BUILDING MATERIAL REUSE WAREHOUSE FEASIBILITY STUDY FOR COOK COUNTY

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PREPARED BY:

Delta Institute
35 E. Wacker Drive, Suite 1200
Chicago, IL 60601
Tel. 312-554-0900
www.delta-institute.org

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Delta Institute is a Chicago-based 501(c)3 nonprofit organization that serves as a catalyst for environmental sustainability and economic development throughout the Great Lakes region. Delta works in partnership with business, government and communities in the Great Lakes region to create and implement innovative, market-driven solutions that build environmental resilience, economic vitality and healthy communities. Visit online at www.delta-institute.org.

Executive Summary

Over the past six years the Chicago Metropolitan Region has grown a building material reuse economy that is employing both skilled and unskilled workers, and transforming building materials that might otherwise be landfilled into economic assets. Chicago's building material reuse economy has been catalyzed by the creation of the reuse warehouses that act as a conduit for reused building materials to enter the marketplace and stoke the demand for those products through marketing, DIY classes, and strategic partnerships that supply craftsmen. Reuse warehouses can be community gems providing a positive activity space where community members and those from outside the community come to shop for salvaged items, learn about home repair and crafts, and socialize. These warehouses are a critical vehicle to develop the building material reuse industry, because they develop both supply and demand in tandem rather than just one or the other.

Community development practitioners also want to attract building material reuse warehouses, not only because of their positive impact on host communities, but also because they support deconstruction – a job-rich alternative to demolition. Traditional demolition refers to knocking a building down and then landfilling the waste, while deconstruction refers to the systematic dismantling of a building that allows for salvaging of valuable materials. Not only does deconstruction provide more jobs in the structure removal process, but it also supports transportation, warehousing, reuse, and production jobs.

Cook County has been a leader in building material reuse. The landmark Demolition Debris Diversion Ordinance mandated both recycling and reuse to reduce landfilled materials, to promote safety and environmental quality, and to build the nascent building material reuse economy. Cook County has the opportunity to continue this market transformation through the creation of one or more additional reuse warehouses. At the close of 2014, we know that there is an unprecedented level of publicly-funded, local government-managed demolition to occur. Privately-funded demolition is rebounding from the recession and growing most heavily in the northern suburbs, and a large concentration of public activity is planned for the south and southwest suburbs. Together public and private demolitions are projected to increase 90% in 2014 and another 89% in 2015, providing an immediate growth opportunity, since there are no warehouse facilities serving these areas. This increase is due both to changes in the market and to the U.S. Department of Justice and Bank of America settlement which created the Hardest Hit funds for communities disproportionately impacted by the foreclosure crises. In addition, home renovations contribute the majority of the supply to some of the existing reuse warehouses. The home renovation market is also on the rebound and in a growth mode. The lack of warehouses makes it challenging for demolition contractors to comply with the Demolition Debris Diversion Ordinance. Without a market conduit, salvaged building materials will go to C&D recycling and not reuse, denying those materials the opportunity to make their way back into the economy.

The key findings of this feasibility study indicate that there is room in the building material reuse market to expand existing and add additional warehouse facilities. The supply and demand analyses identified the geography where new reuse warehouses could be located based upon the availability of adequate supply within ten miles and demand within seven miles. This analysis was then overlaid with the goal of establishing reuse warehouses within ten miles of any location in Cook County. This goal was established to enable all contractors meet the 5% reuse goal in the Demolition Debris Diversion Ordinance with relative ease anywhere in Cook County and enable the building material reuse industry to compete on more even footing with the C&D recycling industry which has existing facilities at this approximate interval throughout the County.

Mapping the existing reuse warehouses according to the supply and demand analyses described above reveal large gaps in coverage throughout Cook County – particularly in the south suburbs (including neighborhoods in southern Chicago) and the northwest suburbs.

The supply and demand scores awarded to each community, when overlaid with the goal of even distribution throughout the County, show the optimal locations for facilities in suburban Cook County. These include: 1) Midlothian-Oak Forest area in the south suburbs; and 2) Arlington Heights-Palatine area in the northwest suburbs. These communities have reasonably high demand and can capture other high-demand communities within their trade areas. Additionally, they have central locations suitable to build supply infrastructure and capture more reused materials within the County.

It should be noted that this recommendation does not account for the south side of Chicago, which is also without coverage. An analysis based strictly on supply and demand of the metropolitan area (not restricted to suburban Cook County) would likely reveal an additional opportunity there. This area is not covered by this report and cannot be well served by a suburban location.

In addition, the Glenview-Northbrook area has very high supply and demand scores. These communities alone comprised 17% of all demolitions in Cook County over the previous three years. They are at the exterior perimeter of the ten-mile supply area, and they are not within the seven-mile trade area of either the Evanston ReBuilding Warehouse or the proposed northwest suburban warehouse. This suggests that an additional north suburban warehouse facility, or at least a collection facility, is badly needed in this area.

Establishing reuse warehouses in these areas would help build both local supply and demand for reused building materials simultaneously. This is the ideal growth scenario. The best start-up facility size for a reuse warehouse is 20,000 to 25,000 square ft. All of the existing reuse facilities are located on major streets which promotes visibility and often in industrial facilities that are equipped with high ceilings, open layouts, loading docks, and are affordably priced. Convenient parking and access to public transportation are also important. The proposed new warehouses should seek these same advantages in choosing additional locations. This size eliminates the need for frequent moves which are costly and disruptive and allows for adequate lumber display. Facilities of this size can, theoretically, generate sufficient revenue in the $600,000 to $650,000/year range when mature to support the staffing required to operate without relying significantly on volunteer labor or on-going operating grants.

A capable entrepreneur is needed to establish and successfully run a used building material business. In addition, significant grant or equity capital of about $450,000 is needed to sustain the business through the first two to three years once the business is up and running, while the business grows to capacity at a 20,000 square foot location. In addition, loans of about $120,000 are needed to purchase the equipment and make the building improvements necessary to start each warehouse. In addition, business planning funds will be needed prior to opening each warehouse. A new reuse warehouse may be able to break even in the third year without additional grant or equity investment and make a profit in its fourth year and beyond, even while paying the principle and interest on an equipment loan for the first seven years of operation.

A lower-cost alternative to additional reuse warehouses, or as an interim strategy until new warehouses can be established, is to form collaborations of existing reuse warehouses with C&D recyclers and municipalities to establish pilot collection centers for contractors and DIY-ers to drop off salvaged materials. These centers could be conveniently located in high-supply areas and contractors could drop off various-sized loads from multiple demolition and renovation sites. Drop-off centers could be as simple as a low-cost, used truck supplied by an existing reuse warehouse. When full, these materials would be moved in the collection truck to the sponsoring reuse warehouse. One full-time employee to staff the center, if necessary, would cost approximately $30,000-$35,000 per year. In addition to manning the collection center during hours of operation, this employee could meet with potential suppliers to promote the center and pick up materials from sites with larger donations.

