



Ann Arbor 2030 District Toolkit for Tenant Engagement

The tools outlined in this document were compiled using resources from Ann Arbor city government, University of Michigan Student Life, University of Michigan Office of Sustainability, a literature review, and input gathered directly from tenants of Ann Arbor Housing Commission (AAHC) and Oxford Companies (Oxford). The tenants interviewed were from four main categories. AAHC interviews included participants from low-income family, low-income senior, and low-income single adult housing. Oxford interviews included participants from off-campus student housing. This set of recommendations can be used as a working directory of tools building owners can use to engage tenants in meeting Ann Arbor 2030 District goals of reducing existing building energy consumption, water use, material waste, and transportation emissions by 50% for existing buildings and infrastructure before 2030.

I am not the first person to do a project of this kind, and there are precedents to build on. Multiple organizations are doing similar work and research, mostly in commercial spaces. Better Building Partnership has created a similar toolkit, emphasizing partnership between owners and occupiers of commercial buildings (Better Buildings Partnership, 2013). Energy Star has a toolkit with resources focused on strategies to engage commercial tenants on energy efficiency (EPA, n.d.). The National Renewable Energy Lab's (NREL) recommendations for commercial buildings emphasize the voices of both parties; the building needs to communicate energy use information and recommendations, and the occupant must respond by providing comfort feedback and requesting adjustments (Schott et al., 2012). The American Council for an Energy-Efficient Economy (ACEEE)'s toolkit focuses on the multifamily sector through engaging utility regulators, facilitating access to whole-building energy usage data, and reducing funding uncertainties (ACEEE, 2017).

De Young (1993) discusses five ways to evaluate effectiveness of behavior change techniques: how reliable a technique is in affecting individuals' behavior, how quickly a technique can affect behavior change, how universally applicable the technique is, how well the technique encourages others to change behavior, and how well the technique can be maintained without repeated intervention (De Young, 1993). De Young also points out that behavior change research is constantly evolving, and must be actively consumed, reinterpreted, and studied further. A separate study by De Young concludes there is no single incentive or motive that is optimal for promoting environmentally responsible behavior (De Young, 2002). This toolkit is designed to be reliable, easily implementable, generalizable and durable, but also to be built upon and used as a foundation for other 2030 Districts. The goal of this engagement toolkit is to leverage and build upon the resources that already exist to create a list of diverse strategies for property

owners in the Ann Arbor 2030 District to use, and yet is applicable to and available for other 2030 Districts' use.

Instructions for future research can be found in Appendix C. I recommend landlords do their own survey of their tenants to find out what will work best in their buildings. The suggestions in each category below are sorted from more engaging items at the top to less engaging at the bottom.

Low-Income Family Housing

General Recommendations

1. **Establish sustainability goals.** Visualizing goals and sharing them with residents will improve accountability of all involved. Tenants want landlords to bring ideas to the table, which can take a lot of the perceived effort out of making behavioral changes for tenants. But building on these goals to include tenants' goals will be even more impactful if they feel they have a stake in the efforts. Low-income housing property managers can build on A²Zero or Ann Arbor 2030 District efforts coupled with information from tenant feedback to shape these goals. Property managers should bring their organization's sustainability goals to the table and collaborate with tenants to build them out further. These can be established alongside residents at a resident council meeting. Formalize goals by having them printed neatly and large in a high-traffic area such as a community center, laundry room, or mail room.
2. **Implement solutions that require easy behavior changes for tenants.** Solutions in which tenants do not have to change their behavior drastically could be upgrading washer and dryers to Energy Star appliances, installing WaterSense certified fixtures, and using motion-sensing lights in communal areas.
3. **Frame efforts in ways tenants care about.** In family housing sites there is an emphasis on building community, belonging, and taking care of the community. A requirement of living at a family site is that tenants are a family with children, so an impactful way to frame efforts in low-income family housing is by outlining the impact behavior changes will have on children and future generations.
4. **Create sustainability tip sheets.** Work with third parties such as AA2030 District, University of Michigan, or local businesses or non-profits to create a sustainability tip sheet for distribution to tenants. This could be a cardstock information sheet with a magnet on the back. The magnet will likely be in the kitchen on the fridge, so including strategies relevant to the kitchen space to reduce water, energy, and waste will be best. This could include ways to reduce plastic at the grocery store (bringing reusable bags or buying fresh fruits and veggies not wrapped in plastic), reminders not to leave the water running, keeping the fridge fuller uses less energy, and to unplug appliances like toasters or microwaves when not in use. Third-party partners or a committed group of residents could be responsible for researching or helping decide what to include on the tip sheet. This could also be implemented on a more ongoing, regular basis such as a monthly email or text message since those are the most used forms of communication in this

setting. These tips could again be researched by a third-party partner or a committed group of residents and sent out through the service provider on site.

Recommendations for Reducing Waste

1. **Focus on improving recycling efforts.** Tenants know that recycling exists but may not have all the information to utilize the service properly. Providing information on what can and cannot be recycled can help improve the effectiveness of recycling. In family housing, parents may send their children to take out the trash, so education on material waste that is targeted toward youth may also increase the effectiveness of recycling programs. This information includes tips such as: always recycle mixed paper, metal cans, plastic bottles and jars, collapse all cardboard boxes to create more room in your recycling cart, and do not put Styrofoam, batteries, light bulbs, or any electronics into the recycling. See the “Material Waste” section in Appendix A for more details.
2. **Implement a composting program.** There is typically a small group of residents who are passionate about improving the environmental sustainability of their community. This group can be a resource for piloting the implementation of a composting program. Low-income housing property managers can partner with tenants who use and manage the community gardens to pilot the composting program, iron out details and roadblocks, and then take the program to the community scale. Providing materials to tenants will increase the success of the program, such as kitchen compost bins, information on how to compost in your freezer or keep pests away, and what can and cannot be composted. Once the pilot program is complete and the site is ready to scale up the composting program, hold a workshop for tenants with snacks and refreshments. An additional incentive for attending the meeting could be taking home food grown in the community garden. This would demonstrate how composting – when done correctly – is directly beneficial to the community.
3. **Provide information on biodegradable and low-waste, zero-plastic packaging options.** This could be providing trials of sustainable laundry soap options in laundry rooms or encouraging use of reusable grocery bags.

Recommendations for Reducing Energy Use

1. **Provide all possible information on energy use.** This can be done by posting a large chart of the building energy use and cost fluctuation every month in conjunction with strategies to save and goals the community wants to meet. The chart will show if usage or cost to the community fluctuates each month. This makes the costs of usage more tangible and visible for the community. This could be posted in a communal space such as a mail or laundry room. Low-income housing property managers can also have people sign the chart or the goals to “pledge” to meet the goals. Other options for making energy use data more visible to tenants include improving access to DTE data hub or working with 2030 Districts to implement building dashboards.
2. **Install motion-sensing lights in communal areas.** These areas include trash and laundry rooms and hallways. If motion-sensing lights are not feasible, stickers for the light switches with reminders to turn off lights may be a more feasible option.

Recommendations for Reducing Water Use

1. **Install WaterSense plumbing fixtures.** When showerheads, faucets, or toilets need replaced, prioritize installing WaterSense certified plumbing fixtures. The EPA website can help identify the fixtures that are best for each residence and what to look for when buying locally, what rebates may be available, and calculate cost savings: <https://lookforwatersense.epa.gov/products/>. Be sure to provide information on how these products work and how they should be used to address any gaps in understanding that might reduce the effectiveness of this tool.
2. **Provide education on strategies to reduce water use during dishwashing.** This information can be gathered in collaboration with a third-party and distributed via email or flyers on doors by the site service providers. This also would include information on the energy and water saved by using cool or cold water during dishwashing.
3. **Provide water saving information in the laundry rooms.** This information can outline ways to reduce water use by doing larger loads of laundry and not washing single items in the machine. This information can be gathered in collaboration with AA2030 District or other community partners. This also would include information on the energy and water saved by using cool or cold water during laundry cycles.
4. **Focus on reducing outdoor water use.** Outdoor water use can be reduced by capturing rainwater with rain barrels, encouraging tenants to go to a car wash that uses recycled water, rather than washing their cars at home, reducing the amount of lawn watering and incorporating native landscaping, and discouraging driveway cleaning.
5. **Provide all possible information on water use.** This can be done by posting a large chart of the water use and cost fluctuation every month in conjunction with ways to save and goals the community wants to meet. The chart will show if usage or cost to the community fluctuates each month. This makes the costs of usage more tangible and visible for the community. This could be posted in a communal space such as a mail or laundry room. Low-income housing property managers can also have people sign the chart or the goals to “pledge” to meet the goals.

