955 ARROWHEAD DR	12
	965 ARROWHEAD DR	12
	975 ARROWHEAD DR	12

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5F Property Recycling Access		
	■ = Direct Access ■ = Shared Access with 5F property ■ = Shared Access with CommercialBusinesss ■ = No Access	
Property Owner	Address	Number of Units
335 WEST CHURCH STREET LLC	610 S MAIN ST	8
4 D INVESTMENTS INC	112.5 W HIGH ST	6
	5151 WESTGATE DR	8
4-D NATIONAL INVESTMENT	205 E VINE ST	11
ABRAHAM A & EULIN M KURANGA	619 S COLLEGE AVE	5
ARROWHEAD DBA	5141 RED CLOUD CT	12
	5151 RED CLOUD CT	12
	5168 RED CLOUD CT	12
	5171 RED CLOUD CT	12
	5188 RED CLOUD CT	12
BEECH STREET INVESTORS LLC	11 S BEECH ST	17
BERTHA B WESPISER TR	5973 CONTRERAS RD	5
BLUEBELL PROPERTIES LTD	5271 HESTER RD	8
BRYAN F OWENS JR TR ETAL	5402 COLLEGE CORNER PIKE	6
CALISTA ENTERPRISES LLC	112 E HIGH ST	6
CDC OXFORD LLC	1 MIAMI COMMONS	8
	12 MIAMI COMMONS	8
	13 MIAMI COMMONS	8
	2 MIAMI COMMONS	8
	3 MIAMI COMMONS	8
	4 MIAMI COMMONS	8
	5 MIAMI COMMONS	8
	6 MIAMI COMMONS	8
	8 MIAMI COMMONS	8
	9 MIAMI COMMONS	8
CLAWSON PROPERTIES II LLC	639 W CHESTNUT ST	18
	707 W CHESTNUT ST	12
COHO CAPITAL LLC	108 S MAIN ST	10
D&B FAMILY LIMITED PARTNERSHIP	402 HEATHER LN	8
	649 ERIN DR	6
	606 BRILL DR	6
	626 BRILL DR	6
	314 N COLLEGE AVE	5
	400 E CHURCH ST	5
	308 S MAIN ST	12
DAY ESTATES LLC	305 S LOCUST	20

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5F Property Recycling Access		
	■ = Direct Access ■ = Shared Access with 5F property ■ = Shared Access with CommercialBusinesss ■ = No Access	
Property Owner	Address	Number of Units
	315 S LOCUST ST	20
	5279 COLLEGE CORNER PIKE	13
	640 MCGUFFEY AVE	7
	642 MCGUFFEY AVE	6
	644 MCGUFFEY AVE	7
	5273 COLLEGE CORNER PIKE	14
DOLLAR INVESTMENTS LLC	311 S POPLAR ST	5
	315 S POPLAR ST	5
	316 S POPLAR ST	5
	319 S POPLAR ST	5
	320 S POPLAR ST	6
	322 S POPLAR ST	6
	5290 COLLEGE CORNER PIKE	5
DUBOIS RENTALS LLC	118 E HIGH ST	10
DUDLEY PRIME PROPERTIES	103 E SPRING ST	5
	107 E SPRING ST	14
EAST STREET HOLDINGS LLC	306 N MAIN ST	18
	712 S POPLAR ST	18
FOX & HOUNDS APTS OXFORD, LLC	215 FOXFIRE DR	54
	325 FOXFIRE DR	53
FRANKLIN D GROSS	210 S BEECH ST	5
GLENN & LAVEDA A BAILEY	926 TOLLGATE DR	6
HAPPYUS INC	5205 COLLEGE CORNER PIKE	6
HPCT PROPERTIES INC	1011 ARROWHEAD DR	12
INDIAN TRACE LTD	4163 INDIAN TRACE DR	12
	4174 INDIAN TRACE DR	12
	4183 INDIAN TRACE	12
	5041 RED CLOUD CT	12
	5061 RED CLOUD CT	12
	5098 RED CLOUD CT	12
	5118 RED CLOUD CT	12
	5131 RED CLOUD CT	12
JAMES A AND BARBARA J GIBBINS TRS	315 N CAMPUS AVE	12
JAMES CLAWSON	116 W WALNUT ST	6
JMH VENTURES LLC	211 S ELM ST	6
JRJ INVESTMENT COMPANY LLC	2 W SPRING ST	8