The collection center strategy, while cheaper and easier to implement, is not ideal because it will increase supply but not necessarily increase demand. Better marketing to potential customers may not overcome the large distances to reuse warehouses for potential customers. If any pilot collection centers are established close attention should be paid to any increasing mismatch between supply and demand. Based on the experience with the collection centers, a determine whether to continue with the collection center strategy or to encourage a reuse warehouse in that area in order to grow supply and demand together.

Based upon these findings, the following recommendations are offered:

- Establishing a south suburban reuse warehouse should be the top priority to build the reuse infrastructure in Cook County. While this is not the top supply or demand area, there is more than sufficient supply and demand to support a reuse warehouse. The south suburbs are cited as the top priority, because there is no reuse infrastructure anywhere in the area, requiring long trips through significant traffic to achieve the 5% reuse mandate. Additionally, given the proximity of the proposed center to low-income communities, it would have greater impact to surrounding communities than a warehouse in the more affluent northwest and north-central suburbs. Locating the warehouse in an area that serves low-income communities will also increase the likelihood of securing charitable grant funds for start-up.

  Cook County as well as other government entities and interested parties should explore the potential of using publically owned facilities in the Midlothian-Oak Forest area to determine whether any are available and appropriate for a reuse warehouse. Discussions should be held with the Cook County Land Bank Authority, South Suburban Land Bank Development Authority, and the Sheriff's office to determine whether any of them have an interest in co-locating in this space in conjunction with their demolition or deconstruction activities. A Request for Proposals (RFP) should be issued, preferably with an escalating lease rate and some business planning and start-up funding, to identify an entrepreneur for a reuse warehouse pilot in the south suburbs at this or an alternative location in the Midlothian/Oak Forest area.

- If adequate resources and entrepreneurs can be identified first for Arlington Heights-Palatine and, secondly, for Glenview-Northbrook, move forward with RFPs similar to the one described above for the south suburbs to identify entrepreneurs for these warehouses. The Arlington Heights facility would provide reuse infrastructure in the northwest suburbs which, while not as disconnected from the market as the south suburbs, is beyond the ten-mile supply area recommended in this analysis. Arlington Heights is the second highest supply and demand community in Cook County, and there is adequate supply and demand there and in the surrounding area to support a reuse warehouse. Glenview is the highest supply and demand community. While it is at the outer boundaries of the Arlington Heights-Palatine and Evanston supply areas, it is not within their demand areas. Efforts should also be made to better capture the supply and demand in Glenview and the surrounding area. At the very least, collection centers should be established in these areas as an interim strategy.

The regional building material reuse market is growing, however, it is unlikely that a for-profit entrepreneur will be able to create a building material warehouse. While it is feasible to operate a warehouse and break even within four years of operation, it will not be a profit-rich enterprise, and a significant amount of grant money or equity capital—about $450,000-- is needed to break even. This economic model requires patience and a social mission. It is not an accident that the existing reuse warehouses are all connected to non-profit organizations. Tax deductible charitable donations of used

building materials are an important element of their business model that are not available to for-profit entrepreneurs. Finally, more sources of start-up capital and operating funds will be available through grants and low interest loans for a not-for-profit. Given the economics of reuse warehouses and the locations and growth patterns of the existing warehouses, direction and incentives from the County and other government entities will be needed to facilitate growth. If the right conditions are met, this warehouse will provide geographic coverage and reuse infrastructure throughout the County, supporting uniform compliance with the waste reuse mandate and growing the reuse industry.

This study also contains a number of recommendations for government, the existing reuse warehouses, and other key actors to work together to grow the building material reuse industry, which is still in its early stages of development from both the supply and demand standpoints.

These recommendations reflect the conclusions of this study regarding the needs and the warehouse feasibility assessments that are contained within the full report.

Needs Assessment

Existing conditions

The Chicago Metropolitan Region's burgeoning materials reuse industry, as evidenced by current design aesthetic and the tenfold increase in building materials sold by existing reused building material warehouses between 2009 and 2014,[1] offers a variety of economic development and environmental opportunities to individuals, businesses, and municipalities. It is widely acknowledged that improved materials management reduces waste and conserves scarce resources. However, there appears to be a growing recognition and interest around the economic drivers of opportunity for both existing businesses and entrepreneurs throughout the supply chain to add value to, or capture value from, discarded or recycled materials. Realizing these gains can be particularly advantageous for communities through increased employment opportunities, augmented local tax bases, improved housing stock, and resulting community investment.

The building material reuse industry also presents unique opportunities for growth and maturation. Homes, apartment buildings, and a variety of other building types contain beams, flooring, woodwork, cabinets, doors, windows, tubs, and sinks – all of which may be reusable. Many buildings also contain rare or unique fixtures or old-growth lumber, which is of higher quality and value than much of the wood used in today's construction. Opportunities to salvage, recycle, and resell building materials are widespread, but the ability to take advantage of these opportunities are limited by gaps and inefficiencies in an expanding marketplace.

Cook County has been proactive in addressing market inefficiencies through its Demolition Debris Diversion Ordinance, which took effect in November 2012, requiring demolition contractors to recycle 70% by weight of demolition debris and to divert 5% of debris from residential properties for reuse, while encouraging reuse of materials from all properties[2]. The ordinance has been successful in keeping building materials out of the landfill resulting in a reduction of construction and demolition waste in the landfill from 25.3% in 2007 to 7.6% of residential landfill waste and 16.8% on industrial and commercial of landfill waste and in 2014[3].

However, the impact of the ordinance on the reuse economy remains unclear. One reason for this is that there is not sufficient data to compare pre-implementation and post-implementation diversion practices. Additionally, where data does exist there are significant gaps. For example, one gap is the absence of reliable data on the proportion of reuse materials allocated to warehouse enterprises versus other market actors. Another gap is a full accounting of diversion by material type. For instance, bricks are generally not accepted by the reuse warehouses and have been the basis of a well-developed reuse market that predates the ordinance. So, in the absence of clear and accurate data on waste stream composition by material, the full impact of the ordinance on the reuse economy cannot be quantified. However, there are indicators that since the ordinance was passed additional market actors have emerged and early adopter reuse warehouses have grown.