Recommendations for Reducing Emissions from Transportation

1. **Plan for electric charging stations.** As automakers and infrastructure shift to support electric vehicles, planning for electric charging stations and other infrastructure can be a longer-term project to prepare to support tenants in this switch.

Low-Income Senior Housing

General Recommendations

1. **Utilize the social nature of the community.** Senior housing residents are typically retired and have more time to spend engaging with neighbors and in community activities. They are more likely to attend workshops and events and hold their neighbors accountable because they know each other. We can capitalize on the nature of the

community by incorporating more social ways to meet AA2030 District goals. Working with third-party partners to facilitate competitions, workshops, meetings and opportunities to learn together is intriguing to this population. One example is a workshop for tenants to make their own green cleaning products (See “Green Cleaning Products” section of Appendix A).

2. **Use recognition as an incentive.** Recognition for behavior change is more effective in this population because people know each other and are more social. Recognition can be used to encourage participation and behavior change. If tenants know their neighbors are making sustainable switches, this group is more likely to do the same.
3. **Establish sustainability goals.** Visualizing goals and sharing them with residents will improve accountability of all involved. Tenants want landlords to bring ideas to the table, which can take a lot of the perceived effort out of making behavioral changes for tenants. But building on these goals to include tenants’ goals will be even more impactful if they feel they have a stake in the efforts. Low-income housing property managers can build on A²Zero or Ann Arbor 2030 District efforts coupled with information from tenant feedback to shape these goals. Property managers should bring their organization’s sustainability goals to the table and collaborate with tenants to build them out further. These can be established alongside residents at a resident council meeting. Formalize goals by having them printed neatly and large in a high-traffic area such as a community center, laundry room, or mail room.
4. **Implement solutions that require low behavior change for tenants.** Solutions in which tenants do not have to change their behavior drastically could be upgrading washer and dryers to Energy Star appliances, installing WaterSense certified fixtures, and using motion-sensing lights in communal areas.
5. **Create sustainability tip sheets.** Work with third-party partners such as AA2030 District, University of Michigan, or local businesses or non-profits to create a sustainability tip sheet for distribution to tenants. This could be a cardstock information sheet with a magnet on the back. The magnet will likely be in the kitchen on the fridge, so including strategies relevant to the kitchen space to reduce water, energy, and waste will be best. This could include ways to reduce plastic at the grocery store (bringing reusable bags or buying fresh fruits and veggies not wrapped in plastic), reminders not to leave the water running, keeping the fridge fuller uses less energy, and to unplug appliances like toasters or microwaves when not in use. Third-party partners or a committed group of residents could be responsible for researching or helping decide what to include on the tip sheet. This could also be implemented on a more ongoing, regular basis through memos on tenants’ doors since that is the most used form of communication in this setting. These tips could again be researched by a third-party partner or a committed group of residents and sent out through the service provider on site.

Recommendations for Reducing Waste

1. **Focus on improving recycling efforts.** Tenants know that recycling exists but may not have all the information to utilize the service properly. Providing information on what

can and cannot be recycled can help improve the effectiveness of recycling. This information includes tips such as: always recycle mixed paper, metal cans, plastic bottles and jars, collapse all cardboard boxes to create more room in your recycling cart, and do not put Styrofoam, batteries, light bulbs, or any electronics into the recycling. (See the “Material Waste” section in Appendix A for more details).

2. **Reduce package waste of delivered meals.** The community-based and social nature of the senior population allows residents to share leftover food, so the food waste is likely lower at senior housing sites than other types of sites. Although the food waste may be low, the meal-delivery services used at senior housing sites does create extra material waste. Ordering food from places that use compostable or recyclable packaging can reduce this waste. Low-income housing property managers could request the meals be delivered in bulk, such as buffet-style trays, or encourage the suppliers to change their packaging from Styrofoam to something more environmentally conscious.
3. **Assist with move-in and move-out waste.** Appendix A offers resources on where to thrift used items, proper disposal of several types of items and waste, and other ways to reduce waste during the moving process.

Recommendations for Reducing Energy Use

1. **Provide all possible information on energy use.** This can be done by posting a large chart of the building energy use and cost fluctuation every month in conjunction with strategies to save and goals the community wants to meet. The chart will show if usage or cost to the community fluctuates each month. This makes the costs of usage more tangible and visible for the community. This could be posted in a communal space such as a mail or laundry room. Low-income housing property managers can also have people sign the chart or the goals to “pledge” to meet the goals. Other options for making energy use data more visible to tenants include improving access to DTE data hub or working with 2030 Districts to implement building dashboards.
2. **Upgrade faulty thermostats.** Adjusting an old, faulty thermostat is a challenge for some seniors suffering from Parkinson’s disease and other health issues that impact mobility, fine motor skills, and physical strength. If programmable/smart thermostats are feasible, this is a great way to make adjusting temperature more accessible and reduce energy bills.
3. **Install motion-sensing lights in communal areas.** These areas include trash and laundry rooms and hallways. If motion-sensing lights are not feasible, stickers for the light switches with reminders to turn off lights may be a more feasible option.

Recommendations for Reducing Water Use

1. **Provide water saving information in the laundry rooms.** This information can outline ways to reduce water use by doing larger loads of laundry and not washing single items in the machine. This also would include information on the energy and water saved by using cool or cold water during laundry cycles. This information can be gathered in collaboration with AA2030 District or other community partners.

2. **Provide all possible information on water use.** This can be done by posting a large chart of the building's water use and cost every month in conjunction with strategies to save and goals the community wants to meet. The chart will show if usage or cost to the community fluctuates each month. This makes the costs of usage more tangible and visible for the community. This could be posted in a communal space such as a mail or laundry room. Low-income housing property managers can also have people sign the chart or the goals to “pledge” to meet the goals.
3. **Install WaterSense plumbing fixtures.** When showerheads, faucets, or toilets need replaced, prioritize installing WaterSense certified plumbing fixtures. The EPA website can help identify the fixtures that are best for each residence and what to look for when buying locally, what rebates may be available, and calculate cost savings: <https://lookforwatersense.epa.gov/products/>. Be sure to provide information on how these products work and how they should be used to address any gaps in understanding that might reduce the effectiveness of this tool.
4. **Provide education on strategies to reduce water use during dishwashing.** This information can be gathered in collaboration with a third-party and distributed via email or flyers on doors by the site service providers. This also would include information on the energy and water saved by using cool or cold water during dishwashing.

Recommendations for Reducing Emissions from Transportation

1. **Encourage continued use of A Ride, walking, and public transit.** It can be difficult to give up the independence of driving a personal vehicle for some seniors, and hard to change their minds about switching to a cleaner method of transportation. Still, low-income housing property managers can encourage walking group outings, facilitate the A Ride [application process](#) for those who have not applied yet and offer information to increase familiarity and comfort with the bus system.