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5F Property Recycling Access		
	■ = Direct Access ■ = Shared Access with 5F property ■ = Shared Access with CommercialBusinesss ■ = No Access	
Property Owner	Address	Number of Units
	5252 COLLEGE CORNER PIKE	12
KDOANS LLC	5265 COLLEGE CORNER PIKE	14
	5432 COLLEGE CORNER PIKE	5
KIT CURRY LLC	106 W HIGH ST	11
LOUISE A HAUTAU RENTALS LLC	802 S MAIN ST	6
MAIN AND HIGH DEVELOPMENT LLC	1 W HIGH ST	14
MI SOOK WINKLE	311 N COLLEGE AVE	12
MORRISON RENTALS OXFORD LLC	10 W SYCAMORE ST	12
NBJJ LLC	606 S COLLEGE AVE	12
OH MU HOLDINGS LLC	1425 IRONWOOD DR	10
	1427 IRONWOOD DR	10
	1429 IRONWOOD DR	16
	1431 IRONWOOD DR	10
	1433 IRONWOOD DR	10
	1435 IRONWOOD DR	16
OXFORD REAL ESTATE HOLDINGS LLC	124 E SYCAMORE ST	18
OXFORD SQUARE APTS LLC	616 S COLLEGE AVE	72
	716 S COLLEGE AVE	60
OXFORD WEST PROPERTIES I, LLLP	411 WELLS MILL DR	20
	415 WELLS MILL DR	20
	417 WELLS MILL DR	10
	507 WELLS MILL DR	12
	517 WELLS MILL DR	12
	602 S LOCUST ST	10
	605 MCGUFFEY AVE	16
	606 OGDEN CT	14
	609 OGDEN CT	16
	610 OGDEN CT	10
	610 S LOCUST ST	8
	613 OGDEN CT	8
	614 S LOCUST ST	8
	618 OGDEN CT	24
	618 S LOCUST ST	8
	621 MCGUFFEY AVE	30
	622 OGDEN CT	17
	625 MCGUFFEY AVE	22