Building Material Market Actors

The regional building material reuse marketplace, while new and not fully developed, has a fairly complex organizational structure. Economic activity is driven both by market forces and policy choices,

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[1] 990 forms for ReBuilding Exchange 2009-20013, ReBuilding Warehouse 2012-2013, Habitat for Humanity - Chicago Windy City Store 2009-2013.

[2] Stone, D. October 23, 2013. *Cook County Breaks New Ground With Demolition Debris Diversion Ordinance.* http://blog.cookcountyil.gov/sustainability/2013/10/23/cook-county-breaks-new-ground-with-demolition-debris-diversion-ordinance/

[3] CDM Smith, September 24, 2014, *Cook County Waste Characterization Study*

and it is simultaneously constrained by current infrastructure and a business-as-usual approach to materials management. Below are descriptions of key players, in addition to the reuse warehouses described above, that bring reused building materials to the market, so they can be purchased and used by others.

Reuse warehouses – These operations rely on a wide variety of source materials and tend to serve the general public. They are non-profit organizations, and most of their materials are donated. The building material reuse warehouses interviewed for this study are listed in Table 1 below, and are compared in greater detail in Appendix 08:

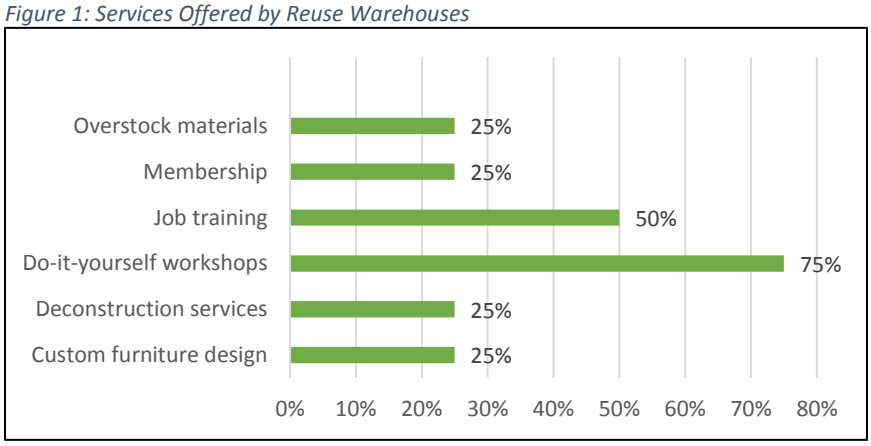
Table 1: Reuse Warehouse Interviews

Name	Address	Established
1 *Rebuilding Exchange (RX)*	1740 W. Webster Avenue, Chicago, IL	2009
2 *Evanston ReBuilding Warehouse*	2101 Dempster Street, Evanston, IL	2011
3 The *ReUse People ReUse Depot*	50 W. Madison Street, Maywood, IL	2012
4 *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

This is neither a mature nor well-defined market sector, and as such these enterprises rely on various strategies for maintaining supply, satisfying demand, reaching new markets and market segments, and general operations. For instance, there is a wide variation in the range of products offered, with lumber being an illustrative example. While lumber sales account for approximately 50% of revenue at the RX, it does not account for a significant portion of revenue at either the Evanston ReBuilding Warehouse or the ReStores.

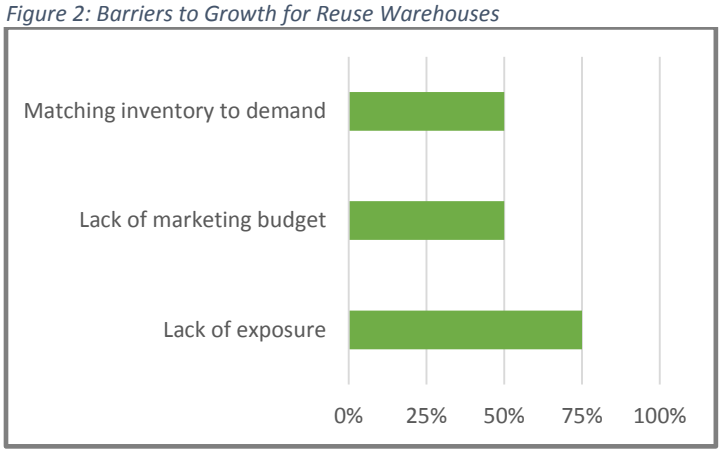
Other important differences revealed in this analysis include the extent to which different enterprises rely on reclaimed materials versus donated overstock materials sold at competitive prices, or the extent to which operators rely on a paid versus volunteer labor force. The warehouse operators also offered a variety of services as part of their respective business models. The nature and frequency of these specialized services are shown in Figure 1 below.

Figure 1: Services Offered by Reuse Warehouses



Regardless of specialized services and products available to their customers, all of the existing reuse warehouses identified barriers to growth. The top three barriers to growth were all cited by more than one of the existing reuse warehouses and are shown in Figure 2 below. Figure 2 shows the percentage of reuse warehouses citing a particular challenge, and in this calculation, the multiple Habitat for Humanity locations are treated as a single group.

Figure 2: Barriers to Growth for Reuse Warehouses



Non-facility recyclers – These operators trade in materials salvaged from home renovations or demolitions. They source materials from property owners and re-sell directly to clients or into secondary markets. These transactions may take a variety of forms, including through web-based sales (i.e. PlanetReuse), proprietary warehousing (i.e. Demolition Promotions, Inc.), limited or public auctions (i.e. Murco Recycling), or through donations to existing reuse warehouses.

A subset of this category includes online market places, such as Craigslist and eBay. Materials available on these platforms may be affiliated with formal entrepreneurs, such as those listed above, or they may be a one-off offering from a homeowner, landlord, or other entity. Regardless, the importance of these online marketplaces should not be overlooked, as they provide established enterprises and entrepreneurs with opportunities to reach new market segments.

Value-add producers – This group of individuals and organizations transform salvaged materials into value-added products, such as furniture. They source materials very broadly and tend to sell into higher-end, artisanal markets. Examples include Icon Modern and the Rebuilding Exchange's line, RX Made. In Chicago, both Icon Modern and RX Made design products with various available materials for in-house production, though larger orders may be outsourced. Regionally, Reclaim Detroit in Detroit, and Rust Belt Reclamation in Cleveland do artisanal woodwork using reclaimed lumber and have large warehouses to store product and accommodate replication.

Architectural salvage – These entrepreneurs, including Chicago's Salvage One and Architectural Artifacts, recycle unique and valuable design elements. Similarly to the value-add producers, these operators cater to more affluent market segments.

Municipalities and counties – Public policy, at any scale, can play an important role in creating the conditions for waste reuse and economic development opportunities. Cook County is a leader and early adopter in this area, having passed the Demolition Debris Diversion Ordinance in July 2012.

