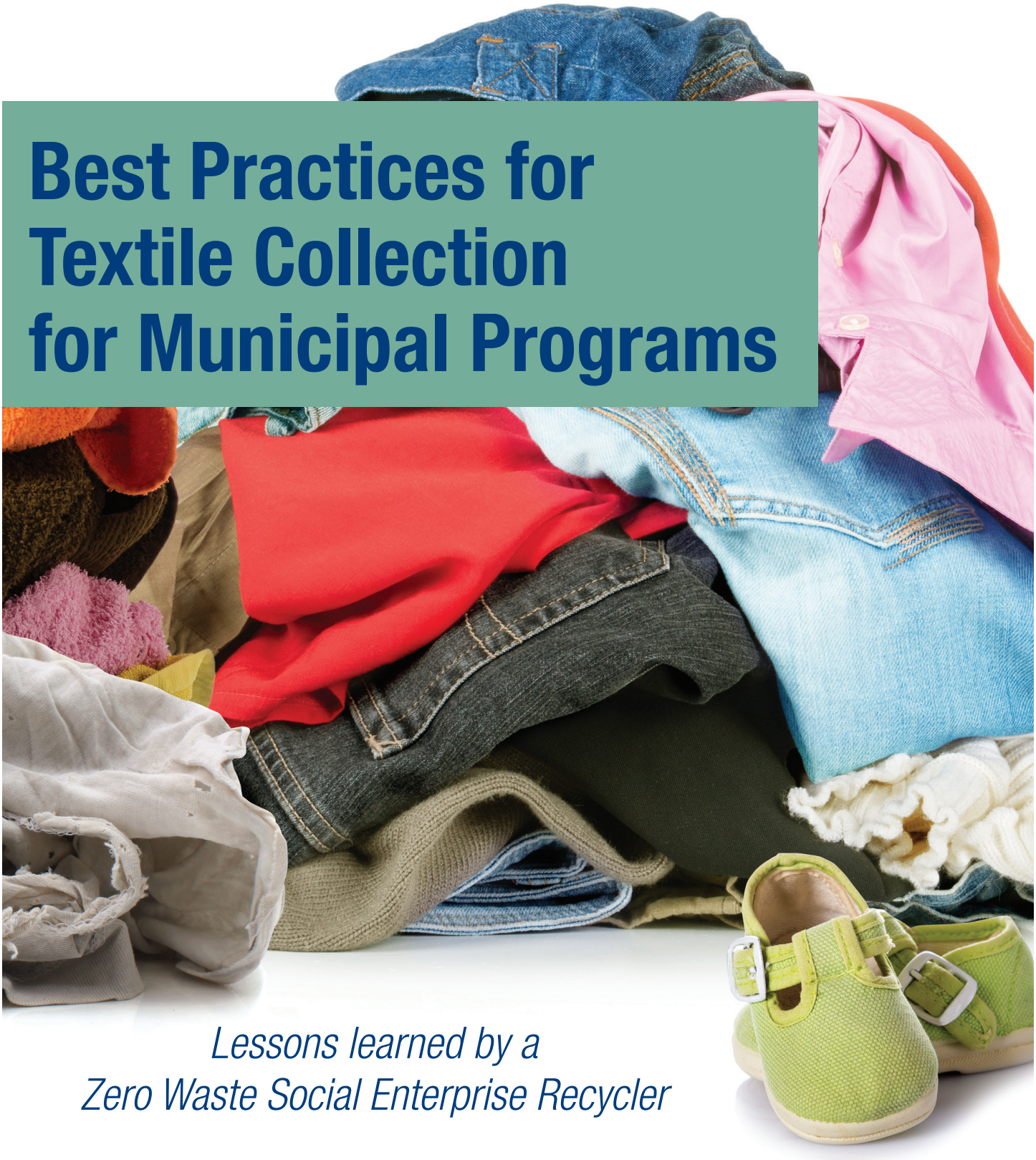
Best Practices for Textile Collection for Municipal Programs