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

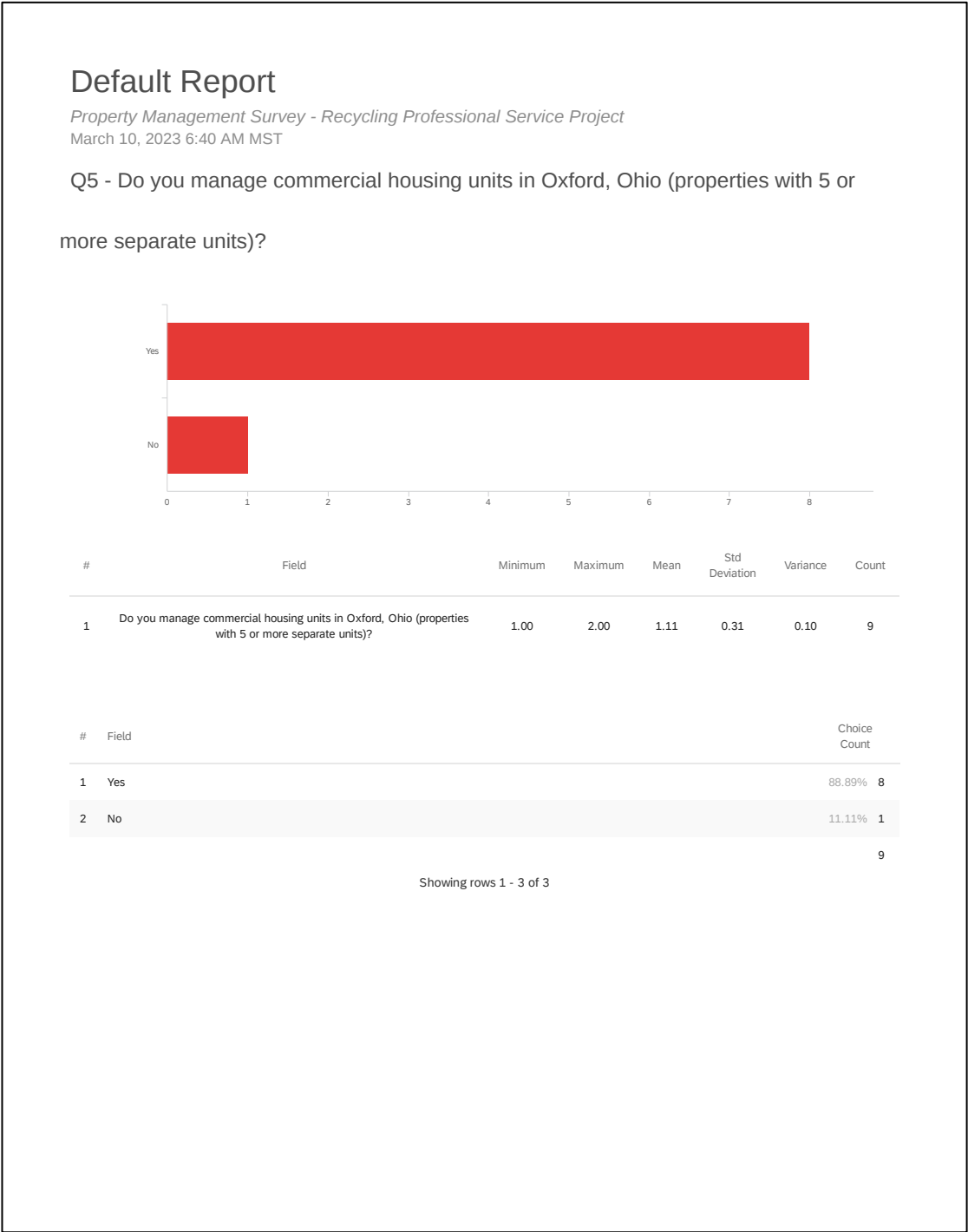
5F Property Recycling Access		
	■ = Direct Access ■ = Shared Access with 5F property ■ = Shared Access with CommercialBusinesss ■ = No Access	
Property Owner	Address	Number of Units
	714 S LOCUST ST	20
PARKVIEW ARMS LLC	5032 COLLEGE CORNER PIKE	86
PAUL W BAER TRUST PROPERTIES LLC	540 S CAMPUS AVE	12
	542 S CAMPUS AVE	12
	544 S CAMPUS AVE	12
	546 S CAMPUS AVE	12
RED BRICK MANAGEMENT INC	219 N ELM ST	6
REDHAWK RENTALS LTD	4350 OXFORD REILY RD	12
RGS PROPERTIES LLC	216 E SYCAMORE ST	24
ROBERT F SCHUETTE	15 E SPRING ST	6
RODBRO & RODBRO INVESTMENTS LLC	119 N CAMPUS AVE	8
	10 N BEECH ST	12
ROSE MANOR OXFORD PROPERTY LLC	312 S POPLAR ST	6
	314 S POPLAR ST	6
SHANE & CHRISTYANNE COFFMAN	620 S COLLEGE AVE	12
STEWART DEVELOPERS LLC	21 W HIGH ST	10
TALAFORD MANOR LLC	900 TOLLGATE DR	12
	912 TOLLGATE DR	8
	918 TOLLGATE DR	10
T H INC	212 N MAIN ST	14
	211 N BEECH ST	11
	215 N BEECH ST	12
TJ OHIO ENTERPRISES LLC	5412 COLLEGE CORNER PIKE	16
	5422 COLLEGE CORNER PIKE	20
TRES WALNUT LLC	230 W CHESTNUT ST	6
	819 S ELM ST	11
	15 W CHURCH ST	6
TYSON R REDPATH	300 BROOKVIEW CT	6
	301 BROOKVIEW CT	6
	303 BROOKVIEW CT	6
	304 BROOKVIEW CT	6
	304 W CHESTNUT ST	6
UGM LLC	616 BRILL DR	6
	620 BRILL DR	6
UNIVERSITY HOUSING APARTMENTS INC	215 N MAIN ST	16
	218 N POPLAR ST	23

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

5F Property Recycling Access		
	= Direct Access = Shared Access with 5F property = Shared Access with CommercialBusinesss = No Access	
Property Owner	Address	Number of Units
UPTOWN 2 LLC	11 E HIGH ST	6
WEST HIGH STREET INVESTMENTS LLC	141 W HIGH ST	22
WWND LLC	814 S MAIN ST	18
XUAN SU	715 W CHESTNUT ST	12

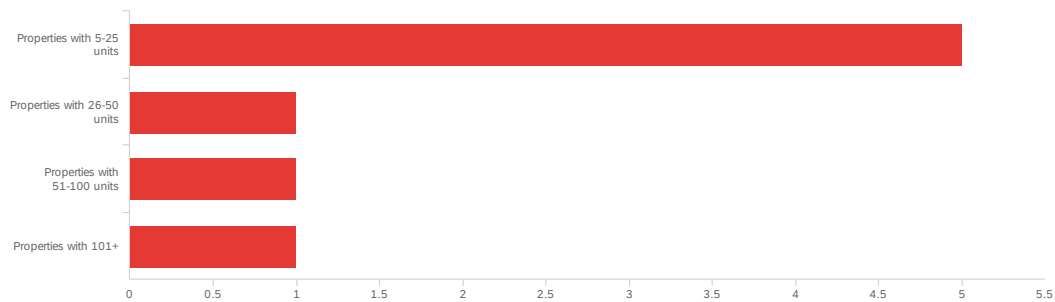
APPENDIX C: Property Manager Survey Report

The following appendix item summarizes the survey results in an automatic report generated by Qualtrics. Report and question names were not changed; therefore, the report is called “Default Report,” and question names may not indicate the order in which questions were presented nor missing questions. For example, “Q1” is not included in the report since Q1 was initially deleted and was not presented to survey respondents.



PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q6 - What sizes of commercial housing properties do you manage? (Check all that apply)



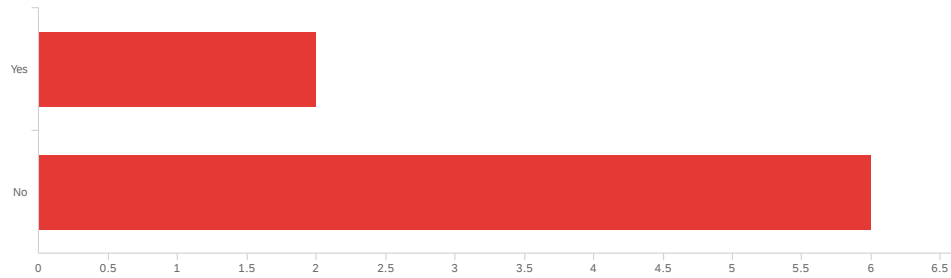
#	Field	Choice Count
1	Properties with 5-25 units	62.50% 5
2	Properties with 26-50 units	12.50% 1
3	Properties with 51-100 units	12.50% 1
4	Properties with 101+	12.50% 1

8

Showing rows 1 - 5 of 5

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q7 - Do any of the properties you manage offer recycling services (bins, dumpsters, etc) for residents?



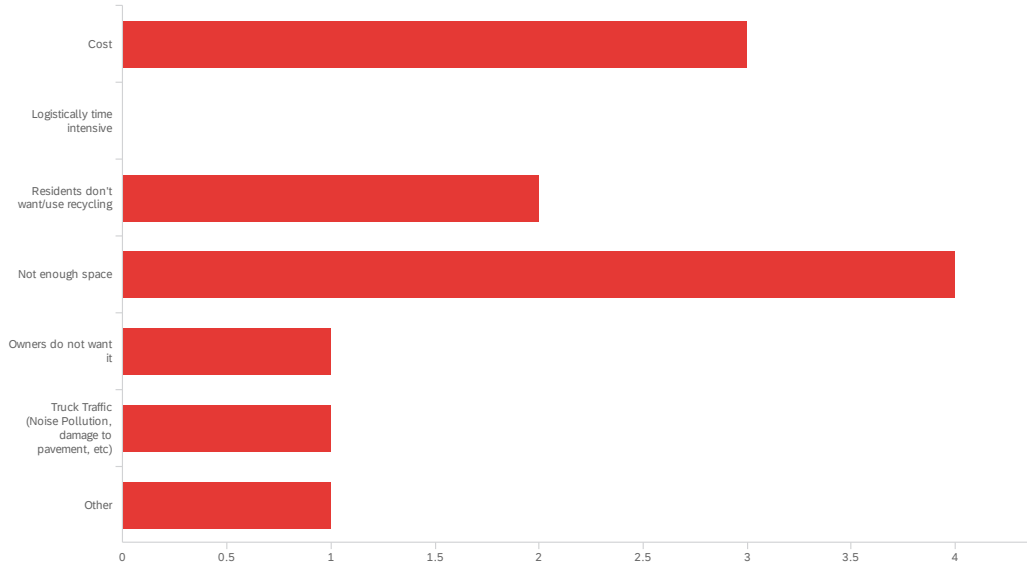
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do any of the properties you manage offer recycling services (bins, dumpsters, etc) for residents?	1.00	2.00	1.75	0.43	0.19	8

#	Field	Choice Count
1	Yes	25.00% 2
2	No	75.00% 6
		8

Showing rows 1 - 3 of 3

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q8 - Checklist of reasons why you don't currently offer recycling



#	Field	Choice Count
1	Cost	25.00% 3
2	Logistically time intensive	0.00% 0
3	Residents don't want/use recycling	16.67% 2
4	Not enough space	33.33% 4
5	Owners do not want it	8.33% 1
6	Truck Traffic (Noise Pollution, damage to pavement, etc)	8.33% 1
7	Other	8.33% 1
		12

Showing rows 1 - 8 of 8

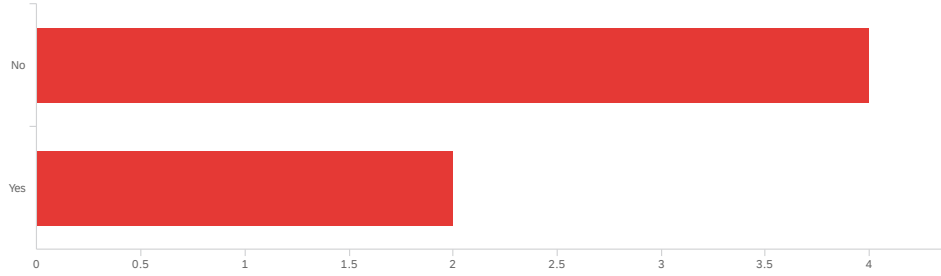
Q11_7_TEXT - Other

Other

Residents are incapable of separating their trash, causing massive build ups and trash issues

