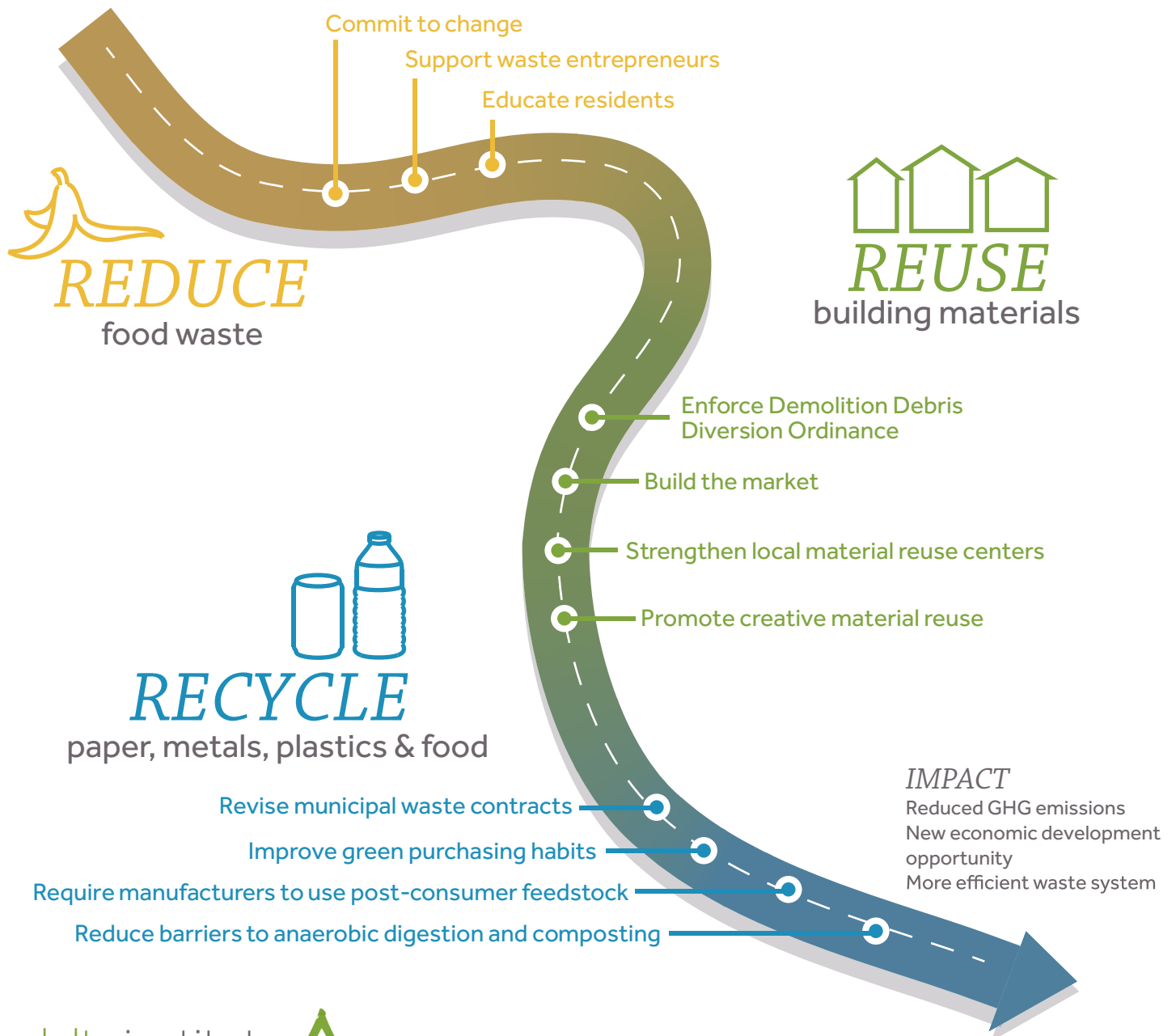


ROADMAP TO SUSTAINABLE MATERIALS MANAGEMENT IN COOK COUNTY

February 2016

EXISTING CONDITIONS

7 pounds of waste/person/day
29% recycling rate



ROADMAP TO SUSTAINABLE MATERIALS MANAGEMENT IN COOK COUNTY

Our relationship with waste is on an unsustainable course in Cook County. Recycling rates are low, and the rate of disposal per capita is high in comparison to the nation.