Lessons learned by a Zero Waste Social Enterprise Recycler

EUREKA! RECYCLING AND MORE

Best Practices for Textile Collection in Municipal Recycling Programs

The apparel industry is the second largest polluter in the world (second only to oil) and contributes 10% of global carbon emissions.[1] The average consumer is bombarded with as many as 10,000 advertising messages[2] a day, creating a carefully crafted desire to have the latest "fast fashion." This, coupled with the never ending mix of materials used to make clothes, leaves us with a textiles production industry that contributes over 1.3 billion tons of CO2 equivalent, per year, perpetuating our current climate crisis. According to the UN Environment Program, "Textile dyeing is the second largest polluter of water globally and it takes around 2,000 gallons of water to make a typical pair of jeans. Every second, the equivalent of one garbage truck of textiles is landfilled or burned. If nothing changes, by 2050 the fashion industry will use up a quarter of the world's carbon budget. Washing clothes also releases half a million tonnes of microfibres into the ocean every year.[3]" In the US alone 14 million tons (more than 85% of US textiles)[4] are headed directly for disposal and it is likely that some percent of the items we think are reused or recycled are actually just disposed later, after being shipped halfway around the world.

According to Greenpeace in their "Time Out for Fast Fashion"[5] report, clothing production doubled from 2000 to 2014, and the average person buys 60 percent more items of clothing and keeps them for about half as long as 15 years ago. In less than 20 years, the volume of clothing Americans toss each year has doubled from 7 million to 14 million tons, or an astounding 80 pounds per person.[6] Eighty four percent of unwanted clothes in the United States in 2012 went into either a landfill or an incinerator, where all of the bleaches, dyes and chemicals used in the production of the clothing end up in the leachate of a landfill (and eventually our ground water) or emissions of an incinerator. While the US has been recycling textiles for over 200 years, the growth in low quality material, increased consumption and the mix of materials used results in the textiles recycling industry not being able to support substantial reduction of textiles into landfills and incinerators.

What are we to do? Everything we can to repair, reduce, redesign, and reuse:

1. Develop policy to address the negative impacts of production and
2. Incentivize reuse and repair
3. Recycle textiles as a last resort.

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1 http://www.planetaid.org/blog/could-a-new-recycling-technique-help-save-climate-change

2 https://www.forbes.com/sites/forbesagencycouncil/2017/08/25/finding-brand-success-in-the-digital-world/#6701933b626e

3 https://www.unenvironment.org/news-and-stories/story/putting-brakes-fast-fashion

4 https://www.thereformation.com/pages/impact-of-fashion

5 Timeout for Fast Fashion, Greenpeace, 2016

6 Fast Fashion Is Creating an Environmental Crisis, Newsweek, Alden Wicker, Sept 2016

It cannot be overstated that recycling is not the first stop on our way to a lasting solution, but it can play an important part. Done efficiently and transparently, municipal collection of textiles to be authentically reused (and recycled if possible), can increase diversion and decrease impacts, reducing emissions with little additional cost. This reports provides Eureka Recycling's Five Recommendations for Best Practices in Municipal Collection of Textiles for Waste Reduction.

The challenges and pitfalls are many and must be addressed for this effort to be meaningful and not just a feel good consolation. First and foremost, these collection programs must not take the place or reduce the sense of urgency for real solutions that should include extended producer responsibility systems, material standardization, design for durability, and repair.

Over the last year, there is an increased awareness of the limitations of recycling (plastic in particular) in the U.S., primarily driven by China's ban on importing recycling (aka National Sword). The lessons learned from the impact of including non-recyclable items in recycling programs that ultimately ended up being disposed of has created a distrust in the system. **Now is a critical time to work towards building transparency and trust as we redefine the role of recycling in waste reduction.**

To that end, Eureka Recycling conducted a multi-year study supported by funding from the MN Pollution Control Agency, to determine the most effective ways to collect and educate for a city-wide household textiles collection program while attempting to understand the supply chain for discarded textiles as it exists today.