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q9 - Have any of the properties you manage in Oxford, Ohio previously offered recycling services?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have any of the properties you manage in Oxford, Ohio previously offered recycling services?	1.00	2.00	1.33	0.47	0.22	6

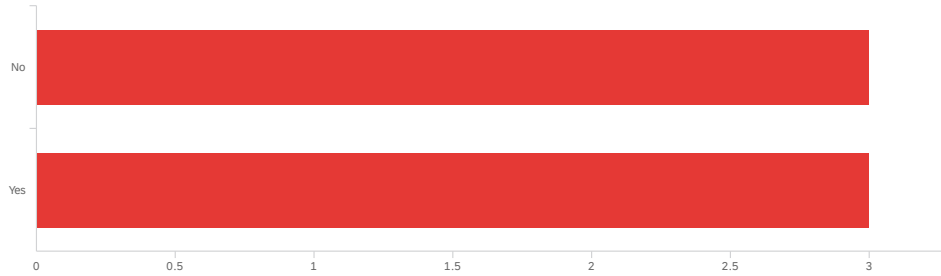
#	Field	Choice Count
1	No	66.67% 4
2	Yes	33.33% 2

6

Showing rows 1 - 3 of 3

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q10 - Are there plans or a desire to offer recycling to properties in Oxford, Ohio in the future?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Are there plans or a desire to offer recycling to properties in Oxford, Ohio in the future?	1.00	2.00	1.50	0.50	0.25	6

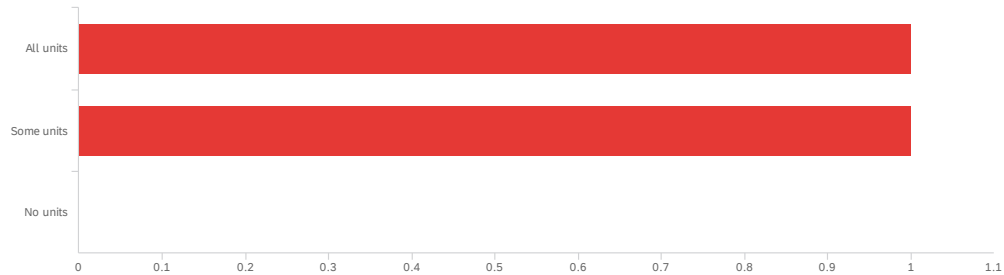
#	Field	Choice Count
1	No	50.00% 3
2	Yes	50.00% 3

6

Showing rows 1 - 3 of 3

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q11 - What portion of units do you offer recycling for on properties with 5 or more units?



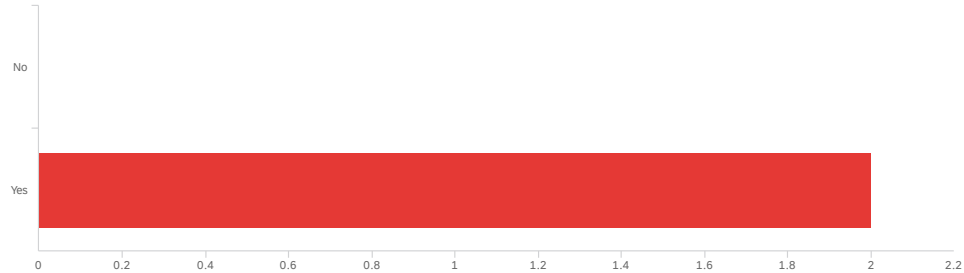
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What portion of units do you offer recycling for on properties with 5 or more units?	1.00	2.00	1.50	0.50	0.25	2

#	Field	Choice Count
1	All units	50.00% 1
2	Some units	50.00% 1
3	No units	0.00% 0
		2

Showing rows 1 - 4 of 4

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q12 - Do you communicate to your residents that recycling is available?