Currently, Cook County residents produce 7 pounds of waste per day, compared to the average American who generates 4.4 pounds of waste per day, and Cook County's 29% recycling rate trails the national average of 34%.¹ Among Great Lakes states, Illinois is second

1 Delta Institute. 2012. Cook County Solid Waste Management Plan 2012 Update Cook County Department of Environmental Control. <http://blog.cookcountyil.gov/sustainability/2012-cook-county-solid-waste-management-plan/>

to Indiana in waste generation per capita as shown in the figure below.

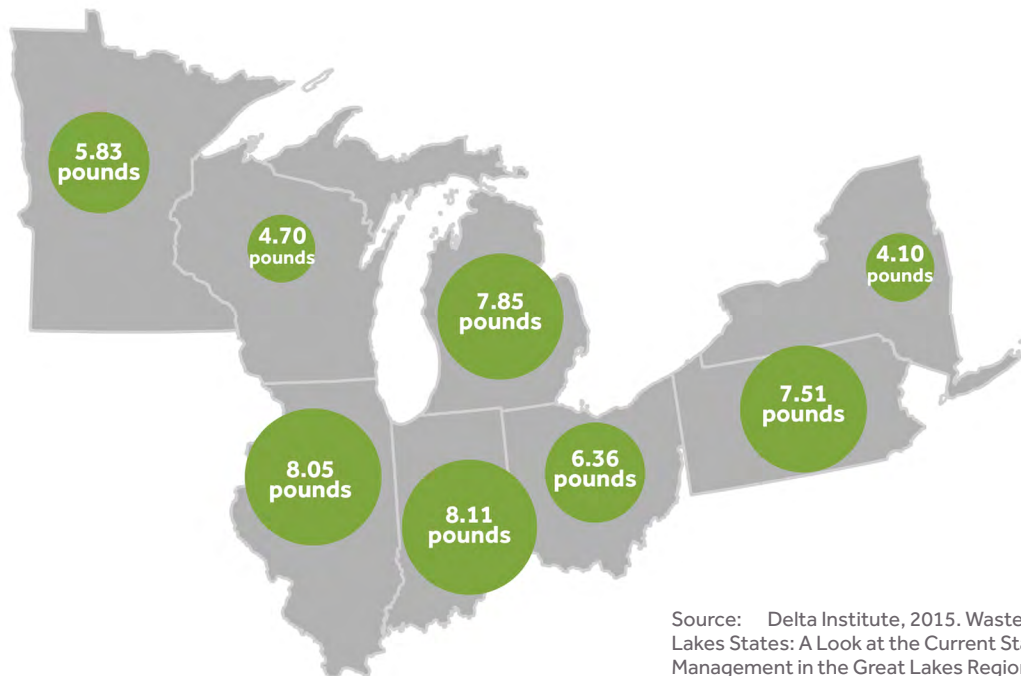
Diminishing landfill capacity

The last remaining landfill in Cook County, River Bend Prairie Landfill, reached capacity and closed at the end of 2015. Furthermore, compared to its neighboring states, Illinois has the fewer years of landfill capacity remaining.

Despite diminished local landfill capacity, Cook County continues to landfill a significant amount of material that could be diverted or recycled.

[cookcountyil.gov/sustainability/2012-cook-county-solid-waste-management-plan/](http://blog.cookcountyil.gov/sustainability/2012-cook-county-solid-waste-management-plan/)

Figure 1: Waste generation per capita per day in Great Lakes states



Source: Delta Institute, 2015. Waste in the Great Lakes States: A Look at the Current Status of Waste Management in the Great Lakes Region.

Figure 2: Years of landfill capacity in Great Lakes states³



In fact, with improvements in infrastructure and consumer education, 76% of municipal solid waste and 69% of industrial, commercial, and institutional waste could be diverted from landfills. Those waste streams include organics (food scraps and landscape waste), paper, and plastics (including recyclable and non-recyclable plastics).

Market complexity

Municipal waste managers, haulers, and recyclers face a complicated market situation. The commodities market is down, with fewer buyers of recyclable materials, and the material mix is changing due to packaging advances, such as light-weighting, and increased electronics entering the waste stream. Manufacturers have embraced light-weighting, which

substantially reduces the amount of material required in products. For example, “between 2000 and 2014, the average weight of a 16.9-ounce PET (Polyethylene terephthalate) half-liter plastic bottle has declined 48% to 9.89 grams. This has resulted in a savings of 6.2 billion pounds of PET resin since 2000.”⁴ Additionally, per capita paper waste is down 7%, which is suspected to be due to a shift to electronics.⁵