Land banks - Land banks are quasi-governmental entities created by counties or municipalities to effectively manage and repurpose an inventory of underused, abandoned, or foreclosed property. Because land banks typically perform a lot of demolition, they are well-positioned to support building material reuse through the demolitions and deconstructions they commission. The Cook County Land Bank Authority and the South Suburban Land Bank Development Authority are currently pursuing both demolition and deconstruction. Cook County Land Bank Authority will accept both suburban Cook County properties and Chicago properties, while the South Suburban Land Bank Development Authority will serve its member municipalities in both Southern Cook County and Will County.

Construction and Demolition Recycling Centers – These centers are processing sites for the temporary deposition of construction and demolition waste. C&D contains bulky, heavy materials, such as concrete,

wood, metals, glass, and salvaged building components.[4] By using C&D transfer recycling centers, demolition contractors in Cook County can meet the 70% recycling goal in the Cook County demolition ordinance.

Supply

Demolition through deconstruction and renovation are two main sources of supply of building materials to the reuse market. Like demolition, deconstruction seeks to remove existing structures; deconstruction, however, is the process of systematically dismantling a structure in an environmentally, economically, and socially responsible manner, aiming to maximize the recovery of materials for reuse and recycling. Similarly, home renovations drive supply to the reuse market through removal of existing materials. New construction is not a significant source of supply for reuse markets, because it produces relatively little material, and it is difficult to collect.[5]

The average per-square-foot yield of reusable building materials is listed below by source of supply[6]:

- Deconstruction: 12-24 pounds per-square-foot
- Renovation: 23 pounds per-square-foot
- New Construction: 4.4 pounds per-square-foot

The extent to which existing warehouse operators rely on demolition versus renovation materials as a source of supply is a key characteristic that defines their role in the marketplace. For example, the ReUse People, which is involved in the deconstruction business, secures a majority of their supply from deconstructed homes. The RX, however, estimates that 80% of its inventory is salvaged from renovations.

Deconstruction

The deconstruction process is also sometimes referred to as "soft demolition," which refers to the manual method used to recover materials, as opposed to traditional demolition, which generally involves the use of backhoes, bulldozers, or other heavy machinery. Structures can either be fully deconstructed or "soft stripped," a process that keeps labor costs lower while salvaging the easiest-to-capture and highest-value components. Deconstruction can take either form, or a hybridized approach that optimizes benefits and costs. Typically, easily-recoverable, high-value materials may include appliances, cabinetry, or old-growth lumber.

However, the values of deconstructed or soft-stripped materials can vary considerably, depending on the size and condition of a given home. For example, the RX reported that based on the outcome of its deconstruction pilot program, many foreclosed homes generated fewer marketable materials than otherwise comparable homes, because they had been stripped of high-value items, such as fixtures, built-ins, and cabinets, or these items were in disrepair.[7] This is an issue of concern, because the quality of materials salvaged through deconstruction or soft-stripping will ultimately drive both supply and demand.

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[4] http://www.epa.gov/epawaste/conserve/imr/cdm/ 11/7/2014

[5] Delta Institute. March 5, 2012. *ReBuilding Exchange Business Case for Expansion.* Draft publication.

[6] Franklin Associates. June 1998. *Characterization of Building and Building-Related Construction and Demolition Debris in the United States*. Report No. EPA530-R-98-010. http://epa.gov/wastes/hazard/generation/sqg/cd-rpt.pdf

[7] Delta Institute. 12/12/2012. Cook County EECBG - Activity EEM-002-MREC (6B) Sourcing and Supply Trends for Reused Building Materials.

While there are no precise data on the scale of regional deconstruction activity, an analysis of demolition permit issuance provides a high-level overview of the potential supply for reused building materials. For example, in 2013 Cook County issued 565 demolition permits for single-family residential structures (SFR) in suburban municipalities. While this number is less than a third of the 1,756 permits issued before the onset of recession in 2006, it has climbed steadily from a nadir of 286 permits in 2009, and is expected to continue increasing. Table 2 below depicts the impact of the recession on the local demolition market, and Appendix 1 depicts the geography of demolition permit issuance in Cook County, 2011-2014.[8] Table 2 also includes demolition permits issued in the City of Chicago between 2006 and projected for 2014.

Table 2: Demolition Permits for Residential Homes and Barns, by Year for Cook County

Year	SFR Demolition Permits Issued in Cook County	Demolition Permits Issued in Chicago
2014*	622	1310*
2013	565	1554
2012	413	1673
2011	511	1225
2010	348	1154
2009	286	875
2008	640	968
2007	1,284	1367
2006	1,757	1448

*projected

Given the 5% reuse mandate in Cook County, the 622 private demolitions projected for 2014 can be expected to generate 2,768 tons of building materials for reuse. This is enough to supply four 20,000-square-foot warehouses with 692 tons each. This is well within the 500-1,000 tons needed for each warehouse of this size.[9]

A more likely scenario, however, is that the supply for reuse warehouses is constrained by the diversity and overlap in the marketplace, and that brick recyclers, non-facility recyclers, auctioneers, and online vendors will also receive a portion of the materials. On the other hand, some properties have been, and will continue to be, fully deconstructed, which will supply two to six times the reusable material as demolished homes and will deliver additional supply for all market actors.

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[8] It should be noted that the demolition permits listed in table 2 represents all homes and barns inclusive of structures that may be fire damaged and court ordered demolition.

[9] According the U.S. EPA, demolition of an average single-family house generates 111 lbs. per square foot of construction and demolition (C&D) materials. Assuming an average house size of 1,600 square feet, a fully deconstructed house will yield roughly 89 tons of material. According to deconstruction experts consulted in development of the *Cook County Deconstruction Strategy Report,* 11-22% of those materials are marketable, and could potentially supply the market with 10-20 tons of marketable materials. Assuming that half of the homes for which demolition permits are projected to be issued in 2014 are suitable for deconstruction (see Table 2 above), then the salvage potential is approximately 3,100 tons of building material. Given that, conservatively, 500 tons of reusable materials may support a reuse warehouse for one year then the 622 demolitions projected for 2014 would produce materials sufficient to support six 10,000 square foot reuse warehouses if all materials were diverted to reuse warehouses. Franklin Associates. June 1998. *Characterization of Building and Building-Related Construction and Demolition Debris in the United States*. Report No. EPA530-R-98-010. http://www.epa.gov/wastes/hazard/generation/sqg/cd-rpt.pdf; Weber, R. et. al. January 2009. *Market Analysis of Construction & Demolition Material Reuse in the Chicago Region.* University of Illinois at Chicago. Report prepared for the Delta Redevelopment Institute; Delta Institute. July 11, 2011. *Cook County Deconstruction Strategy Report: Market analysis of construction and demolition material reuse in suburban Cook County.* http://blog.cookcountyil.gov/sustainability/cook-county-deconstruction-strategy-report/; Delta Institute. July 11, 2011. *Cook County Deconstruction Strategy Report: Market analysis of construction and demolition material reuse in suburban Cook County.* http://blog.cookcountyil.gov/sustainability/cook-county-deconstruction-strategy-report/

Despite the lack of available data on the number of homes annually deconstructed in the private marketplace, a number of publicly-funded demolition programs, some with deconstruction goals, are operating regionally, which will contribute to the net regional supply.