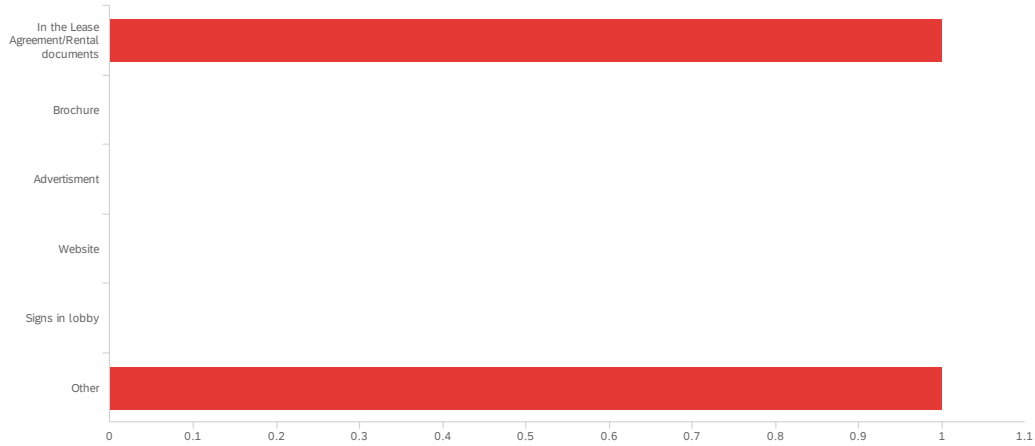
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you communicate to your residents that recycling is available?	2.00	2.00	2.00	0.00	0.00	2

#	Field	Choice Count
1	No	0.00% 0
2	Yes	100.00% 2
		2

Showing rows 1 - 3 of 3

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q13 - How do you communicate this? Click all that apply



#	Field	Choice Count
1	In the Lease Agreement/Rental documents	50.00% 1
2	Brochure	0.00% 0
3	Advertisement	0.00% 0
4	Website	0.00% 0
5	Signs in lobby	0.00% 0
6	Other	50.00% 1

2

Showing rows 1 - 7 of 7

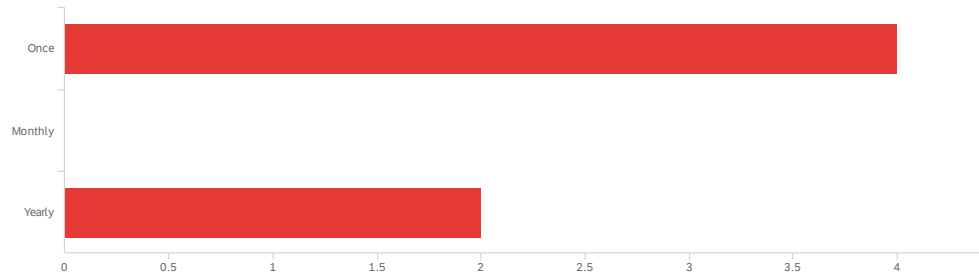
Q16_6_TEXT - Other

Other

Magnet

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q14 - How often do you communicate that recycling is available?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How often do you communicate that recycling is available?	1.00	3.00	1.67	0.94	0.89	6

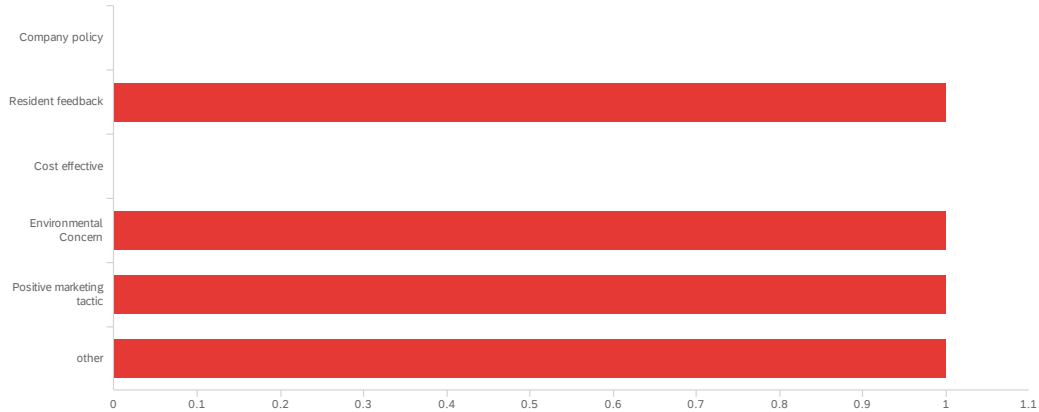
#	Field	Choice Count
1	Once	66.67% 4
2	Monthly	0.00% 0
3	Yearly	33.33% 2
		6

Showing rows 1 - 4 of 4

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q15 - Do you know the main reason recycling was implemented at these properties?

Check all that apply.



#	Field	Choice Count
1	Company policy	0.00% 0
2	Resident feedback	25.00% 1
3	Cost effective	0.00% 0
4	Environmental Concern	25.00% 1
5	Positive marketing tactic	25.00% 1
6	other	25.00% 1

4

Showing rows 1 - 7 of 7

Q17_6_TEXT - other

other

previous mgmt put in place

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q16 - What are the biggest challenges you face regarding recycling programs at your facilities?