Low-Income Single Adult Housing

General Recommendations

1. **Recruit, educate, and retain supportive service staff members.** Supportive service staff are trusted individuals that work closely with tenants in vulnerable populations to help them succeed in daily goals. These trained staff members can be given additional training to communicate new programs and goals of the low-income housing providers and the building including environmental sustainability goals. They can also be trained in sustainability best practices so when they are assisting tenants with cleaning their apartments or addressing waste issues, they will know the most sustainable ways to do so. This training can be conducted through a third-party collaborator. In the low-income single adult housing sites, there is much less emphasis on community and neighborliness, so focusing on the individual through these support service roles is a strong option.
2. **Establish sustainability goals.** Visualizing goals and sharing them with residents will improve accountability of all involved. Tenants want property owners to bring ideas to

the table, which can take a lot of the perceived effort out of making behavioral changes for tenants. Tenants also want to know why they are being asked to make changes, and want the materials and information provided which can also reduce some of the perceived effort. But building on these goals to include tenants' goals will be even more impactful if they feel they have a stake in the efforts. Low-income housing property managers can build on A²Zero or Ann Arbor 2030 District efforts coupled with information from tenant feedback to shape these goals. Property managers should bring their organization's sustainability goals to the table and collaborate with tenants to build them out further. These can be established alongside residents at a resident council meeting. Formalize goals by having them printed neatly and large in a high-traffic area such as a community center, laundry room, or mail room.

3. **Create sustainability tip sheets.** Work with third-party partners such as AA2030 District, University of Michigan, or local businesses or non-profits to create a sustainability tip sheet for distribution to tenants. This could be a cardstock information sheet with a magnet on the back. The magnet will likely be in the kitchen on the fridge, so including strategies relevant to the kitchen space to reduce water, energy, and waste will be best. This could include ways to reduce plastic at the grocery store (bringing reusable bags or buying fresh fruits and veggies not wrapped in plastic), reminders not to leave the water running, keeping the fridge fuller uses less energy, and to unplug appliances like toasters or microwaves when not in use. Third-party partners or a committed group of residents could be responsible for researching or helping in deciding what to include on the tip sheet. This could also be implemented on a more ongoing, regular basis through memos on tenants' doors since that is the most used form of communication in this setting. These tips could again be researched by a third-party partner or a committed group of residents and sent out through the service provider on site.

Recommendations for Reducing Waste

1. **Focus on improving recycling efforts.** Tenants know that recycling exists but may not have all the information to utilize the service properly. Providing information on what can and cannot be recycled through graphics can help improve the effectiveness of recycling, as well as ensuring the recycling bins are emptied regularly. This information includes tips such as: always recycle mixed paper, metal cans, plastic bottles and jars, collapse all cardboard boxes to create more room in your recycling cart, and do not put Styrofoam, batteries, light bulbs, or any electronics into the recycling. See the "Material Waste" section in Appendix A for more details.
2. **Implement a composting program.** Food distribution organizations often bring in a lot of compostable food that does not get consumed, so there is a potential for large amounts of food waste depending on the type and state of food brought into the building by these services. There is typically a small group of residents who are passionate about improving the environmental sustainability of their community. This group can be a resource for piloting the implementation of a composting program alongside interested building staff and employees. The pilot will be used to iron out details and roadblocks,

and then take the program to the community scale if successful. Providing materials to tenants will increase the success of the program, such as kitchen compost bins, information on how to compost in a freezer or keep pests away, and what can and cannot be composted. Once the pilot program is complete and the site is ready to scale up the composting program, hold a workshop for tenants with snacks and refreshments. This community is concerned about pests, and the apartment building structure may not be conducive to building-wide composting in individual units but might be something that could be incorporated in trash rooms or outdoors on the property. Sites with onsite community gardens may be more effective than those without due to the therapeutic nature of gardening and maintaining the compost.

Recommendations for Reducing Energy Use

1. **Install motion-sensing lights in communal areas.** These areas include trash and laundry rooms and hallways. If motion-sensing lights are not feasible, stickers for the light switches with reminders to turn off lights may be a more feasible option.
2. **Give tenants sustainable habit reminders using graphics.** These reminders can be in the form of light switch stickers with a reminder to turn off the lights when exiting.



(fishpond.com)

3. **Provide tenants with weatherization tools.** Providing tenants with tools such as insulation tape and door draft stoppers to improve the efficiency of their unit can keep units warmer and reduce the need for turning up individual apartment temperatures.

Recommendations for Reducing Water Use

1. **Install WaterSense plumbing fixtures.** When showerheads, faucets, or toilets need replaced, prioritize installing WaterSense certified plumbing fixtures. The EPA [website](#) can help identify the fixtures that are best for each residence and what to look for when buying locally, what rebates may be available, and calculate cost savings. Be sure to provide information on how these products work and how they should be used to address any gaps in understanding that might reduce their effectiveness!
2. **Continued investment in bed bug prevention.** Low-income single adult housing serves those transitioning out of homelessness. With the increased number of tenants moving in and out of the building, there is an increased risk of bed bugs. Tenants may have to wash

their belongings with hot water and dry them on high heat. If bed bugs can be prevented, this may reduce the amount of energy intensive loads of laundry that have to be done.

3. **Provide education on strategies to reduce water use during dishwashing.** This information can be gathered in collaboration with a third-party and distributed via email or flyers on doors by the site service providers. This also would include information on the energy and water saved by using cool or cold water during dishwashing.
4. **Provide water saving information in the laundry rooms.** This information can outline ways to reduce water use by doing larger loads of laundry and not washing single items in the machine. This also would include information on the energy and water saved by using cool or cold water during laundry cycles. This information can be gathered in collaboration with AA2030 District or other community partners.

Recommendations for Reducing Emissions from Transportation

2. **Encourage continued use of walking and public transit.** Offer bus route and fare information to increase familiarity and comfort with the bus system.

Off-Campus Student Housing

General Recommendations

1. **Implement a monthly email newsletter with sustainability tips.** These tips can be small behavioral changes such as turning off the water while brushing your teeth or making a swap for chicken instead of red meat at the grocery store. Explaining how each tip is impactful will improve effectiveness. Include seasonal tips such as planning to reduce food waste before leaving for winter break or what to do with items that are hard to dispose of during move out. Utilize community experts to communicate information to tenants and establish credibility. Experts could include resources from the Ann Arbor Office of Sustainability and Innovation or programs at the University of Michigan such as the School for Environment and Sustainability, Planet Blue Ambassadors, or Planet Blue Student Leaders. Materials can also be labeled with “In partnership with Ann Arbor 2030 District” and Ann Arbor 2030 District branding to serve the same purpose of expertise and credibility. Examples of sustainability tips can be found in Appendix B.
2. **Target students when they are moving into a new place.** This is a fresh start and new beginning when implementing new habits is more reasonable than changing behaviors once a student is settled into their new space.
3. **Offer an online carbon footprint calculator tool.** A short, virtual workshop for tenants to calculate their carbon footprint or simply a link to the tool can empower tenants to be more conscious in their water, energy, and material consumption.
4. **Establish sustainability goals.** Visualizing goals and sharing them with residents will improve accountability of all involved. Tenants want property owners to bring ideas to the table, which can take a lot of the perceived effort out of making behavioral changes for tenants. Tenants also want to know why they are being asked to make changes, and want the materials and information provided which can also reduce some of the perceived

effort. But building on these goals to include tenants' goals will be even more impactful if they feel they have a stake in the efforts. Student housing property managers should bring their organization's sustainability goals to the table and collaborate with tenants to build them out further. These can be established alongside residents at a resident council meeting. Formalize goals by having them printed neatly and largely in a high-traffic area such as a community center, laundry room, or mail room.

5. **Create community partnerships.** Ann Arbor is home to the University of Michigan's main campus. The graduate School for Environment and Sustainability, the undergraduate Program in the Environment, UM Student Life, UM Office of Sustainability and UM Housing are all potential partners that can help create resources and facilitate action toward AA2030 District goals. Student housing property managers can work with UM Housing to identify and mirror what dorms are doing that might work for off-campus housing, especially around move-in and out waste. The City of Ann Arbor's Office of Sustainability and Innovation, A2Zero program, and A2Zero Ambassadors, and local businesses and non-profits are all potential partners.