The Cook County Land Bank Authority (CCLBA) will demolish or deconstruct 200 homes using Illinois Attorney General National Foreclosure Settlement Awards with the possibility of securing additional funds through the Hardest Hit program and the Cook County Community Development Block Grant. Additionally, the Sheriff's Neighborhood Restoration Initiative will demolish or deconstruct 60 homes in 2015. Through these ongoing initiatives, demolition or deconstruction numbers are expected to increase from 110 in 2015 to approximately 160 in 2016 and to approximately 210 in 2017. The South Suburban Land Bank and Development Authority will also undertake demolition or deconstruction activity in the coming years, but further details are not yet available.

The City of Chicago has also pursued demolition through the Neighborhood Stabilization Program. Chicago received $55 million in the first round of NSP funding in 2009, $98 million in the second, and in September 2010 was awarded an additional $15.9 million. The city hopes to use NSP funds to rehab, construct or demolish up to 2,500 units in the next three to five years. The City will pursue Hardest Hit Funding and the Cook County Land Bank Authority may use some of its funding to demolish City of Chicago properties.[10]

Public sector programs in the City of Gary and the City of East Chicago, both in northwest Indiana, will also demolish or deconstruct a number of homes using Hardest Hit and Neighborhood Stabilization Program funds. Reclaimed building materials from these homes are likely to be sold in the Chicago area market, because there is currently no infrastructure to support resale of used building materials Northwest Indiana. The City of Gary plans to demolish 650 homes in 2015 and has committed to a pilot project to deconstruct 24 of them. An additional 650 homes will be demolished or deconstructed in 2016, and 800 will be demolished or deconstructed in 2017. Future determinations regarding demolition or deconstruction will depend on the outcome of the 2015 pilot program. The City of East Chicago intends to demolish or deconstruct 50 to 100 homes each year from 2015 to 2017.

Table 3 below identifies publicly planned demolition, 2015-2017, which is projected to increase by 282% over the 2013 level by 2017. To assess the role of the private market in this analysis, suburban residential permitting is assumed to continue the 10% rate of growth annually that occurred between 2013 and 2014 until stabilizing at or near the 2007 level of 1,284, which shows the rate of demolition permit issuance at the highest point after the housing bubble. Between 2010 and the projected 2014 demolition totals, private demolition has increased 78% suggesting a mean average growth of 15% in private demolition permits. The 10% projection is conservative, because they intentionally do not capture or attempt to capture materials donated in the past from privately demolished or deconstructed homes in surrounding counties.

Table 3: Planned Demolition or Deconstruction in Cook County and Surrounding Areas 2015-2017

	Private Cook County Demolition	Public CCLBDA[11]	Other Public Cook County[12]	Public City of Gary Indiana	Public City of East Chicago	Total	% Increase
2013	565	0	0			565	
2014*	622	50	20	379		1071	90%
2015*	684	150	460	650	75	2019	89%

[10] Chicago NSP FAQ, http://www.chicagonsp.org/About-us/Chicago-Neighborhood-Stabilization-Program-QA.html

[11] Pytel E., Director of Strategic Priorities at Delta Institute and White, B., Executive Director at Cook County Land Bank Authority. Personal Communication via email. October 2, 2014.

[12] Pytel E., Director of Strategic Priorities at Delta Institute and Winters, W., Director at Cook County Sheriff's Office. Personal communication via telephone. September 26, 2014. (This is in addition to 2015 Hardest Hit Funds to be processed by SSLBDA.)

2016*	752	150	460	650	75	2087	3%
2017*	827	150	460	800	75	2312	11%

*projected

The projected 90% increase in demolitions in 2014 and another 89% in 2015 presents an immediate opportunity to grow the existing warehouses while providing supply for new reuse warehouses.

Renovation

The scale and scope of renovation activity varies widely among projects. However, kitchens and bathrooms typically generate the most reusable and valuable materials.

According to an early 2013 survey of 106,383 members of Houzz, a home improvement and design website, Midwesterners spend an average of $152,708 on complete home remodels and an average of $26,103 on kitchen remodels.[13] Table 4 below, excerpted from Appendix 2, shows the breakdown of the renovation and reuse-related economic activity for Cook County, Chicago, and suburban Cook County in 2014. Delta Institute used ESRI Business Analyst to analyze potential sales information, as well as understand renovation activity in Cook County. ESRI Business Analyst combines demographic and business data, detailed maps, and advanced spatial analytics to understand customers and the marketplace. ESRI is the creator of ArcGIS, the predominant geospatial information system. The business analyst tool combines mapping with Census data, Bureau of Labor Statistics data, consumer spending and spending potential index, and GfK MRI's Survey of American Consumers.[14] According to ESRI Business Analyst, over $1.15 billion is projected to be spent on remodeling materials in Cook County this year. Of that, 29% will be spent in Chicago, while 71% will be spent in suburban Cook County. In Chicago, 2% of remodelers used some type of green product in the course of their remodel, while 3.8% of suburban remodelers did the same. Nationally, 2.8% of remodelers used of some type of green product, which is a possible indicator of the environmental market. Additionally, the retail potential for all used merchandise stores in Cook County in 2014 is nearly $128 million, with just over 52% of that potential located in suburban Cook County. Taken together, these numbers suggest that despite the lower density, suburban Cook County could provide more supply from renovations as well as stronger demand for used building materials sales than Chicago. Compared to Chicago, suburban Cook County residents engage in significantly more remodeling activity, are more inclined to purchase green products for remodeling, and spend more dollars on used merchandise.