Finally, glass, a significant material in recycling, has proven so costly to recycle that some municipalities are removing it from their recycling programs. Not only is glass recycling energy-intensive, but mixed recycling results in broken glass, which is difficult to sort. While glass can be recycled because it does not decompose, glass manufacturers need high-quality, uncontaminated material for recycling. Additionally, there are few uses for poor-quality recycled glass, and glass shards can contaminate other more valuable recyclables, like paper and plastic.⁶

² Illinois 2013 LF capacity Report. <http://www.epa.state.il.us/landfill-capacity/2013/landfill-capacity-report-2014.pdf>.
³ 2012 Indiana Municipal Solid Waste Landfill Capacity & Estimated Life. http://www.in.gov/idem/files/solid_waste_indiana_msw_landfill_capacity.pdf. Report of Solid Waste Landfilled in Michigan. http://www.michigan.gov/documents/deq/DEQ-OWMRP-SWS-SolidWasteAnnualReportFY2013_447054_7.pdf New York: 2011 Landfill Capacity Chart. <http://www.dec.ny.gov/chemical/23723.html> 2013 Ohio Facility Data Reporting Tables. http://epa.ohio.gov/portals/34/document/general/FDR_2013_draft.pdf. Pennsylvania: Statewide Municipal Solid Waste Composition Study. http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Waste_Comp/Study.htm

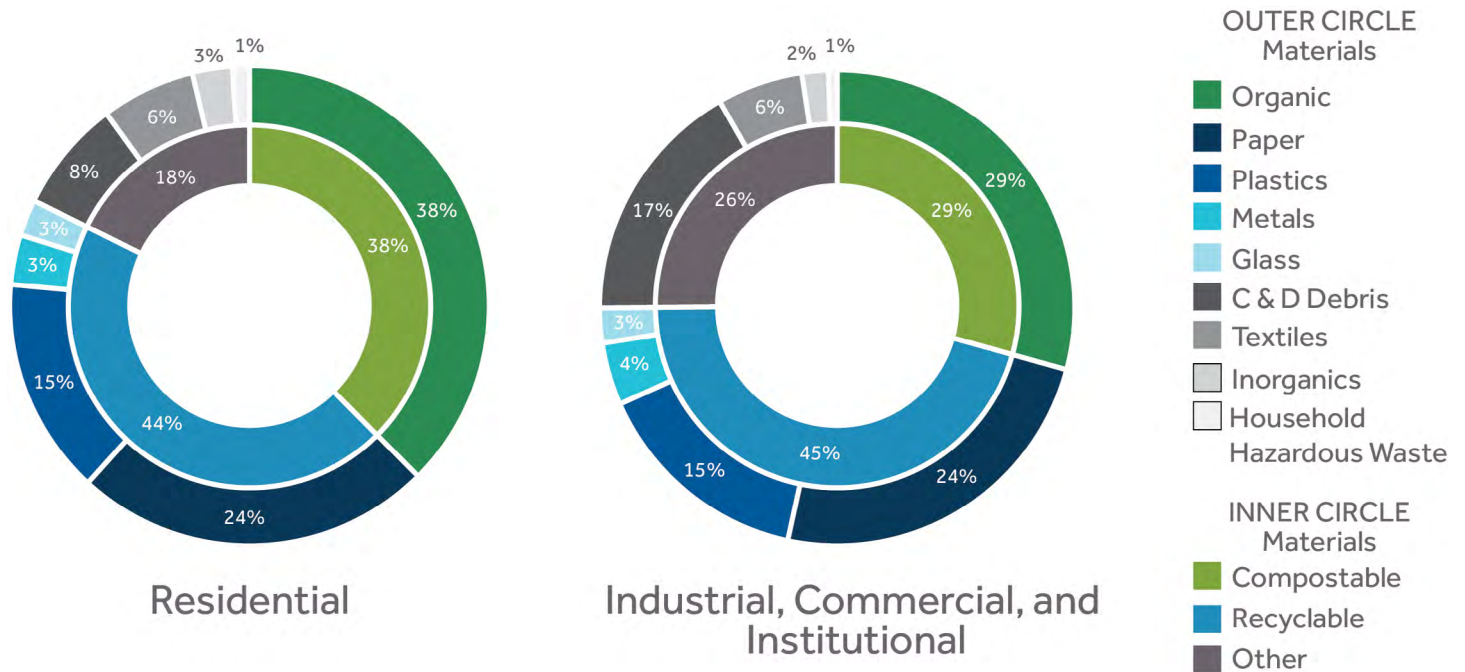
³ “Cook County, Illinois Commodity/Waste Generation and Characterization Study” commissioned by Cook County Department of Environmental Control, contracted by the Delta Institute and prepared by CDM Smith. September 24, 2014 funded by U.S. Department of Energy - Energy Efficiency Community Block Grant