Recommendations for Reducing Waste

1. **Provide information and materials to reduce waste during move-in and move-out season.** Appendix A can be used as a template. This includes move-in tips, donation drop sites and pick-up services, and what to do with material waste and unwanted medications.
2. **Lobby the city to expand composting services to multi-tenant buildings.** Right now, Ann Arbor does not offer composting services to multi-tenant buildings. Many Oxford tenants are also UM students, and understand how to sort their waste already, so this can be an easy transition for Oxford residents if the opportunity is made available to them.

Recommendations for Reducing Energy Use

1. **Encourage tenants to utilize free energy-efficiency [products from DTE](#).** This may include ENERGY STAR®-certified LED light bulbs, energy efficient showerheads, faucet aerators, water heater pipe wrap, nightlights, and programmable/smart thermostats. Student housing property managers should also encourage use of the DTE Insight app upon move-in, work on improving tenant access to DTE data hub, or working with 2030 Districts to implement building dashboards.
2. **Provide one LED light bulb upon move-in for tenants.** This can create habits for tenants when they go to buy a new light bulb, they will reference the one provided and continue to purchase Energy Star LED light bulbs. Los Angeles Department of Water and Power implemented a similar strategy and was able to save customers money and reduce the city's energy consumption significantly (LADWP, 2019).
3. When appliances need upgrades, choose to install only Energy Star appliances.
4. **Install programmable/smart thermostats.** and provide instructions to tenants on how to use them.

Recommendations for Reducing Water Use

1. **Install WaterSense plumbing fixtures.** When showerheads, faucets, or toilets need replaced, prioritize installing WaterSense certified plumbing fixtures. The EPA [website](#) can help identify the fixtures that are best for each residence and what to look for when buying locally, what rebates may be available, and calculate cost savings. Be sure to provide information on how these products work and how they should be used to address any gaps in understanding that might reduce their effectiveness!
2. **Encourage composting in properties that are not classified as “multi-tenant.”** These properties should be able to use the city’s composting program. By providing resources such as compost bins, bags, and information on what can and cannot be composted, we can encourage tenants that have access to use the city’s resources to reduce food waste.
3. **Provide all possible information on water use.** This can be done by posting a large chart of water use and cost fluctuation every month in conjunction with strategies to save and goals the community wants to meet. The chart will show if usage or cost to the community fluctuates each month. This makes the costs of usage more tangible and visible for the community. This could be posted in a communal space such as a mail or laundry room. Low-income housing property managers can also have people sign the chart or the goals to “pledge” to meet the goals.
4. **Provide water saving information in the laundry rooms.** This information can outline ways to reduce water use by doing larger loads of laundry and not washing single items in the machine. This also would include information on the energy and water saved by using cool or cold water during laundry cycles. This information can be gathered in collaboration with AA2030 District or other community partners.
5. **Provide education on strategies to reduce water use during dishwashing.** This information can be gathered in collaboration with a third-party and distributed via email or flyers on doors by the site service providers. This also would include information on the energy and water saved by using cool or cold water during dishwashing.

Recommendations for Reducing Emissions from Transportation

1. **Encourage continued use of walking and public transit.** Many student tenants already prioritize housing that is within walking distance of campus, but when they need to go other places such as the grocery store, they may use a car. Offering information to increase familiarity and comfort with the bus system can reduce single drivers on the road.

Resources for Commercial Buildings

Commercial spaces are unique in that they serve a very different purpose than residential spaces. Much more research and publications exist supporting commercial tenant engagement, including the resources listed in the introduction of this toolkit from Building Better Partnerships, NREL and Energy Star. Additionally, a partnership between Institute for Market Transformation and U.S. Department of Energy's Better Buildings Alliance created reference guides for both landlords and tenants in commercial spaces for green leasing practices, also called “energy-

aligned” or “high-performance” leases (Institute for Market Transformation, n.d.). Below are some resources targeted toward commercial spaces that may be useful in the interim until further research can be conducted.

1. EPA (n.d.). *8 Great Strategies to Engage Tenants on Energy Efficiency*. Energy Star. Retrieved March 25, 2022 from <https://www.energystar.gov/sites/default/files/buildings/tools/8-Great-Strategies-to-Engage-Tenants.pdf>.
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Future Research Recommendations

The sample population was relatively small and there is room for more research on the four categories of tenants interviewed for this toolkit: low-income family, low-income senior, low-income single adult, and off-campus student housing. In addition to a larger sample size of the interviewed populations, surveys of commercial, retail, and restaurant occupants would provide data on strategies to reduce energy and water use, material waste, and transportation emissions in their sectors. Guidance for future research on this topic is contained in Appendix C.

References

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APPENDICES

APPENDIX A

Resources for Student Move-in and Move-out Waste (A2gov.org)

Sustainable Move-in Tips

- Have less stuff.
- Collect used cardboard boxes from local shops.
- Order reusable moving boxes: <https://www.uhaul.com/Plastic-Moving-Boxes/>

Green Cleaning Products

- [make your own natural cleaning products](#)
- <https://nymag.com/strategist/article/best-natural-organic-cleaning-products.html>
- [Dropps laundry detergent](#)

General Resources

- Food prep/storage tool donation: <https://agentchange.org/food-tool-donation>
- University of Michigan's Waste Search Tool: <http://ocs.umich.edu/where-to-throw>
- If you have other waste that you are unsure how to dispose of, recycle Ann Arbor's [A-Z Recycling Guide](#) has you covered. Just type in the item you want to throw away to learn how to best dispose of it.
- You can also check out the [City of Ann Arbor's Spring 2022 Move In/Out page](#) for details about the city's solid waste collection area on East University.
- [Live Zero Waste Ann Arbor](#) shares zero-waste lifestyle tips on their blog such as:
 - How to compost
 - How to stop junk mail
 - How to reduce clothing waste
 - How to reduce household waste

Donation Drop Sites

- [Ann Arbor PTO Thrift Shop](#)
 - Location: 2280 S. Industrial Hwy.
Open for Donations: Monday, Thursday, Friday from 10am to 6pm, Saturday from 10am to 5pm, and Sunday from 12pm to 4pm.
 - The PTO Thrift Shop accepts clothing, books, kitchenware and small appliances in good condition. [List of acceptable donations.](#)
 - The money earned from the resale of items goes to benefit Ann Arbor public schools and their extracurricular programs.
- [Goodwill](#)
 - Location: 3782 Carpenter Rd
 - Open for Donations: Monday through Saturday from 8:00am to 8:00pm, and Sundays from 11:00am to 5:00pm.
 - All Goodwill retail locations accept clothing, electronics, furniture, and home goods. See [Goodwill Detroit](#) for a full list.

- Proceeds from the resale of donations support local people in the Greater Detroit area.
- [Kiwanis](#)
 - Location: 100 N. Staebler Rd., Suite C, at Jackson Rd.
 - Drop off donations are accepted only on Saturdays from 9am to Noon, weather permitting.
- [Sharehouse](#)
 - Location: 5161 Jackson Road

Pick-Up Services

- [Salvation Army](#)
 - Schedule a free pick-up [online](#), and let them know what you will be donating.
 - Clothing, furniture and appliances are accepted in good condition. Check out [Salvation Army's value guide](#) to determine the tax-deductible value for your donations.
- [Ann Arbor ReStore](#)
 - Donate to the Habitat for Humanity of Huron Valley. You can schedule a free pick-up Monday through Friday between 9am and 5pm on the [ReStore website](#) or by calling (734) 323-7028.
 - Fill out the [Ann Arbor ReStore's online form](#) and upload photos of the items you wish to donate.