Table 4: Home Improvement Activity and Economic Data, Cook County 2014[15]

Variables	Cook County	Share	Chicago	Share	Suburban Cook	Share
2014 Total Households (ESRI)	1,994,327	100%	1,067,453	53.5%	926,874	46.5%
2014 Home remodeling done in last 12 months	319,823	16.0%	130,157	12.2%	189,666	20.5%
2014 Used any green product with home remodeling work	55,924	2.8%	20,996	2.0%	34,928	3.8%
2014 Retail Sales: Bldg Material/Supplies Dealers (NAICS 4441)	$1,153,154,474	100%	$331,828,639	28.8%	$821,325,835	71.2%
2014 Retail Sales Potential: Used Merchandise Stores (NAICS 4533)	$127,702,406	100%	$61,060,271	47.8%	$66,642,135	52.2%
2014 Retail Sales: Used Merchandise Stores (NAICS 4533)[16]	$133,956,046	100%	$61,060,271	47.8%	$72,895,775	

[13] Tanaka, S. October 3, 2013. "What Homeowners Across the U.S. Spend on Home Improvement." *The Wall Street Journal.* http://online.wsj.com/news/articles/SB10001424127887323808204579087123986702580

[14] 11/10/2014 http://www.esri.com/software/arcgis/extensions/businessanalyst/included-data/data-us-prem

[15] ESRI Business Analyst House and Home Expenditures 2014 Summary where data is derived from Census and derived from Consumer Expenditures Surveys and Bureau of Labor Statistics.

Geography of Supply

The supply of reused building materials is influenced by a number of factors with geography among the most significant. For example, The ReUse People report that their geography of supply is largely congruous with their deconstruction businesses throughout the metropolitan area. For the RX, the geography of supply is more fluid, with 40% of donated material from ZIP codes adjacent to their facility, and the remainder coming from as far as Naperville (DuPage County) and Highland Park (Lake County). The other reuse warehouses did not have comparable data available for review.

Pick-up services have been found to expand the supply area greatly. The ReUse People use demolition fleet trucks to recover deconstructed material from throughout the region and deliver it to their warehouse. The RX reported that 69% of its total donations are picked up. Additionally, the RX implemented a new "drop and haul" strategy by providing a reuse dumpster (through a dumpster rental company) to a deconstruction contractor, which was delivered back to the RX by the dumpster company when filled with salvaged materials. This strategy requires education of the contractor to ensure that only reusable materials are put in the dumpster and that they are packed correctly to minimize damage. The pilot was successful enough that the RX will try this again in the future. The Evanston ReBuilding Warehouse reported that approximately 50% of its inventory is picked up and 50% is dropped off.

Supply Analysis

Delta created two indexed rating systems to measure supply and demand in Cook County municipalities. One methodology ranked communities' ability to supply the warehouses based on numerous factors, and the other system ranked likely demand in each community. These methodologies established supply and demand scores between 0 and 1, or a percent ranking that is used to compare municipalities.

The supply score is comprised of material data, housing stock data, and social indicators, described below:

Raw Material data (50% of total supply score) –The estimated supply of usable material is the most important factor influencing supply. It accounts for 50% of the total supply score and is comprised of demolition and renovation.

- Demolition is calculated as the percentage of demolition permits in a given municipality as compared to the maximum number of demolition permits in any municipality in Cook County (% D); and
- Renovation is calculated as the percentage of building permits in a given municipality as compared to the maximum number of building permits in any municipality in Cook County (% R). While building permits cover both renovation and new construction activity, permits for renovation are more common, and both are indicative of community investment and likely supply.

Supply is comprised of both demolition and renovation, so these relative scores are weighed at 50% for demolition and 50% for renovation. This ratio is held constant across the supply analysis, thereby weighting demolition at 25% of the total supply score and renovation at 25%.

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[16] Retail sales are derived from the Census of Retail Trade Advance Monthly Retail Trade Survey which estimates monthly sales. Sales are based on the origin of the retailer and not the destination or home zip code of the customer. (https://www.census.gov/retail/definitions.html)

Housing Stock data (40% of total supply score) – Material composition of the housing stock is the second critical factor influencing supply. It accounts for 40% of the total supply score and is comprised of two factors:

- Pre-1960 homes, which are more likely to be comprised of desirable and reusable materials (pre60); and
- Percent of vacant land in a given municipality, as compared to the maximum vacant land in any municipality (% V).

Because material composition is a relatively more important factor, pre-1960 homes are weighted to comprise 30% and vacant properties 10% of the total supply score respectively.

Social Indicators (10% of total supply score) – Social indicators are important for targeting communities inclined to support green initiatives. It accounts for 10% of the total supply score and is comprised of two, equally-weighted factors, including:

- Whether the municipality is a member of a suburban housing collaborative (SHC), 5%. The suburban housing collaborative promotes and supports sustainable, livable communities. This indicates the level of support for community development initiatives and sustainability. There are suburban housing collaboratives in the North, South and Western Cook County. These collaborations represent communities that value-planned, sustainable, progressive housing agendas; however, they are not able to afford their own dedicated community economic development staff to focus on housing.
- Number of green initiatives in which the municipality participates as a percentage of seven total possible initiative categories (GI), 5%. This metric is based on the sum of a given municipality's participation in the following programs: Clean Air Counts, Greenest Region Compact, ICLEI (Local Governments for Sustainability), Tree Cities USA, U.S. Conference of Mayors Climate Protection Agreement, Chicago Area Clean Cities Coalition, and Energy Star.

These six factors are weighted to represent their impact on supply of materials as follows:

$$\text{Supply Score} = 0.3(\text{pre60}) + 0.25(\%\ R) + 0.25(\%\ D) + 0.1(\%\ V) + 0.05(\text{SHC}) + 0.05(\text{GI})$$

For the purposes of this analysis, the supply area maps use a ten-mile radius from each existing or proposed reuse warehouse. This radius was selected, because it depicts the distance that construction and demolition disposal companies are willing to travel to dispose of materials[17]. Siting reuse warehouses or collection points within ten miles of most demolition and renovation sites will provide the infrastructure to capture materials throughout the County. This is also important, because a C&D recycling facility can be found within ten miles of any point in the County. If we seek to increase reuse of C&D materials, reuse warehouses will need to become as convenient as recycling.

Barriers and Strategies to Supply

One critical theme to emerge throughout interviews with existing reuse warehouses is that supply is relationship-dependent. Lack of exposure and marketing budgets were frequently cited as barriers to success that limit relationship-building and therefore supply (See Appendix 8). Anecdotal evidence suggests that materials may travel greater distances if the supply is picked up by the warehouse. Drop-offs are more frequent when the warehouse is nearby. Quality control is another barrier to ensuring a consistent supply. It is not enough for end-users or merchants to receive a supply of materials if those materials do not meet their needs or their budgets. It is therefore important and necessary to identify

[17] Delta staff queried demolition crews between 10/1/2014 and 10/4/2014 to determine the greatest distance they would travel with materials and most said that ten miles was the longest distance they were willing to travel.

what materials will ultimately be used, through what process they will be obtained for reuse, and at whose expense.