⁴ International Bottled Water Association Recycling Page <http://www.bottledwater.org/education/recycling#sthash.Wu6HSbUL.dpuf> web 10/27/2015

⁵ What are the changes and challenges facing the recycling/waste management? Changes in tonnage, composition, management and markets?” Chaz Miller, National Waste & Recycling Association, Director of Policy/Advocacy. October 13, 2015 SWANA Fall Workshop: Managing Recyclables.

⁶ “High Costs Put Cracks in Glass-Recycling Programs: Some cities pull back as processors begin to chage for accepting trash-heavy shipments” <http://www.wsj.com/articles/high-costs-put-cracks-in-glass-recycling-programs-1429695003> April 22, 2015. Web October 27, 2015

Figure 3: Waste characterization by source



Source: Delta Institute, 2014. Cook County, Illinois Commodity/Waste Generation and Characterization Study.

A roadmap for systemic change

Faced with challenges and opportunities, it is imperative that waste management stakeholders in Cook County come together and work toward a new waste paradigm that supports municipal solid waste management, recycling, and reuse, while enabling waste haulers and recyclers to thrive.

Systemic changes to our regional waste management practices could yield significant opportunities for positive impacts, as stated in Delta Institute’s 2014 report, “Waste Management: Unrealized Environmental & Economic Benefits for Chicagoland.” Changing our waste management behavior at the regional, institutional, and residential level has the potential to:

- Increase waste diversion rates to 60%, including recycling, composting, and anaerobic digestion;
- Create 39,000 regional jobs by 2040; and
- Achieve significant environmental benefits, including offsetting all greenhouse gas emissions from waste management-related practices, such as collection, disposal, transportation, and separation.

This roadmap offers actionable recommendations for sustainable materials management in Cook County. Divided into three actions of Reduce, Reuse, and Recycle, the roadmap defines the basic actions required, who should take those actions, and the potential impact of those actions.

Reduce: Take action to prevent food waste

According to the U.S. Environmental Protection Agency (EPA): “The most effective way to reduce waste is not to create it in the first place.”⁷ Reducing consumption means that in addition to not having to recycle or dispose of waste material later, the cost of production may also be avoided. Production costs include the cost of extracting virgin materials and then fabricating and transporting those materials to their point-of-sale.

Because Cook County residents dispose of more waste than the average American, there is an opportunity to reduce the pounds disposed per capita. Organic waste, or food waste, provides a good starting point, as it

⁷ “Reducing and Reusing Basics.” <http://www2.epa.gov/recycle/reducing-and-reusing-basics>. Environmental Protection Agency, 11 March 2015. Web. 17, September 2015.

represents 38% of residential municipal solid waste and 29% of industrial, commercial, and institutional municipal solid waste in Cook County.

Reducing food waste also aligns with the recently announced joint USDA and EPA goal to reduce food waste by 50% by 2030.⁸ The agencies seek to reduce food waste, because it “is the largest component of the U.S. municipal solid waste stream...and accounts for a significant portion of methane emissions. Landfills are the third largest source of methane in the United States.”⁹ Additionally, better systems for managing food could significantly help those who face food insecurity. The Food Waste Reduction Alliance estimated the resources dedicated to food that never gets eaten in the U.S. to be:

- 25% of all freshwater used in U.S.
- 4% of total U.S. oil consumption
- \$750 million per year in disposal fees
- 33 million tons of landfill waste¹⁰

A more efficient food system has the potential to reduce food waste and its resulting methane emissions, and provide more food for the millions of Americans who face food insecurity.

Recommendations

County and local government agencies should focus on food waste reduction and provide support to the federal USDA – EPA partnership to reduce food waste. Illinois Environmental Protection Agency, Cook County, the Solid Waste Agency of Northern Cook County, West Cook County Solid Waste Agency, and the City of Chicago can support this initiative in a number of ways, which can also advance local food waste reduction goals. Specific actions include:

8 “USDA and EPA Join with Private Sector, Charitable Organizations to Set Nation’s First Food Waste Reduction Goals”

9 “USDA and EPA Join with Private Sector, Charitable Organizations to Set Nation’s First Food Waste Reduction Goals” http://www.usda.gov/wps/portal/usda/usdahome?contentid=2015/09/0257.xml&navid=NEWS_RELEASE&navtype=RT&parentnav=LATEST_RELEASES&deployment_action=retrievecontent. United States Department of Agriculture, 16 September 2015. Web 17 September 2015.