What are the biggest challenges you face regarding recycling programs at yo...

Not enough space for an extra dumpster

space

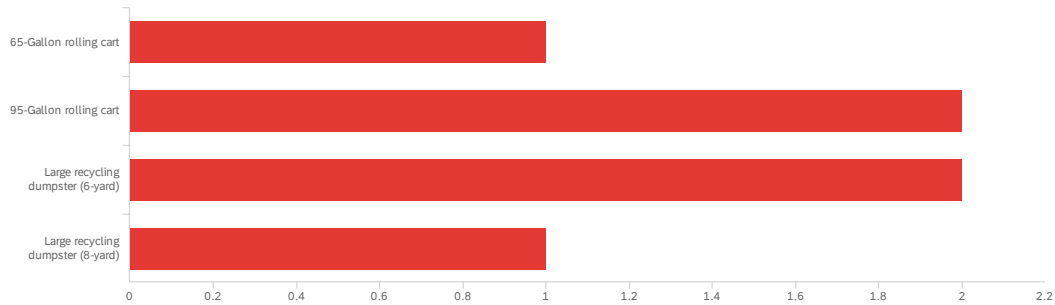
space to place the receptacle and the residents using it as a dumpster

There is simply one challenge that led us to stop recycling. Tenants refuse to follow basic recycling guidelines, and continuously put trash into the recycling. Rumpke will not pick up recycling if it is contaminated, which led to major problems.

None really

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q28 - Which recycling container do you think would receive less contamination if placed on your multi-unit property?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Which recycling container do you think would receive less contamination if placed on your multi-unit property?	1.00	4.00	2.50	0.96	0.92	6

#	Field	Choice Count
1	65-Gallon rolling cart	16.67% 1
2	95-Gallon rolling cart	33.33% 2
3	Large recycling dumpster (6-yard)	33.33% 2
4	Large recycling dumpster (8-yard)	16.67% 1
		6

Showing rows 1 - 5 of 5

Q17 - Does the size of the properties you manage create challenges to providing recycling that properties of other sizes may not face?

Does the size of the properties you manage create challenges to providing r...

yes

It depends on the property location

Yes, however we have recycling issues at every location including individual homes. They still continue to be filled with trash and other items and Rumpke refuses to take them.

No

Q18 - Is there anything you think the City can do to help support recycling at your complexes?

Is there anything you think the City can do to help support recycling at yo...

not sure

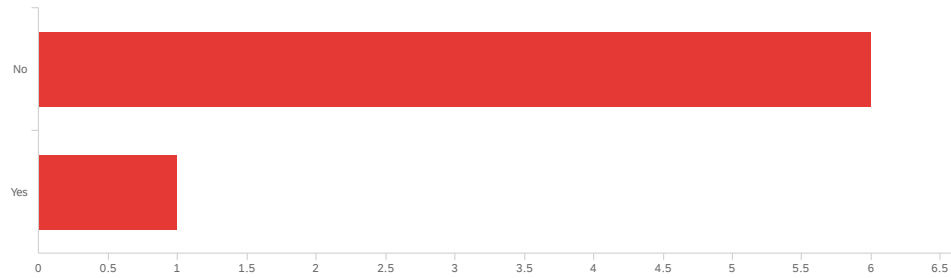
Offer recycling at all. I don't know where the City offers a recycling option. I know Miami University does

Yes. They could enforce the fines in the ORC.

Keep cost down on recycling for environment

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q19 - Would you be willing to participate further in this research project by participating in an interview?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be willing to participate further in this research project by participating in an interview?	1.00	2.00	1.14	0.35	0.12	7

#	Field	Choice Count
1	No	85.71% 6
2	Yes	14.29% 1

7

Showing rows 1 - 3 of 3

PROFESSIONAL SERVICE PROJECT 2022-2023 REPORT

Q26 - Do you think that different types of recycling canisters impact the amount of contamination found within the containers? Why?

Do you think that different types of recycling canisters impact the amount...

No because people throw away different items. Glass, cardboard, plastic etc

Not sure. I think people are lazy and will put trash in any receptacle, trash or recycling which then creates a problem because Rumpke won't pick it up because its contaminated. Then we have to send someone out to dump the recycling into the dumpster and the owner gets frustrated with the cost. It's a conundrum

No. They all seem to get contaminated

Residents mistake the large dumpsters for common trash.

no

End of Report

APPENDIX D: Tenant Survey

The tenant survey was determined to fall outside the scope of this report. The PSP team has included a memo explaining the potential impact and importance of conducting a tenant survey that goes beyond this PSP project.