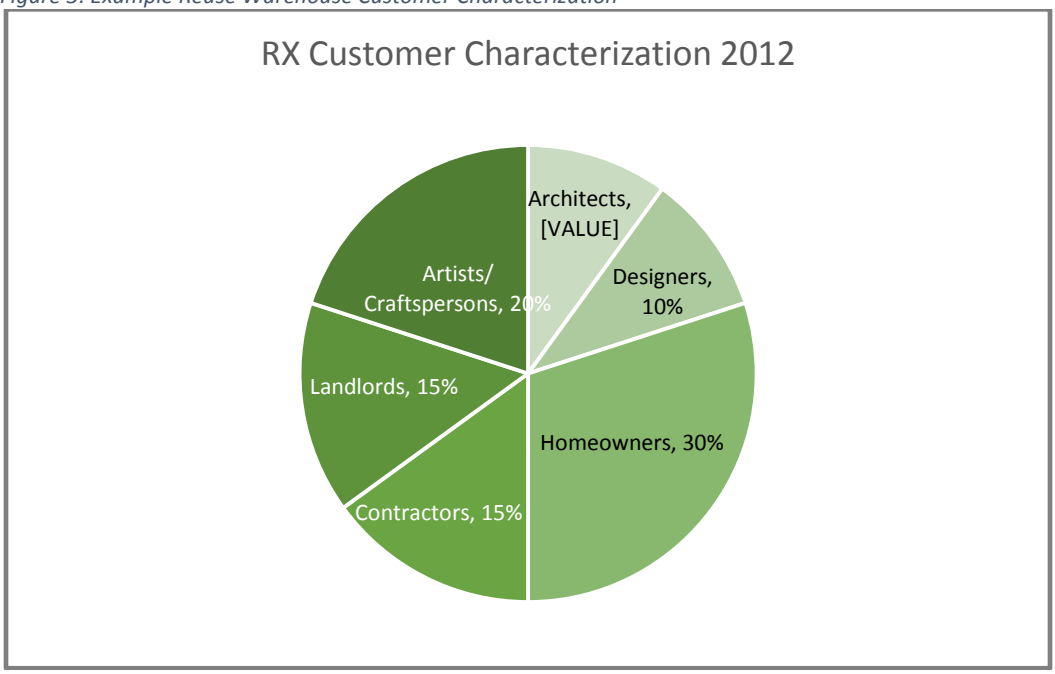
Demand

There are comparatively fewer areas for intervention on the demand side of the materials reuse market. Used building materials ultimately end up either in the landfill, recycled, or in the reclaimed materials marketplace. Demand for these materials is somewhat difficult to quantify. By many indicators demand is growing. This is attributable to a variety of factors, one of which is the enduring impact of the recession and slow economic growth. One market segment is driven to reclaimed materials simply by price. Some of these individuals are attracted to the cost-savings over newer materials, while others may prefer brand new products but lack the purchasing power. For example, a household in need of a new appliance that would have purchased a brand new model before the recession may seek a lightly-used model to save money. Another market segment is lured to reclaimed materials by the idea, the mission, or the green factor. Though the reality is that most individual decisions are based on a variety of factors, this analysis has identified cost and the environmental benefits of reclaimed materials as the most salient drivers of demand.

Customers

To better understand the decision-makers regarding reclaimed building materials, Figure 3 below shows the six segments of the market: architects, designers, homeowners, contractors, landlords, and artists/craft builders. This analysis broadly represents customer segmentation for the RX, which is the only reuse warehouse able to provide this level of detail about its customers.

Figure 3: Example Reuse Warehouse Customer Characterization[18]



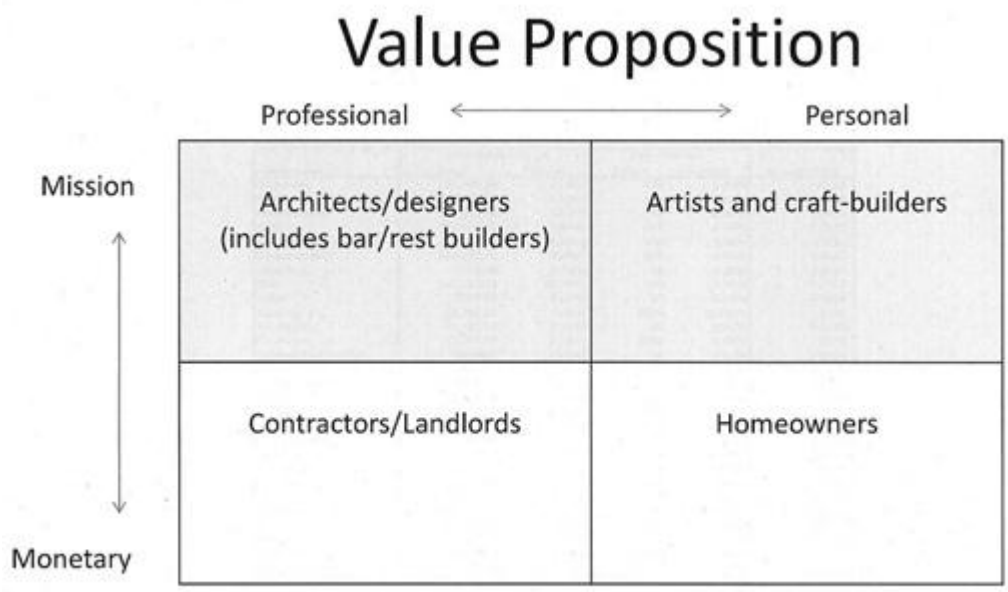
The RX also found that that the market for wood is comprised of a different clientele than for other reused building materials. Wood customers are the same at their current location (1740 W. Webster Avenue) as at its former location (3335 W. 47th Street), despite the fact that the neighborhoods differ in

[18] Delta Institute. March 5, 2012. *ReBuilding Exchange Business Case for Expansion.* Draft publication.

a variety of ways. Both the RX and the ReUse People indicated that customers will travel to purchase quality lumber, and that lumber sales are constrained more by supply than demand. On the other hand, demand for other reused building materials is comprised largely by people in neighborhoods nearer to the reuse warehouse.

The existing reuse warehouses interviewed for this analysis did not uniformly track customer data or demographics, nor did they have detailed profiles for various market segments. However, the Evanston ReBuilding Warehouse reported that over the previous years of significant growth, their customer base expanded from mostly contractors to include homeowners and other diverse market segments. Additionally, one of the Habitat for Humanity managers described their customer base as comprised predominantly of middle-income homeowners or investment property owners and a few contractors. This may suggest that the more affluent, artisanal customer base is more inclined to stores closer to the urban core, though there are not sufficient data to conclude as such. It is clear, however, that different customers and customer segments are motivated to varying extents by price and by the reuse, or "green" ethos, of the products.