10 “Best practices and emerging solutions tool kit.” Food Marketing Institute, Grocery Manufacturers Association & the National Restaurant Association. http://www.gmaonline.org/file-manager/Best%20Practices%20Toolkit%20FINAL%205-1-14_rev091714.pdf 1 January 2014. Web 17 September 2015.

- 1. Municipalities and public agencies should resolve to reduce food waste.** Municipalities, school districts, park districts, and other local taxing bodies should introduce and pass resolutions to reduce food waste through the following actions: challenge cafeterias, stores, and restaurants to audit their waste habits and purchase less of the largest food type they are disposing; provide information about composting and compost service providers to stakeholders; and provide information about how to donate food to those who need it.
- 2. Municipalities, businesses, and civic organizations should promote entrepreneurial efforts to reduce food waste.** For example, Chicago-based startup Zero Percent specializes in providing safe and convenient ways to donate food. CEO and founder Raj Karmani said, “Hunger is not a supply issue, but a distribution issue.”¹¹ Encouraging businesses to utilize Zero Percent will reduce waste and direct food to the hungry that would otherwise be landfilled.
- 3. Municipalities and waste haulers should lead consumer education efforts on food waste.** The National Resource Defense Council has identified “Easy Ways to Reduce Your Food Waste” that can be shared with residents via social media, refrigerator magnets, or door hangers.¹² Tips include shopping wisely, understanding “sell by” and “use by” dates, using leftovers, and donating unperishable items. On the commercial, industrial, and institutional level, users can: assess food waste and tailor purchasing needs to actual needs, utilize composting programs, and donate food where possible.

Impacts

- Reduce local food waste by half
- Reduce food waste-related methane
- Reduce food insecurity

11 “Green Soap Box: Zero Percent”, Raj Karmani, June 15, 2015.

12 “Food Facts” National Resource Defense Council http://www.nrdc.org/living/eatingwell/files/foodwaste_2pgr.pdf 1 March 2013. Web 17 September 2015

Reuse: Include reuse center as critical waste infrastructure

Material reuse avoids energy-intensive resource extraction and costs associated with making new products, while also diverting material from landfills. Reuse is differentiated from recycling, as it involves extending the life of the material without shredding, melting, or smelting. There are many types of reuse that can be fulfilled by residential, as well as commercial, industrial, and institutional users.

Reuse, however, is difficult to track, because its occurrence is not captured in traditional waste data. For example, Cook County is home to many different types of reuse-related facilities, including second hand stores, donation boxes, and internet brokering sites like eBay, Craigslist, and Murco.net. Current activity is focused on items for which an owner is able to find a convenient donation opportunity for items that are easily resold.

Unfortunately, many unused or lightly-used materials that could get a second life are discarded. The Chicago metro area boasts several reuse businesses that aim to provide a second life to materials. For example, the [WasteShed¹³](http://www.thewasteshed.com/) and [Envision United¹⁴](http://www.envisionchicago.org/arts-studio-program/) focus on reuse

¹³ The WasteShed can be found online at <http://www.thewasteshed.com/>.

¹⁴ Envision United can be found online at <http://www.envisionchicago.org/arts-studio-program/>.

of art supplies and office supplies. Additionally, Cook County is a leader in building material reuse. After the passage of a Demolition Debris Diversion ordinance in 2012, suburban Cook County residential demolition contractors are required to achieve a 5% material reuse and 70% recycling goal. The ordinance provides support and material for the region's six reclaimed building material warehouses that accept or purchase reclaimed building materials, architectural elements, and home fixtures that are then resold to the general public.

For demolition contractors who would otherwise dispose of construction and demolition waste at a transfer station, these facilities create market conduits to donate or sell lumber, architectural salvage, and other items for reuse. With the growth in demolition permits observed between 2009 and 2014, there is more supply available.

While there is growth in available reclaimed materials from increased demolition and remodeling, sales at reuse facilities are increasing. Analysis of construction activity, demographic characteristics, social indicators and reuse building material sales data, and trade area data indicated significant demand for reclaimed building materials in both the northwest and southwest suburbs.