Material Waste

- City of A2 recycling guide: <https://www.a2gov.org/departments/trash-recycling/Documents/Recycle%20Item%20Flyer%20III.pdf>
- Drop off Station for many items that curbside doesn't take
- <https://www.recycleann Arbor.org/divisions/drop-off-station>
- <https://www.recycleann Arbor.org/a-z-recycling-guide>
- [Trash](#)
 - All garbage must fit into the trash cart with the lid closed.
 - Make sure to compact your trash bags before putting them into the cart.
 - Bring trash carts to the curb within 24 hours prior to service.
 - Remove trash carts within 12 hours of service.
 - Do not put televisions, computers, and other electronics in your trash cart.
 - Appliances containing freon may not be placed in the trash.
- [Recycling](#)
 - Always recycle mixed paper, metal cans, plastic bottles and jars.
 - Recycle "Aseptic" and "Tetrapak" packages typically used for liquids such as broth or almond milk.
 - Keep the lids on all containers.
 - Larger plastic items like laundry baskets and lawn chairs can be put in your curbside recycling if they fit into the cart with the lid closed.

- Collapse all cardboard boxes to create more room in your recycling cart.
- Do not put Styrofoam, batteries, light bulbs, or any electronics into your recycling cart.
- Biodegradable plastics (marked “PLA” or “BPI”) may not be placed in curbside recycling.

Unwanted Medications

- Unwanted medications can be taken to UHS for disposal anytime UHS is open. See [Safe Medication Disposal](#).

APPENDIX B

Water and Energy Saving Tips for Tenants

- **In the Kitchen**
 - When cooking, peel and clean vegetables in a large bowl of water instead of under running water.
 - Fill your sink or basin when washing and rinsing dishes.
 - Only use garbage disposal when necessary (composting is a great alternative).
- **Shower/Bath**
 - A ten-minute shower can use less water than a full bath.
 - With a new 2.5 gallon-per-minute (low-flow) shower head, a 10-minute shower will use about 25 gallons of water, saving you five gallons of water over a typical bath.
 - A new showerhead also will save energy — up to \$145 each year on electricity — beating out both the bath and an old-fashioned showerhead.
- **Dishwashing**
 - Save water by scraping dishes instead of rinsing them before loading them in the dishwasher. Run your dishwasher with a full load and use the air-dry option if available.
 - Rinsing dirty dishes before loading your dishwasher uses a lot of water and energy. Most dishwashers today can thoroughly clean dishes that have had food scraped, rather than rinsed, off — the wash cycle and detergent take care of the rest. To make the most efficient use of your dishwasher's energy and water consumption, run the dishwasher only when enough dirty dishes have accumulated for a full load.
 - Use one basin for suds, and one for cool rinse. Avoid washing and rinsing under a running tap. Skip the towel, better to air-dry instead (Porras et al., 2020).
 - Scrape, but don't rinse. Run a full load. Select “normal” cycle. De-select heated dry (Porras et al., 2020).
- **Clothes Washing**

- Wash your laundry with cold water whenever possible. To save water, try to wash full loads or, if you must wash a partial load, reduce the level of water appropriately.
- Hot water heating accounts for about 90 percent of the energy your machine uses to wash clothes — only 10 percent goes to electricity used by the washer motor. Most clothes can effectively be washed exclusively with cold water, using cold water laundry detergents.
- Washing full loads can save you more than 3,400 gallons (about half the volume of a large U-Haul truck) of water each year.
- **Clothes Drying**
 - Don't over dry your clothes. If your dryer has a moisture sensor that will automatically turn the machine off when clothes are done, use it to avoid over drying. Remember to clean the lint trap before every load. Dry full loads or reduce drying time for partial loads.
 - It's easy to over dry your clothes, if one setting is used for various fabric types. Try to dry loads made up of similar fabrics, so the entire load dries just as the cycle ends. Many dryers come with energy-saving moisture or humidity sensors that shut off the heat when the clothes are dry. If you don't have this feature, try to match the cycle length to the size and weight of the load. A dryer operating an extra 15 minutes per load can cost you up to \$34, every year.
 - The lint trap is an important energy saver. Dryers work by moving heated air through wet clothes, evaporating, and then venting water vapor outside. If the dryer cannot provide enough heat, or move air sufficiently through the clothes, it will take longer to dry, and may not dry at all. One of the easiest things you can do to increase drying efficiency is to clean the lint trap before each load. This step also can save you up to \$34 each year.

APPENDIX C

Instructions for Future Research

As stated above, the sample population for this research was relatively small and there is room for more research on the four categories of tenants interviewed for this toolkit: low-income family, low-income senior, low-income single adult, and off-campus student housing. In addition to a larger sample size of the interviewed populations, commercial, retail, and restaurant occupants would provide a unique perspective on ways to reduce energy and water use, material waste, and transportation emissions in their sectors and should be included in future research. Below are steps for landlords to follow to implement this research in their own buildings.

Phase 1 – Project Planning

1. Meet with a contact at each building and find someone who is willing to help you identify potential interviewees.

2. Work with building contacts to identify interviewees.

Phase 2 – Interview Development

3. Use and modify interview script templates (see Appendix D) in this toolkit to fit the goals of your building.
4. Since you are doing human subjects research, you must complete an Institutional Review Board (IRB) application and receive IRB approval. This can be completed through the University of Michigan at eresearch.umich.edu.
5. Finalize interview plan. Decide whether you will offer an incentive (e.g., a gift card), contact and schedule interviews with participants.

Phase 3 – Data Collection

6. Conduct interviews with participants. Be sure to use a transcription service at the time of the interview to save time during analysis.

Phase 4 – Analysis

7. Organize your data – I used Google Sheets (template can be found here: https://docs.google.com/spreadsheets/d/1d-ar3VERQJfvwsKio_6OmfZygXxJXUInTaxHwpi45og/edit?usp=sharing), but as outlined in the report, I recommend using NVIVO software, especially if you use a transcription service, this will save you time. When cleaning up your interview scripts, listen back to be sure you captured everything accurately.
8. Do qualitative analysis – Outline initial findings of trends in tenant knowledge, concerns, interests, and preferences in terms of sustainability of their residences by looking at frequency of keywords and ideas.
9. Create toolkit – Prioritize your recommendations by putting the ideas tenants showed the most interest in at the top of your list. Remember, just because a small number of people responded one way does not mean it is not worth including. Having a small sample size, I found it was important to include these ideas as it may have been unlikely to have multiple people to say the same thing in such a small group.

Phase 5 – Feedback and Revision

10. Ask your building contacts for feedback on your recommendations in the toolkit.

Phase 6 – Share Your Results

11. Present your results to neighbors, similar buildings, community partners, tenants, other stakeholders and other 2030 Districts. The more of this type of research we can do the better picture we will have of the best ways of engaging tenants in various types of buildings across our Districts and the closer we are to our 2030 goals.

APPENDIX D Interview Scripts

Low-Income Housing Tenant Engagement Interview Template:

Tips:

- 1a. Do not skip questions
- 1b. Be sure you receive a number answer for the Likert scale questions

Provide Background & Goals

- 2a. Include who you are, your research goals
- 2b. **Example:** *I am an intern working on a project with Ann Arbor 2030 District – a partnership of Property Owners, Managers, Developers, Tenants, and Professional and Community Stakeholders who are all working to reduce existing building energy consumption, water use and transportation emissions by 50% by 2030. I am conducting interviews with tenants to continue shaping an engagement toolkit. The toolkit will assist building owners in finding ways to engage tenants and collaborate with tenants to reduce energy use, water use, transportation emissions, and material waste.*

Participant Information

3. How long have you lived at your current residence?
4. If you have previously lived outside of Ann Arbor, MI, how has living in Ann Arbor changed your perception of the environmental impact, sustainability and energy efficiency of your residence, if at all?
5. On a scale of 1 to 5, 1 = none, 5 = expert, how would you describe your current knowledge of environmental sustainability as it relates to housing?