As the data from a bevy of recent studies, articles and reports suggests, ignoring the imperfect role of municipal reuse and recycling of textiles while we wait for the perfect solution to our current problem is like continuously leaving all the lights on in our houses because we don't have solar panels. While recycling and reuse (specifically at the local governmental or municipal level) of textiles will not solve every social, environmental and economic challenge created by our current take-make-waste system, these strategies can intervene at a critical point as more desirable systems and solutions are evolving.

Upstream Solutions

Reduction

Reduction or preventing consumption in the first place is obviously the most impactful choice. From a municipal or community perspective, efforts to educate residents on the harmful impacts of fast fashion could reduce consumption overall, increase the purchase of reused clothes and result in a supply of higher quality used clothing available. In addition, implementation of policies that hold manufacturer's responsible are needed to make meaningful changes here.

Repair/Repurpose

Historically, the main motivation for repair and mending was economic: it was much cheaper to repair fabrics and garments than to purchase new items. This is no longer the case. Today fast fashion is extremely

affordable (with most of the true cost of the environmental and social harm from manufacturing and extraction not reflected in the cost) and there is little repair, in part because for most items it would cost more to repair than replace, and in part because the quality is so low it can be difficult/impossible to repair.

Another issue is that clothing is increasingly made of blends of different materials, including a significant amount of synthetic fibers. This makes the traditional and historic reuse of clothing as rags or repurposing in new products even more difficult. Even clothes made of natural fibers like cotton and linen have been bleached, processed and dyed with chemicals which prevents them from being composted or used as traditional cotton replacements.

There are some great community initiatives around repair taking place globally, such as The Renewal Workshop, and the Repair Lair right here in Minneapolis, specializing in outdoor equipment and clothing repair, Fixit Clinics and others. Significant education around why repair is a key solution is needed in conjunction with any recycling program and should be connected. However, until we have voluntary and mandatory requirements in place that increase durability and demand standards around the materials and chemicals used, repair and many repurposing options will not be viable for the tidal wave of textiles waste we will continue to face.

Municipalities and community programs can promote and highlight reuse options in their community and this can be a powerful tool to connect residents to businesses in their own community and businesses online.

Reuse

According to SMART (a textile recycling-based, international, nonprofit trade association comprised of for-profit used clothing, wiping material and fiber industry companies) the markets for reused clothing remain stable. The average person discards 80 pounds of textiles each year with about 12 pounds (only 15%) diverted from the landfill or incinerator. Forty-five percent of that is re-used as apparel. These items are generally processed into large bales that are then sold in the U.S. to the secondhand clothing industry. The decrease in clothing quality and durability overall results in charities selling only 20 percent of the clothing donated to them at their retail outlets, according to the Council for Textile Recycling.

What happens next is an area that needs much regulation and transparency. The textiles reuse and recycling industry is notoriously difficult to track, because of their control of the supply chain which is centralized to large players with claims of proprietary business practices. Eureka conducted interviews with industry contacts and project partners including USAgain, Salvation Army and others. None of them were able to definitively establish where clothing is sent because of the length and complexity of the supply chain. The interviewees indicated that those markets are constantly changing and that the material itself often changes hands through several brokers before reaching the final destination. Depending on where items are sent and what kind of clothing is exported, the reality is that there is likely a large percent of clothing that is ultimately disposed of. The cost of this long journey to someone else's backyard is financed through the small

percent of high value, high-desired items, leaving the bulk of the impact resting on the communities that end up with these piles of textile waste.