Figure 4: Building material reuse warehouses

Name	Address	Est.
Rebuilding Exchange (RX)	1740 W. Webster Avenue, Chicago, IL	2009
Evanston Rebuilding Warehouse	2101 Dempster Street, Evanston, IL	2011
The ReUse People ReUse Depot	50 W. Madison Street, Maywood, IL	2012
Habitat for Humanity	800 N. State Street, Elgin, IL (Northern Fox Valley ReStore)	2006
	6040 N Pulaski Road, Chicago, IL (ReStore Chicago)	2014
	180 W Joe Orr Road, Chicago Heights, IL (South Suburbs ReStore)	2008

Source: Delta Institute, 2014. Building Material Reuse Warehouse Feasibility Study for Cook County funded by U.S. Department of Energy - Energy Efficiency Community Block Grant

Figure 5: Demolition permits for residential homes and barns, by year for Cook County

Year	Single Family Residential Demolition Permits Issued in Cook County
2014*	622
2013	565
2012	413
2011	511
2010	348
2009	286
2008	640
2007	1,284
2006	1,757
*projected due to partial year supplied by Cook County Department of Environmental Control	

Source: Delta Institute, 2014. Building Material Reuse Warehouse Feasibility Study for Cook County funded by U.S. Department of Energy - Energy Efficiency Community Block Grant

Figure 5 shows the demand for building materials and existing reuse stores and highlights where potential facilities could be located.¹⁵

Other major metropolitan areas are formalizing municipal programs around material reuse. Material For the Arts, a program of the New York City Departments of Culture Affairs, Sanitation and Education in conjunction with Friends of Materials for the Arts, provides a model for reusing, receiving, and redistributing materials.¹⁶ In 2014, according to Tom Finkelparl, Commissioner NYC Department of Cultural Affairs, "MFTA collected 1.2 million pounds of quality goods and redistributed them to 2,205 nonprofits and public schools in 2014, supporting and

15 Delta Institute, 2014. Building Material Reuse Warehouse Feasibility Study for Cook County funded by U.S. Department of Energy - Energy Efficiency Community Block Grant

16 Friends of Materials for the Arts 2014 Annual Report. http://www.nyc.gov/html/dcla/mfta/downloads/pdf/mfta_annual_report.pdf 2014. Web 23 September 2015.

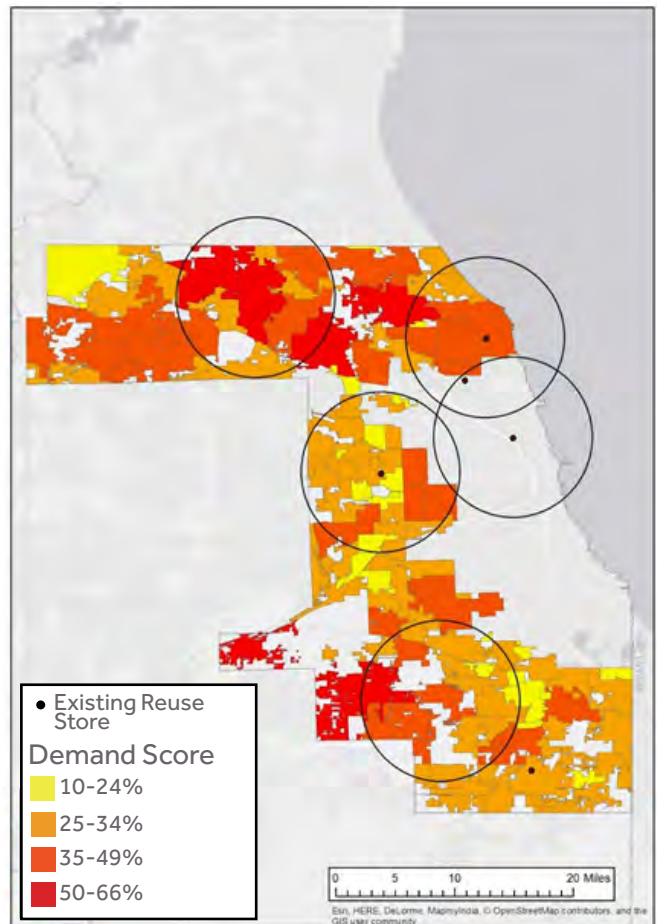
enhancing programs in all five boroughs while diverting items from the waste stream."

Replicating a Material for the Arts would be a meaningful way to reduce waste in the Chicago metro area while providing several social benefits. Not only could waste be reduced by potentially 600 tons, but a variety of nonprofits, schools, and institutions could more sustainably source the materials they need.¹⁷

Encouraging material reuse in the City of Chicago and Cook County through a variety of measures can help to keep valuable material out of landfills and to redistribute those valuable materials to those with limited resources.