Communication

- 6a. How do you typically engage and communicate with [Ann Arbor Housing Commission]?
- 6b. Is that typically how [AAHC] communicates with you as well? (Tenants may call the emergency work order line; [AAHC] may put a notice on their door, etc.)
- 6c. Do you communicate with [AAHC] differently depending on the issue?
- 6d. What methods of communication do you think are most effective?
- 6e. What methods of communication do **not** work for you?
7. How would you prefer to receive information on ways to reduce your water and energy use and solid waste?

8. If [AAHC] were to roll out a new program, what is the best way for them to communicate that to you? (Through resident council, bulletin postings, meetings, mail, onsite AAHC or other staff if your building has them?)
- 9a. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), Would you attend environmental sustainability focused community meetings organized by your landlord to reduce transportation emissions, energy and water use, and waste in your community?
- 9b. Why or why not?
- 9c. If unlikely, how would you prefer to receive this information rather than via meetings? (Videos, emails, etc.)

Current Efforts and Barriers

10. What sustainability, waste reduction or energy efficiency products, programs, or resources already exist in your building? (e.g., energy efficient furnaces, water saving faucets, recycling bins, or educational programs, a coordinator, recurring meetings, programs, etc.)?
- 11a. What are the barriers to reducing how much electricity and gas your household uses?
- 11b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that your energy consumption would be lower?
- 12a. What are the barriers to reducing the amount of water your household uses?
- 12b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that your water consumption would be lower?
- 13a. What are the barriers to reducing the amount of garbage your household throws away?
- 13b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that the amount of landfill waste produced by your household would be lower?
- 13c. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if you were provided a compost bin, how likely is it that you would use it?
- 14a. How do you typically commute to work? (Public transit, walk, drive a vehicle, bike, other)
- 14b. How do you typically commute around town? (Public transit, walk, drive a vehicle, bike, other)
- 14c. What factors impact the methods of transportation that you use? (Availability of car or bike, proximity, etc.)
- 14d. If you drive a personal vehicle, what would encourage you to switch to a method with lower GHG emissions?

Interest and Behavior Change

15. On a scale of 1 to 5 (1=very disinterested, 5=very interested), what level of interest do you have in knowing your electric, gas, and water usage?

16. On a scale of 1 to 5 (1=very disinterested, 5=very interested), what level of interest do you have in implementing energy efficiency and energy saving behaviors? For example: keeping doors and windows closed when AC or heat is on, replacing incandescent light bulbs with LED ones, unplugging things when not in use, or turning off lights
- 17a. On a scale of 1 to 5 (1=very disinterested, 5=very interested) how interested would you be in knowing your water and energy use compared to your neighbors? (Through a building-wide competition, an app, a notification in the mail telling you about your consumption compared to others, for example)
- 17b. On a scale of 1 to 5 (1=very unlikely, 5=very likely) if you know your neighbors are paying attention to and achieving reductions by using less water and energy, how likely would you be to do the same?
- 18a. What motivates you to care about your impact on your neighbors?
- 18b. What motivates you to care about your impact on your community?
- 18c. What motivates you to care about your impact on the environment?
19. Do you think there is a lot of food waste being produced in your building/community?
- 20a. What do you think would incentivize you individually to make reductions in energy and water consumption and solid waste produced? (A competition, cash incentives, recognition, food, parties, light bulbs, workshops, educational sessions, etc.)
- 20b. What do you think would incentivize other tenants in your building to make reductions together in energy and water consumption and solid waste produced? (A competition with other buildings, cash incentives, food, recognition, parties, free light bulbs, educational sessions, workshops, etc.)
- 20c. Is this something you would participate in?
- 20d. What do you think is the minimum amount of a gift card required to motivate people to be engaged?
- 20e. On a scale of 1 to 5 (1=not effective at all, 5=very effective), How effective do you think recognizing people for their efforts would be in changing tenant behavior to reduce water and energy consumption?
- 21a. If [AAHC] was to bring in a sustainability expert and hold a workshop on ways to lower your energy and water bills, do you think people would attend?
- 21b. Why or why not?
- 21c. What is the best way to get people to attend that workshop?
22. What sustainability products, services or features would you like to have access to or have at your residence if you do not already? (e.g., ability to opt into powering your home with clean energy, compost if not already available, a smart thermostat, weatherization, etc.)
- 23a. If these services were offered, which would you utilize? [*insert services*, e.g., composting, recycling, move out waste help, workshops]
- 23b. Why did you respond yes to the ones you did? [Only ask if context not given previously]

- 23c. What would change your mind about the services you said no to or maybe to? [Only ask if context not given previously]
24. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), how likely do you think it is that people in your building would get involved with a sustainability program rolled out by [AAHC]?
25. On a scale of 1 to 5, (1=Very unwilling, 5=very willing), if your landlord was prioritizing sustainability and energy efficiency of your residence, how willing would you be to collaborate with them to reduce water and energy consumption and material waste?
26. As a percentage split with your landlord (e.g., 50/50, 35/65), what level of effort or cost would you be willing to put toward improving the sustainability and energy efficiency of your residence?
27. Would a “sustainability cheat sheet” with tips and ways to save energy and water be helpful after you move in?
28. How could your landlord help in providing more sustainability resources?
29. Responsibility for managing the energy consumed in a multi-tenant space is often balanced between tenants and owners and reducing energy and water consumption and material waste requires collaboration. How do you think landlords and tenants can better work together to make reductions in waste, emissions, and consumption?
- 30a. Do you compost?
- 30b. If yes, do you compost on your own (e.g., have a compost pile) or do you utilize city composting?
- 30c. If no, on a scale of 1 to 5 (1=not likely at all, 5=very likely) if bins were provided to your residence and picked up weekly with your other recycling and landfill waste, how likely is it that you would separate your food waste and utilize the city’s composting program?
31. What other ways would you be interested in engaging in or learning more about to reduce your environmental impact?

Low-Income Housing Service Provider Tenant Engagement Interview Template:

Provide Background & Goals

- 1a. Include who you are, your research goals
- 1b. **Example:** *I am an intern working on a project with Ann Arbor 2030 District – a partnership of Property Owners, Managers, Developers, Tenants, and Professional and Community Stakeholders who are all working to reduce existing building energy consumption, water use and transportation emissions 50% by 2030. I am conducting interviews with tenants to continue shaping an engagement toolkit. The toolkit will assist building owners in finding ways to engage tenants and collaborate with tenants to reduce energy use, water use, transportation emissions, and material waste.*

Interviewee Information

1. What is your role within [AAHC]?
2. How long have you worked for your organization?

Communication

- 3a. How do you typically engage and communicate with tenants?
- 3b. Do you think this method of distributing information is effective?
- 3c. What methods of distributing information have **not** worked in the past?
4. How do you think tenants would best receive information on reducing GHG emissions, water and energy use, and solid waste?
5. If [AAHC] were to roll out a new program, what is the best way to communicate that to your tenants (possibly through resident council, bulletin postings, meetings, mail, onsite management if your building has that)
6. What do you find to be the biggest challenges in communicating with tenants?

Current Efforts and Barriers

7. What sustainability or energy efficiency products, programs, resources, or goals already exist on your property that you know of?
- 8a. What are the barriers to reducing tenant energy consumption?
- 8b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that tenant energy consumption would be lower?
- 9a. What are the barriers to reducing tenant water consumption?
- 9b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that tenant water consumption would be lower?
- 10a. What are the barriers to reducing tenant waste production?
- 10b. On a scale of 1 to 5, (1 = very unlikely 5 = very likely), if these barriers didn't exist, how likely is it that the amount of landfill waste produced by your site would be lower?

Interest and Behavior Change

11. On a scale of 1 to 5 (1=very disinterested, 5=very interested), what level of interest do you think your tenants would have in implementing energy efficiency, water saving, and waste reducing behaviors?
- 12a. What do you think would encourage tenants to reduce energy, water or material waste?
- 12b. What has worked in the past when encouraging tenants to engage in any type of behavior change?