Memo

OX Multifamily Recycling Team - Tenant Survey

To: PSP Recycling Team

From: Emily Anzalone

Re: Tenant Survey

Date: 3/29/23

One of the objectives set at the beginning of this professional service project was to create a tenant survey that would be sent out to the residents of the multifamily housing complexes in Oxford, Ohio. This survey would help gain a better understanding of if/how these tenants recycled. It would also help us understand the level of education they had about what can and cannot be recycled in Oxford. Examples of these questions are as follows:

- If my building offered recycling
 - I would participate
 - I would not participate
- Whether your complex does or does offer recycling, do you recycle your materials?
 - If no: Why not: list options - not accessible, don't know how, don't think it matters, etc
 - If yes: list options - as much as possible, sometimes, very rarely
 - Do you ever take recycling to an off-site location?
- Do you know what materials can be recycled in Oxford?

While the PSP team hoped to complete this objective, unfortunately, time and resources did not allow us to do so. After asking stakeholders if they had suggestions for a successful project outcome, a tenant survey was often at the top of their list. One complaint that some stakeholders had was that even when recycling was offered it became so contaminated that Rumpke would not collect it. It became clear to us that we need to understand what motivates tenants to recycle well and the only way to do that is to get information from them directly. This is why the PSP team recommends that the next team or the City of Oxford's Environmental Commission create a tenant survey using our questions. With this information, the hope is to be able to better implement recycling in multifamily housing complexes.

APPENDIX E: Austin, TX Tenant Education Email Template

Attached are the English tenant letters that Austin, Texas, provides commercial housing properties to distribute to tenants.

Recycling Email and/or Letter to your Residents [English]

This document provides text that you can copy and paste into an email and/or easily print and physically provide to each resident at their doors.

See pages 3-4 for Spanish translation.

Consulte las páginas 3-4 para español.

Instructions for Property Managers and Employees:

- 1) Check the colors of your bins, lids and stickers. (Landfill and recycling should be identified by your hauler in all 3 ways).
- 2) Replace all green text below with your property's information.
- 3) Send to your residents by:
 - a. Erasing these instructions, printing and leaving a letter at each resident's door
 - b. OR copying and pasting the information below into an email and send each resident.

Additional Suggestions:

- 1) Also give each resident a recycling poster that can be found on this website
- 2) Include photos of each dumpster to help residents tell the difference between them

Thank you for fulfilling the City's recycling education requirement and working to support the City of Austin's community efforts!

Recycling at [Property Name]

Dear Resident,

Thank you for being part of our community! We want to update you on our recycling efforts and provide you with a few resources to support you in your recycling practices at home. We have conveniently located recycling containers near the landfill containers throughout the property. It is important that we use these containers correctly!

Only FIVE items are allowed in the recycling containers:

- 1) **Cardboard:** Cereal Boxes, Shoe Boxes, Toilet Paper Rolls
- 2) **Paper:** Glossy Paper, Junk Mail, Envelopes, Magazines, Paper Bags
- 3) **Glass:** Glass bottles, Glass Jars
- 4) **Metals:** Aluminum Foil Baking Pans, Soda Cans, Steel and Tin Cans
- 5) **Hard Plastics:** Water or Soda Bottles, Plastic Milk Jugs, Detergent Bottles

Remember: The recycling containers on our property are [color here] with [color here] lids and [color here] recycling stickers.

Please do NOT put these items in Recycling:

- Food or Liquids
- Styrofoam
- Plastic Bags
- Waxy Paper
- Food Soiled Paper or Dirty Take-Out Containers
- Wood
- Furniture
- Mattresses

Remember: The landfill containers on our property are [color here] with [color here] lids and black landfill stickers.

Why is this important?

Putting landfill items into your recycling bin causes expensive problems and unsafe conditions for employees, recycling trucks and machinery.

Do you want to do more?

Learn how you can compost, donate and dispose of hazardous materials here:
www.austintexas.gov/apartmentrecycling

Thank you for your efforts!
Sincerely,
[Property Name]

APPENDIX F: Mockup Recycling Deer Education Campaign

Mockup examples of including a mascot in the City of Oxford's education campaigns for commercial households. These designs were inspired by the personalities of the Michigan Department of Environment, Great Lakes, and Energy's recycling raccoons.



APPENDIX G: Oxford 5F Properties Access and Public Drop-Off Locations

Map of Oxford, Ohio, including the greater mile square area shaded in red. The map details 5F commercial housing properties, their level of recycling access, and the two public drop-off locations. Recycling access is based on the PSP team's assessment of on-site access using recycling billing addresses (direct access) and visual confirmation of potential services shared by properties (referred to as shared access). Households without direct or shared access were determined to have no-onsite access and must use public drop-off locations if they wish to recycle.