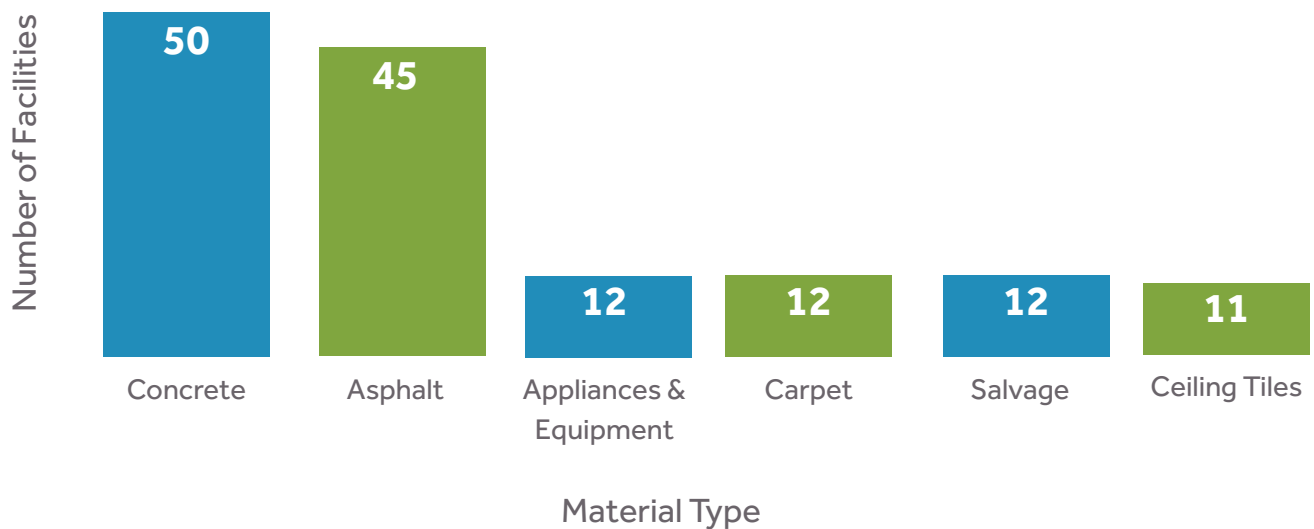
17 These materials could include: building materials; office furniture and supplies; computers and electronics; art materials; medical equipment and supplies; surplus food items and equipment; and household items.

Figure 6 : Demand for building material reuse facilities



Source: Delta Institute, 2014. Building Material Reuse Warehouse Feasibility Study for Cook County funded by U.S. Department of Energy - Energy Efficiency Community Block Grant

Figure 7: Number of reuse and recycling facilities for construction and demolition materials in Cook County



Source: Delta Institute Deconstruction Toolkit. Cook County Land Bank Authority. July 15, 2014.

Recommendations

- 1. Cook County should continue to implement and strengthen enforcement of the Demolition Debris Diversion Ordinance.** In addition, the County can create additional incentives for compliance, like a “hall of fame” of contractors who routinely comply with the ordinance and document high reuse rates. The regulation of the ordinance should be enforced by Cook County Department of Environmental Control, and recognition of compliant contractors should be accomplished by the Building Material Reuse Association and reuse warehouses.
- 2. Local governments should encourage developers to utilize reclaimed materials in new facilities and facility renovations to build demand for reclaimed products.** Alternatively, local governments can require that new development in specific areas meet green building requirements or utilize the LEED rating system¹⁸ or Living Building Challenge and require attainment of reuse and local sourcing credits.
- 3. Cook County and local municipalities should encourage businesses, institutions, and residents to donate materials to local material reuse centers.** Additionally, municipalities, schools, and civic organizations should encourage teachers, artists, and anyone who needs materials to patronize these organizations.
- 4. The City of Chicago and other larger municipalities should create a large-scale creative material reuse center or program to collect and distribute both office supplies and art materials.** There is potential for these facilities to be collocated with existing reuse stores that deal in other materials, such as the Rebuilding Exchange and Habitat for Humanity, or with cultural centers and park districts. Municipalities and the civic sector should support this initiative together.