- 12c. What has not worked in the past when encouraging tenants to engage in any type of behavior change?
- 13a. What do you think motivates residents to care about their impact on their neighbors?
- 13b. What do you think motivates residents to care about their impact on their community?
- 13c. What do you think motivates residents to care about their impact on the environment?
- 14a. What kind of things would incentivize individual tenants or tenants working together at your site to make reductions in energy and water consumption and waste generation? (Competition, cash incentives, food, parties, educational sessions, etc.)
- 14b. What do you think is the minimum amount of incentive required for action is?
- 15. What sustainability products, services or features would you like to have access to or have at your property if you do not already? (e.g., ability to opt into powering your home with clean energy, compost if not already available, a smart thermostat, weatherization, etc.)

Off-Campus Student Housing Tenant Engagement Interview Template:

Tips:

- 1a. Do not skip questions
- 1b. Be sure you receive a number answer for Likert scale questions

Provide Background & Goals

- 2a. Include who you are, your research goals
- 2b. **Example:** *I am an intern working on a project with Ann Arbor 2030 District – a partnership of Property Owners, Managers, Developers, Tenants, and Professional and Community Stakeholders who are all working to reduce existing building energy consumption, water use and transportation emissions by 50% by 2030. I am conducting interviews with tenants to continue shaping an engagement toolkit. The toolkit will assist building owners in finding ways to engage tenants and collaborate with tenants to reduce energy use, water use, transportation emissions, and material waste.*

Participant Information

- 3a. Are you a student at UM?
- 3b. If yes, what is your academic major and minor?
- 3c. If not, are you affiliated with UM?
- 4. What programs are you involved in, sustainability or otherwise e.g., clubs, honor societies, etc.?

- 5a. Are you familiar with Planet Blue Leaders or Planet Blue Ambassadors at the University of Michigan?
- 5b. If yes, on a scale of 1 to 5, 1 = not at all interested, 5 = extremely interested, how interested are you in being a Planet Blue Ambassador or Leader?
- 5c. If no, briefly describe the program and ask 5d.
- Planet Blue Ambassadors is a 101-level training course for staff, students, and faculty on how we can be more environmentally conscious. Includes volunteer opportunities, e-newsletters, tips, a network of people and other resources.
 - Planet Blue Student Leaders are fellowship positions; they are paid employees (freshman to seniors) who are working on ways to get their peers excited about sustainability. 16 PBSLs are hired all over diverse range of colleges and degrees and they complete a project focused on behavior change
- 5d. With this information, on a scale of 1 to 5, 1 = not at all interested, 5 = extremely interested, how interested are you in being a Planet Blue Ambassador or Leader?
- 6a. What is the length of your lease?
- 6b. How long have you lived there?
- 6c. Do you plan to renew your lease at this same residence?
- 7a. What factors did you use when deciding to live at this location? (Cost, friends, proximity to campus, utilities costs, timing/availability, etc.)
- 7b. On a scale of 1 to 5, 1 = not important at all, 5 = very important, when renewing a lease, how important is it to you that your landlord prioritizes the environmental impact, sustainability and energy efficiency of your space? For example, a landlord who is prioritizing savings on utility bills and providing feedback on how much energy and water you are using or saving.
- 7c. If you have previously lived outside of Ann Arbor, MI, how has living in AA changed your perception of the environmental impact, sustainability and energy efficiency of your residence, if at all?
8. On a scale of 1 to 5, 1 = none, 5 = expert, how would you describe your current knowledge of environmental sustainability as it relates to housing?
- 9a. How are utilities handled/paid for at your residence?
- 9b. Are you financially responsible for your utilities or do you receive assistance from family members?
- 10a. If you are responsible for paying utilities, do you know about the DTE Insight app?
- 10b. If yes, do you use the DTE Insight app?
- 10c. If yes, has it affected your behavior? How so?
- 10d. If not, briefly tell them about it and move on. (The DTE Insight app gives you information to understand how your home uses energy. You can find out more at <https://www.newlook.dteenergy.com/>)

Communication

11. How does your landlord typically communicate with you? (Phone, email, text, mail, other)
- 12a. How do you prefer your landlord to communicate with you? (Phone, email, text, mail, other)
- 12b. If your landlord were to implement a program to help you save on your utilities, what would be the most effective way to get you involved? (Incentives, frequent communication, events, etc.)
- 12c. How do you determine what emails from your landlord are important versus not important?
13. On a scale of 1 to 5, (1=not willing at all, 5=very willing), If your landlord were prioritizing sustainability and energy efficiency of your residence, how willing would you be to collaborate with them to reduce water and energy consumption and material waste?
- 14a. Would you attend environmental sustainability focused community meetings organized by your landlord to reduce transportation emissions, energy and water use, and waste in your community?
- 14b. Why or why not?
- 14c. If not, how would you prefer to receive this information rather than via meetings? (Videos, emails, etc.)

Current Efforts and Barriers

- 15a. What sustainability and energy efficiency **goals or efforts** exist in your building/at your residence that you are aware of?
- 15b. What **resources** does your building/residence or landlord (Oxford or owner) have dedicated to sustainability that you know of (e.g., a coordinator, recurring meetings, programs, etc.)?
- 16a. What sustainability or energy efficiency resources would you like to have in your building/at your residence? (e.g., ability to opt into powering your home with clean energy, compost if not already available, a smart thermostat, weatherization, etc.)
- 16b. Do you feel landlord should be fully responsible for providing these resources, or should the effort be split with tenants?
- 16c. Can you elaborate on your response?
17. If energy data were available to you, how do you think the information would impact your housing decision? (For example, you could see how expensive utilities have been on average in the past)
- 18a. If these services were offered, which would you utilize? [*insert services*, e.g., composting, recycling, move out waste help, workshops]
- 18b. Why did you respond yes to the ones you did? [Only ask if context not given previously]
- 18c. What would change your mind about the services you said no to or maybe to? [Only ask if context not given previously]
- 19a. Do you compost?
- 19b. If yes, do you compost on your own (e.g., have a compost pile) or do you utilize city composting?

- 19c. If no, on a scale of 1 to 5 (1=not likely at all, 5=very likely) if bins were provided to your residence and picked up weekly with your other recycling and landfill waste, how likely is it that you would separate your food waste and utilize the city's composting program?
- 20a. What are the barriers to reducing the amount of gas and electricity your household uses? (Roommates, leaving things plugged in, natural light, landlord communication, etc.)
- 20b. On a scale of 1 to 5, (1=not likely at all, 5=very likely), if these barriers didn't exist, how likely is it that your energy consumption would be lower?
- 20c. What are the barriers to reducing the amount of water your household uses? (e.g., water pressure, leaky faucets)
- 20d. On a scale of 1 to 5, (1=not likely at all, 5=very likely), if these barriers didn't exist, how likely is it that your water consumption would be lower?
- 20e. What are the barriers to reducing the amount of garbage your household throws away?
- 20f. On a scale of 1 to 5, (1=not likely at all, 5=very likely), if these barriers didn't exist, how likely is it that your waste production would be lower?
21. On a scale of 1 to 5, (1=not confident at all, 5=very confident), How confident are you that if you brought up a sustainability or energy efficiency issue with your landlord, that they would be willing to address it?
- 22a. In your living situation and communication with your landlord, is it clear who is responsible for updating or fixing things related to energy and water waste such as energy efficient light bulbs, leaky faucets, or drafty windows and doors?
- 22b. What could be included in the lease structure to create a win-win situation for both you and your landlord to reduce energy and water consumption and waste? (Incentives, a reward program, walkthroughs to observe leaky faucets, running toilets, exchanging incandescent bulbs for LED bulbs, improving insulation, smart thermostats, transparency on utilities, feedback on energy and water usage, outlining who is responsible for what to take care of the property for both landlord and tenant, etc.)
- 23a. How do you typically travel around town? (Public transit, walk, drive a vehicle, bike, other)
- 23b. What factors impact your method of transportation? (Availability of car or bike, proximity, etc.)
- 23c. If you drive a personal vehicle, what would encourage you to switch to a method with lower emissions?