For instance, according to Dead White Man's Clothes, a multimedia research project exploring the second-hand clothing trade in the context of Accra, Ghana, on average 40% of every bale of clothing ends up in the landfill, creating a significant burden to the country[7]. Another report by the OR Foundation, found that imported old clothes are now the single largest source of consolidated waste in Accra, amounting to more than 48 million pounds a year. "If your KonMari'd clothes were donated in pristine condition, crafted out of a breathable material, or from a trendy global brand like Adidas or Nike, they had a chance of surviving as secondhand clothes in Ghana's capital, Accra. What of the rest of it, the 5K charity run T-shirts, the jacket with a broken zipper, the flare jeans stuck in the back of your closet since 2007? They will have been carted off to an already overflowing landfill, burned, dumped in the Gulf of Guinea, or, most likely, they will be dumped in informal landfills where people live," says Ricketts, founder of OR Foundation.[8]

Hopefully by now, the lessons from China's National Sword taught us that just because someone somewhere will buy it, that doesn't mean it's getting recycled into something new, or that it's providing the social and environmental benefits we're hoping for. It is irresponsible to ship material to end markets without verifying if and how the items are being recycled. The practice of taking a large stream of material to cherry-pick the high value items and dispose of the rest is particularly dangerous for two reasons. First, it gives the impressions to consumers and manufacturers that the waste problem is solved, and this can result in a lack of efforts to truly reduce it. Secondly it can result in trash being disposed of in a country with immensely less resources to manage and regulate waste. Once again, US and other major world players are simply exporting harm to other communities. Any solution around reuse and export needs to at least acknowledge these challenges and work towards finding solutions to increase accountability and transparency of the end markets for recovered clothing. Currently, the only direct way to address this issue is to market material locally as much as possible. Most local markets will however end up with clothing they can't sell at their location and then end up selling a portion to brokers where it will inevitably end up back in the same opaque supply chains. One might assume that the other more ethical option may be to dispose of it locally and face the burdens here in our own country but the reality is that disposal facilities in the US and around the world are notoriously known for being located in communities that are purposefully and historically under resourced, with little political power to protect themselves.

Technology

Recently, primarily driven by major brands, investments in new technology have increased that might allow fiber feedstock to become part of a circular supply stream in the textiles industry. Retailers such as H&M, Puma and Patagonia are paving the way for these technologies to allow cotton and poly fibers to be pulped/

7 https://deadwhitemansclothes.org/kevin

8 https://slate.com/technology/2019/05/marie-kondo-tidying-up-donate-unwanted-clothing.html?utm_source=Sailthru&utm_medium=e-mail&utm_campaign=Issue:%202019-05-17%20Waste%20Dive%20Newsletter%20%5Bissue:20958%5D&utm_term=Waste%20Dive

processed into new feedstock.[9] Companies such as Evrnu and Ambercycle are working to make post-consumer fiber into pristine new fibers through a molecular recycling process.[10] These advanced technologies are not currently commercially available and are still far from becoming economically viable, and there are many questions to be answered about the yields, residuals, and effluent of these technologies.

One of the biggest challenges these technologies must face is being able to identify the composition of feedstock in textiles so that they can be easily sorted and processed. [11] Today it is by far more cost effective to reduce, reuse and use traditional recycling. However, over time, as cotton fiber becomes more expensive to harvest (a water and land intensive crop), and as the technology evolves, it will become more viable. Companies such as EON, are working on solving this problem. EON has launched an initiative called Circular ID that will track the composition of fiber in clothing with the hope that it could be collected in traditional recycling programs and then chemically recycled back into its original building blocks for use in manufacturing new clothing.[12]

While the potential for chemical recycling to play a role in the future exists, the uncertainty around the human health and environmental impacts, technology and financial viability is great enough that other solutions must continue to be pursued to solve the immediate problem.

Municipal Curbside Textile Collection for Waste Reduction

In the wake of the China National Sword, which focused an intense spotlight on the need for traceability, transparency, and accountability through the supply chain for packaging, we can see the conversation about our clothing coming not far behind.