Impacts

- Reduce waste by giving materials a second life
- Provide low-cost material individuals and institutions with limited resources
- Create jobs and new economic opportunities through the expanded reuse sector

¹⁸ More information on types of materials that could be used to achieve LEED credits is available in “StoryWood: Urban Wood, Reclaimed Wood & Locally Sourced Wood for Design” http://delta-institute.org/delta/wp-content/uploads/storywood_for_web.pdf.

Recycle: Prioritize paper, metals, plastics, and food

Recycling involves the conversion of used material into a format where it can be used again. Basic recycling requires the separation of waste and recyclables, diverting material to a mixed recycling facility where materials are sorted to specifications, then baled, shredded, crushed, compacted, or otherwise prepared for shipment to market.

Recycling is important because converting used material to feedstock for new products negates the environmental impacts of extracting virgin materials. Currently, 95% of Cook County communities have curbside collection of residential recycling written into their waste hauling contracts. A survey of 83 Cook County communities found that municipalities devote approximately 5% of their total budget for waste and recycling collection. The average duration of these contracts (including amendments and extensions) is 11 years. At the same time, waste haulers are struggling to pay for recycling programs due to the confluence of weaker commodities markets and China's weaker economy, which has reduced the amount of recyclables Chinese businesses are purchasing.¹⁹

One of the most substantial local waste streams, food scraps can also be converted to compost or, through anaerobic digestion, can be converted to biogas to generate electricity and heat, processed for natural gas. Separated digested solids can be composted, utilized for dairy bedding, directly applied to cropland, or converted into other products. Nutrients in the liquid stream can be used as a fertilizer in the agricultural industry.²⁰

The Illinois Food Scrap Coalition is a group of solid waste agencies, counties, community and government organizations, businesses, schools, institutions, service providers, and processors dedicated to advancing food scrap composting in Illinois through program implementation, policy, and advocacy. The Coalition

wants to regulate anaerobic digesters, introduce a tiered composting system to ensure that composting is available and not a nuisance, create municipal ordinances to regulate composting facilities, clarify IEPA permit information, and encourage use of end products.

Improvements in recycling and composting can lead to expanded and diversified markets for recyclables, reduce food waste-related methane emissions, and support local renewable energy generation and agriculture.

Recommendations

- 1. Municipalities should reexamine their waste management contracts.** By using best practices in waste procurement, municipalities can maximize services, achieve price efficiencies, increase accountability, manage their risks, and achieve higher recycling rates.
- 2. All local governments, institutions, and businesses should green their purchasing habits.** By prioritizing products with significant amounts of post-consumer content, they will help to grow and diversify the market for recyclables.
- 3. Policymakers should encourage Chicagoland manufacturers and Great Lakes manufacturers to use post-consumer feedstock.** By getting local businesses to use recycled material in their products we can increase demand for recyclables and be even more sustainable by keeping our materials closer to home.
- 4. State and local government agencies should reduce barriers to anaerobic digestion and composting.** Support the policy advocacy efforts of the Illinois Environmental Council and Illinois Food Scrap Coalition to make food scrap diversion more affordable and achievable in Illinois. The General Assembly and State Senate should pass drafted legislation.

¹⁹ SWANA 2015 Fall Workshop: Managing Recyclables. Susan Robinson, Federal Public Affairs Director, Waste Management, 10/13/2015 Glen Ellyn.

²⁰ American Biogas Council Web Page on Anaerobic Digestion. https://www.americanbiogascouncil.org/biogas_what.asp web 10/26/2015.

Impacts

- Improved recycling rates
- More efficient municipal waste contracts
- Diversified recyclable markets
- Reduced food waste and food waste-related emissions
- Increased renewable energy generation
- Nutrient-rich compost and soil amendments for agriculture and land management

Conclusion

The Chicago metropolitan region's waste management system is on an unsustainable course that will result in higher financial costs, increased greenhouse gas emissions, and missed economic opportunities in the long-term. The good news is that we can correct our course and still accrue significant environmental and economic benefits to local residents, institutions, and municipalities.

Cook County and its municipalities can start down a more sustainable path by taking the actions recommended in this roadmap to reduce, reuse, and recycle more material in the Chicagoland region. Taken together, these small actions to improve waste diversion will model a culture of waste efficiency and influence systemic change that will benefit the Chicagoland environment, economy, and community.



Founded in 1998, Delta Institute is a Chicago-based nonprofit organization working to build a more resilient environment and economy through sustainable solutions. Visit Delta Institute online at www.delta-institute.org.

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JOIN THE CONVERSATION!

What are you doing to make Chicagoland more sustainable? How are you reducing, reusing, and recycling? What are your BIG ideas?

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