Interest and Behavior Change

- 24a. Have you ever used a carbon footprint calculator?
- 24b. If yes, please describe how your behavior changed after learning about your carbon footprint.
25. On a scale of 1 to 5 (1=very disinterested, 5=very interested), what level of interest do you have in implementing sustainable behaviors?

- 26a. What motivates you to care about your impact on the environment?
- 26b. What motivates you to care about your impact on your neighbors?
- 26c. What motivates you to care about your impact on your community?
- 27a. What sort of incentives would work to change your or other tenants' consumption and waste behaviors? (Recognition, money, food, etc.)
- 27b. Do you think tenant recognition from your landlord would be more effective on a personal level (e.g., they send the tenant an email directly) or in a more public way (e.g., a newsletter to all the management company's residents)?
- 27c. (On a scale of 1 to 5) How effective do you think recognizing people for their efforts would be in changing tenant behavior to reduce water and energy consumption?
- 28a. Responsibility for managing the energy consumed in a multi-tenant space is often balanced between tenants and owners and reducing energy and water consumption and material waste requires collaboration. How do you think landlords and tenants can better work together to make reductions in waste, emissions, and consumption?
- 28b. As a percentage split with your landlord (e.g., 50/50, 35/65), what level of effort or cost would you be willing to put toward improving the sustainability and energy efficiency of your residence?
- 29a. Would a "sustainability cheat sheet" be helpful when you're looking for housing? (For example, a cheat sheet that told you what to look for in a rental to keep utility costs down like double-paned windows, or energy efficient lighting, etc.)
- 29b. Would a "sustainability cheat sheet" with tips and ways to save energy and water be helpful after you move in?
30. In the move-in and move-out process, what other types of services, information, programs, etc. do you think would be successful in getting people to reduce their waste?
- 31a. On a scale of 1 to 5 (1=very unlikely, 5=very likely), how likely would you be to read information from Oxford with tips to save energy and water and reduce waste?
- 31b. What would increase this likelihood?
32. On a scale of 1 to 5 (1=very disinterested, 5=very interested), how interested would you be in competing with other buildings to reduce emissions and energy, water, and material waste?
- 33a. What resources would be helpful for you to be able to reduce your energy and water consumption and waste production? (Educational videos, transparency in bills, etc.)
- 33b. How could your landlord help in providing more resources?
- 33c. Are there any other ways you would like to add that you are interested in engaging in or learning more about to reduce your environmental impact?

Commercial Tenant Engagement Interview Template (not used in this research):

Background & Goals

1. Overview of AA 2030 District organization, interviewer and project
2. Overview of goals: looking at how we can best learn from and engage tenants to reduce water and energy consumption and material waste production
3. Note: please answer these questions as an individual, not as a representative of your company

Communication

- 4a. Do you communicate with your landlord? (If yes → ask b and c. If no, move to 5)
- 4b. How do you typically engage and communicate with your landlord? (Phone, email, text, mail, other)
- 4c. How do you prefer your landlord to communicate with you? (Phone, email, text, mail, other)
5. If your landlord were to implement a program to help you save on your utilities, what method of distributing information about the program would be most effective in getting you involved?

Current Efforts and Barriers

- 6a. What sustainability initiatives exist in your organization?
- 6b. What sustainability and energy efficiency goals or efforts exist in your building that you know of?
- 6c. If none that you know of, would you like to know more about sustainability efforts in your building?
7. What sustainability or energy efficiency resources would you like to have in your building?
- 8a. If these services were offered, which would you utilize?
- 8b. Composting, recycling bins, move out waste help, access to where information on where you can reuse/sell/etc. during move out, zero waste events, workshops on how to reduce waste at events (Yes, no, maybe)
- 8c. Why did you respond yes to the ones you did?
- 8d. What would change your mind about the services you said no to or maybe to?
9. If your company offered electric vehicle charging stations at the office, how would this impact your decision when you choose your next car?
- 10a. What resources do you need to be able to reduce your energy and water consumption and waste generation at work? (Training videos, etc.)
- 10b. How could your landlord or employer help in providing more resources on sustainability?
- 11a. When looking for a job, does a company's sustainability goals or initiatives impact who you decide to work for? If yes, how so?

- 11b. When looking for a job, how does a company's physical workspace sustainability impact who you decide to work for? (For example, it offers cleaner modes of transportation, bright natural workspace lighting, outdoor workspaces, etc.)
- 12a. What are the barriers to reducing your energy consumption in the office? (Lighting, other tenant use, communication, etc.)
- 12b. What are the barriers to reducing your water consumption in the office? (Water pressure/leaky faucets, running toilets)
- 12c. What are the barriers to reducing your waste generation in the office?
- 12d. What kind of education and resources on sustainability from your landlord or management company would be helpful?
- 13a. Are you aware of A2Zero goals?
- 13b. (If not, give a brief description)

Interest and Behavior Change

- 14a. What level of interest do you have in implementing energy efficiency and saving behaviors? (Very disinterested, somewhat disinterested, neither interested nor disinterested, somewhat interested, very interested)
- 14b. Would you attend environmental sustainability focused building meetings organized by your landlord with the goal of reducing transportation emissions, energy and water use, and waste in your building?
- 14c. Why or why not?
- 14d. If not, how would you prefer to receive this information, rather than meetings? (Videos, emails, etc.)
- 15a. How do you typically commute to work? (Public transit, walk, drive a vehicle, bike, work from home, other)
- 15b. What factors impact your method of transportation? (Availability of car or bike, proximity, time, expense, etc.)
- 15c. If you drive a personal vehicle, what would encourage you to switch to a method with lower emissions, such as biking or public transit?
- 16a. How would you describe your current knowledge of environmental sustainability as it relates to office space? (On a scale of 1 to 5, 1 = none, 5 = expert)
- 16b. What does sustainability mean to you in the context of your workspace?
- 16c. How important is sustainability to you? (Not important at all, somewhat unimportant, neither unimportant nor important, somewhat important, very important)
- 17a. Earlier I asked about sustainability goals in your building. Now I'll ask if your organization has any company-wide corporate sustainability goals or initiatives?

- 17b. If yes, are you involved in them? If not, why not?
- 17c. How do you think your organization could get more people involved in their sustainability efforts?
- 17d. If not, does your organization have plans to implement sustainability efforts that you know of?
- 18a. What motivates you to care about your impact on the environment?
- 18b. What motivates you to care about your impact on your community?
- 18c. What sort of incentives do you think would work to change your consumption and waste behaviors? (Recognition, cash, certifications, etc.)
- 18d. The responsibility for managing the energy consumed in a multi-tenant space is often balanced between tenants and owners and reducing energy and water consumption and material waste requires collaboration. How do you think landlords and tenants can better work together to make reductions in waste, emissions, and consumption?
- 18e. How effective do you think recognition would be in changing tenant behavior to reduce water and energy consumption in your building? (For example, your office displaying a plaque for reaching certain levels of reductions for other tenants to see)
- 19. Would you be interested in participating in a friendly competition with other buildings or other tenants within the building to reduce emissions and energy, water, and material waste?
- 20a. What other sustainability solutions would you like to see in your organization or office space?
- 20b. What do you think is needed to implement these solutions?
- 21. How interested do you think your office would be in partnering with your landlord to implement sustainability changes? (Very disinterested, somewhat disinterested, neither interested nor disinterested, somewhat interested, very interested)
- 22. If your landlord were prioritizing sustainability and energy efficiency of your workspace, how willing would you be to collaborate with them to reduce water and energy consumption and material waste? (Very unwilling, somewhat unwilling, neither unwilling nor willing, somewhat willing, very willing)

Next Steps & Tenants to Interview

- 23. Are you aware of any other people in your organization that would be interested in talking with me?