While state and federal government appear paralyzed by political divisions, local government can and need to play a lead role in driving systems change. There are some interesting initiatives coming from the textiles industry, but local governments (who are not financially incentivized to increase consumption) are freer to pursue a larger array of solutions like repair and reuse. Local governments can make requirements around traceability and transparency in contracts, which can send a powerful market signal and begin to shed light on the human, social, and environmental problems that need to be solved.

While the solutions curbside recycling collection provide don't compare to the benefits that methods including EPR (extended producer responsibility) systems, material standardization, design for durability, and repair would offer, there is still a need to consider what to do with the unrelenting stream of no longer wanted textiles that we have today. As we move towards upstream and systematic solutions, it is vital to continue efforts to keep clothes out of the waste stream by supporting local thrift store and drop off dona-

9 https://www.theguardian.com/sustainable-business/2014/sep/24/closed-loop-textile-recycling-technology-innovation

10 https://www.evrnu.com/

11 http://www.wrap.org.uk/sites/files/wrap/priv_download/MPD007-014%20Final_End%20of%20life%20sorting%20technologies.pdf

12 https://www.fastcompany.com/90377286/the-ambitious-plan-to-create-a-public-database-of-every-piece-of-clothing-you-buy

tion options, and also offering residents convenient solutions for diversion through the inclusion as part of a curbside recycling program (in a separate stream – not commingled with single stream recycling).

Study Methodology and Results

Eureka has been collecting discarded textiles (collected separately from other recyclables and bagged) as part of the residential recycling program in the City of Saint Paul, MN for almost two decades. During that time, both reuse and recycling markets and textiles themselves have changed significantly.

The study conducted with support from the Minnesota Pollution Control Agency was designed to analyze the best method of collecting textiles for waste reduction on a city-wide scale, as well as the implications of the changing materials and end-markets. Collection test areas included collection in special separate compartments on recycling trucks, separate dedicated routes, and on-call collection. The study also explored education frequency and messaging through direct mailings and surveys designed by local experts in behavioral psychology.

Working with innovators in the emerging textiles repair industry, The Repair Lair and The Renewal Workshop, as well as a local office of The Salvation Army, Eureka conducted multiple composition analyses of the textiles stream being collected in the City of Saint Paul. The analysis looked specifically for how much material had the potential for local reuse and repair.

Details of the pilot study methodology and results can be found on the Resource Library page of Eureka Recycling's website. The recommendations below incorporate much of the learning and results.

Recommendations for Municipalities:

1. **Worth saying again, focus on reduction, reuse, and repair education, policy, and programs before implementing collection as part of a recycling program.** True with any material, the social and environmental impacts of using what we have and consuming less are unmatched. Many cities and counties are promoting these upstream solutions through education, programing, and policy.

2. **While upstream strategies are being developed, improve current diversion of reusable and repairable textiles from landfills and incinerators.** While the data collected in this study isn't conclusive, the analysis of the surveys together with quality/composition studies of material collected curbside seems to indicate that residents that previously used drop off or donations view curbside collection of textiles differently than existing reuse opportunities. In the curbside collection they put out additional lower-quality textiles (one sock with a hole, old college choir shirt with paint on it, etc.), and while this may increases diversion at the curb, as discussed in this report, challenges remain in finding markets for low quality textiles and much of that material is likely becoming trash somewhere else.

While chemical recycling is one area that could potentially address low value textiles in the future, there are significant issues around economics, processing and sorting technology as well as the human health and environmental impacts that need to be understood and addressed.

3. **When launching a curbside collection program:**

   a. **Set collection of textiles to occur on same day as recycling.** This results in more participation then on-call service. While on-call service results in higher pounds of material per set out, likely due to residents searching for everything they want to recycle since they called in, collection on the designated recycling day results in more pounds/household on average due to higher participation resulting from the convenience of participating throughout the year on one's scheduled recycling day.

   b. **More frequent smaller pieces of education** with any type of collection method results in higher participation then one-time, elaborate mailings. This shows the potential for continued engagement through social media and other low cost channels that can keep the issue on people's mind as they engage opportunities to dispose of clothing.

   c. **Co-collection of material with recycling in a separate compartment:**

      i. Textiles can be very cost effective to collect as part of a curbside program, resulting in an increased cost as low as $.01/household/month.

      ii. Bagged textiles should always be collected separately. Given the quality issues and sensitivity of the market for both single stream recycling in general, as well as specifically for textiles, allowing clothing to comingle with single stream is a bad idea.
         1. It results in bagged material, which is contrary to the message of single stream. Bags/film/etc. in single stream programs is already a serious challenge in terms of worker safety as well as significantly increasing program costs.
         2. When bags break the quality of clothing is deteriorated and also results in the contamination of the single stream. Textiles on the single stream sort line causes serious issues with sorting equipment. (Since Eureka does not comingle the textiles with recycling in compactor trucks bag breakage was not measured. When textiles are collected separately the bag breaking is not as much of an issue and the textiles do not get contaminated with glass and food waste from recyclables.)

iii. Co-collecting in a separate compartment on the same truck for recycling collection reduces transportation emissions by half compared to a separate truck on a dedicated route. Results from the collection pilot show that collection on one's designated recycling day results in more participation and overall higher diversion than a call-in, and in this case the lower set out weights facilitate this as a viable option in terms of capacity on trucks that generally have little additional space with separate compartments. Automatic weekly collection also resulted in about 40 percent higher tonnage collected compared to on-call.

1. If a placing textiles in a separate compartment or area is not possible, the recycling collection driver can make a note of set-out textiles on route resulting in a much more efficient designated route.

iv. This does result in additional labor costs for collection (in an automated collection program) as drivers must exit trucks however, the labor costs are significantly lower than running a separate route (about 1/3).

v. If working with the existing recycling vendor is not an option, a separate route still results in an environmental benefit and should be pursued. The GHG reductions from increased diversion far outweigh the impact of transportation emissions

4. **Focus educational messaging on environmental impact.** Our survey results clearly showed this is the biggest motivation for residents to reuse and recycle textiles, well above providing financial support for nonprofits.

5. **Support the development of end markets for the evolving textile stream.** As stated above, the proliferation of fast fashion has drastically changed the quality and value of recovered clothing, in part because there is more polyester, less cotton, and ever-emerging new fibers and mixes of materials. Current end markets have not adapted, likely resulting in an increased percent of clothes being disposed of and not reused. While upstream strategies provide far greater long term benefit, in the short term the following is needed:

   a. We need public and private investments to understand and implement new sorting techniques/equipment for clothing to achieve the highest and best use while we simultaneously develop markets for the lower value clothing until policies and standards reduce this burden. While there needs to be more and better markets for textiles this must be done ethically with greater transparency in the marketing of textiles, particularly to overseas markets. Further study and investment (by industry) is needed to better understand the strategies to both sort clothing for highest and best use and develop markets for the lower value clothing.

b. There needs to be a coordinated effort among stakeholders (local and state government, thrifts, retails stores, repair shops, other reuse and recyclers) to develop and promote local reuse and repair policy, educational materials, and programs and services.

c. Whenever curbside recycling of textiles is implemented it needs to be preceded and continuously augmented with messages that encourage thrift, resale and repair options, before putting it at the curb or alley.

d. Educate residents on the importance of putting the right materials out for the programs in their communities. Let them know why the program limits what is accepted, as well as which items are more likely to be reused and recycled. This starts with program designers understanding what and if there are marketing opportunities for high quality materials all the way down to the worn, torn and stained items prior to promoting the program. And the message needs to consistently stay in front of the residents for the long haul.

While the challenges of addressing textile waste issues are many, there is an immediate and clear role for municipalities to engage in efforts to divert the truly reusable and recyclable material from the waste stream anywhere. By highlighting the issue, promoting local reuse and repair businesses, removing barriers to participation, and focus on both upstream reduction efforts, transparency and traceability in markets, and market development for low quality textiles.