Figure 2 below shows the value proposition for a reuse warehouse to the various customer segments. Architects, artists, and craft-builders who reuse building materials are typically catering to customers who value the environmental benefit, historic significance, and/or the look of reuse. These customers often pay a premium to have reused materials incorporated into their purchase for aesthetic purposes. On the other hand, homeowners and landlords are often looking for more functional, cost-effective materials to hold down costs. These characterizations are generalizations and any customer may be motivated by one or the other value proposition or by both.



Trade Area

A 2012 market expansion analysis conducted for the RX by University of Illinois at Chicago (UIC) found that the trade area for the RX is seven miles, which remains the most reliable data to date. The RX is unique among the reuse warehouses that are the subject of this analysis in that it has available trade data. Additionally, information obtained from interviews with other existing reuse warehouses did not suggest an alternative approach, so a seven-mile trade area is used for this demand analysis. A seven-

mile trade area indicates that 80% of sales are to customers located within seven miles of the selling facility. This is relatively large for an urban area.[19]

Geography of Demand Analysis

This analysis relies on two distinct approaches to categorizing geography of demand to ensure accuracy and reliability.

The first approach corresponds to the supply scoring analysis described above. The demand score was similarly constructed to account for the desire of community members to utilize reused materials. The demand score is comprised of construction activity, demographic characteristics, and social indicators, described below:

Construction Activity (30% of total demand score) – Construction, as measured by building permits, includes both new construction and renovation activity. It is an important indicator of demand, because it indicates that people are investing in their properties and each such investment provides an opportunity to incorporate reclaimed materials. This comprises 30% of the total demand score, measured by the percentage of building permits in the municipality as compared to the maximum number of building permits in any municipality in Cook County (% C).

Demographic Characteristics (60% of total demand score) – Demographics can help understand the market for reclaimed building materials, and target subgroups within that market. This factor accounts for 60% of the total demand score and is comprised of three factors:

- Percentage of potential buyers in a given municipality earning between $50,000 and $150,000 per household (% PB), weighted at 30%. This metric describes the range of income for likely customers, from those with little disposable income who seek lightly used appliances, to those more affluent, purchasing artisanal or value-added products.
- Municipal population as compared to the maximum population in any municipality in Cook County (Pop), weighted at 15%, which indicates a community more likely to sustain demand;
- Percentage of owner-occupied household units in the municipality (OO), weighted at 15%, which indicates a segment of customers more likely to remodel or buy in volume.

Social Indicators (10% of total demand score) – As described above, social indicators are important for targeting communities inclined to green initiatives. This score accounts for 1% of the total demand score and is comprised of the number of green initiatives

- Number of green initiatives in which the municipality participates as a percentage of seven total possible initiative categories (GI) and is weighted at 10%. It is based on the sum of a given municipality's participation in the following programs: Clean Air Counts, Greenest Region Compact, ICLEI (Local Governments for Sustainability), Tree Cities USA, U.S. Conference of Mayors Climate Protection Agreement, Chicago Area Clean Cities Coalition, and Energy Star.

These scores are weighted to represent their impact on the demand for materials as follows:

$$\text{Demand Score} = 0.3(\%\ C) + 0.3\ (\%\ PB) + 0.15\ (Pop) + 0.15\ (OO) + 0.1\ (GI)$$

For the purposes of this analysis, the demand area uses a seven-mile trade area for existing or proposed reuse warehouses.

The second approach uses ESRI data to identify the reuse building materials sales and the total resale sales by ZIP code within the seven-mile trade areas. The retail building materials sales are an indicator of the size of the building materials market and therefore the potential demand for used building materials

[19] Weber, R. and Ludwig, I. January 2012. *Customer Analysis for Reclaimed Building Materials from Deconstruction and Renovations*

in each ZIP code. The total resale sales is an indicator of how accustomed consumers in each ZIP code are to purchasing used materials. Communities with high resale sales are, theoretically, more likely to purchase used building materials as well. Both analyses are depicted below. These analyses were conducted to serve as a check on the demand methodology described above and did, in fact, produce similar results.

Barriers and Strategies to Demand

Reuse warehouse operators cited several common barriers to increasing demand, including: lack of exposure, limited marketing budgets, and supply/demand mismatch. They also described some potential ways to build demand:

- Data from the RX, interviews with the ReBuilding Warehouse and Habitat for Humanity stores indicates that over one-third of their customers learned about the operation through a friend or other word of mouth; approximately another one-third learned about it through print media, television, and radio; predominantly, the remaining one-third learned about it through additional outreach activities, including social media, flyers, brochures, and advertising.[20]
- The existing reuse warehouses that offer workshops (75%) identified them as an important driver of demand.
- Lumber grading is another strategy that may drive demand, particularly for warehouses that rely on lumber as a significant portion of revenue. Reused lumber cannot be used for structural purposes unless it has been graded. None of the existing reuse warehouses grade their lumber, which eliminates the segment of customers who would reuse lumber for construction purposes.

Supply and Demand Overlap Analysis

Mapping the existing reuse warehouses according to the supply and demand analyses described above reveal large gaps in coverage throughout Cook County – particularly in the south suburbs (including neighborhoods in southern Chicago) and the northwest suburbs.

The supply and demand scores awarded to each community show the optimal locations for facilities in suburban Cook County. These include: 1) Midlothian-Oak Forest area in the south suburbs; and 2) Arlington Heights-Palatine area in the northwest suburbs. These communities have reasonably high demand and can capture other high-demand communities within their trade areas. Additionally, they have central locations suitable to build supply infrastructure and capture more reused materials within the County.

It should be noted that this recommendation does not account for the south side of Chicago, which is also without coverage. An analysis based strictly on supply and demand of the metropolitan area (not restricted to suburban Cook County) would likely reveal an additional opportunity there. UIC's 2012 Market Expansion Study for the RX indicated opportunity on Chicago's south side, and specifically in the following communities: New City, Fuller Park, and McKinley (ZIP code 60609). This area is not covered by this report and cannot be well served by a suburban location.

In addition, the Glenview-Northbrook area has very high supply and demand scores. These communities alone comprised 17% of all demolitions in Cook County over the previous three years. They are at the exterior perimeter of the ten-mile supply area, and they are not within the seven-mile trade area of either the Evanston ReBuilding Warehouse or the proposed northwest suburban warehouse. This

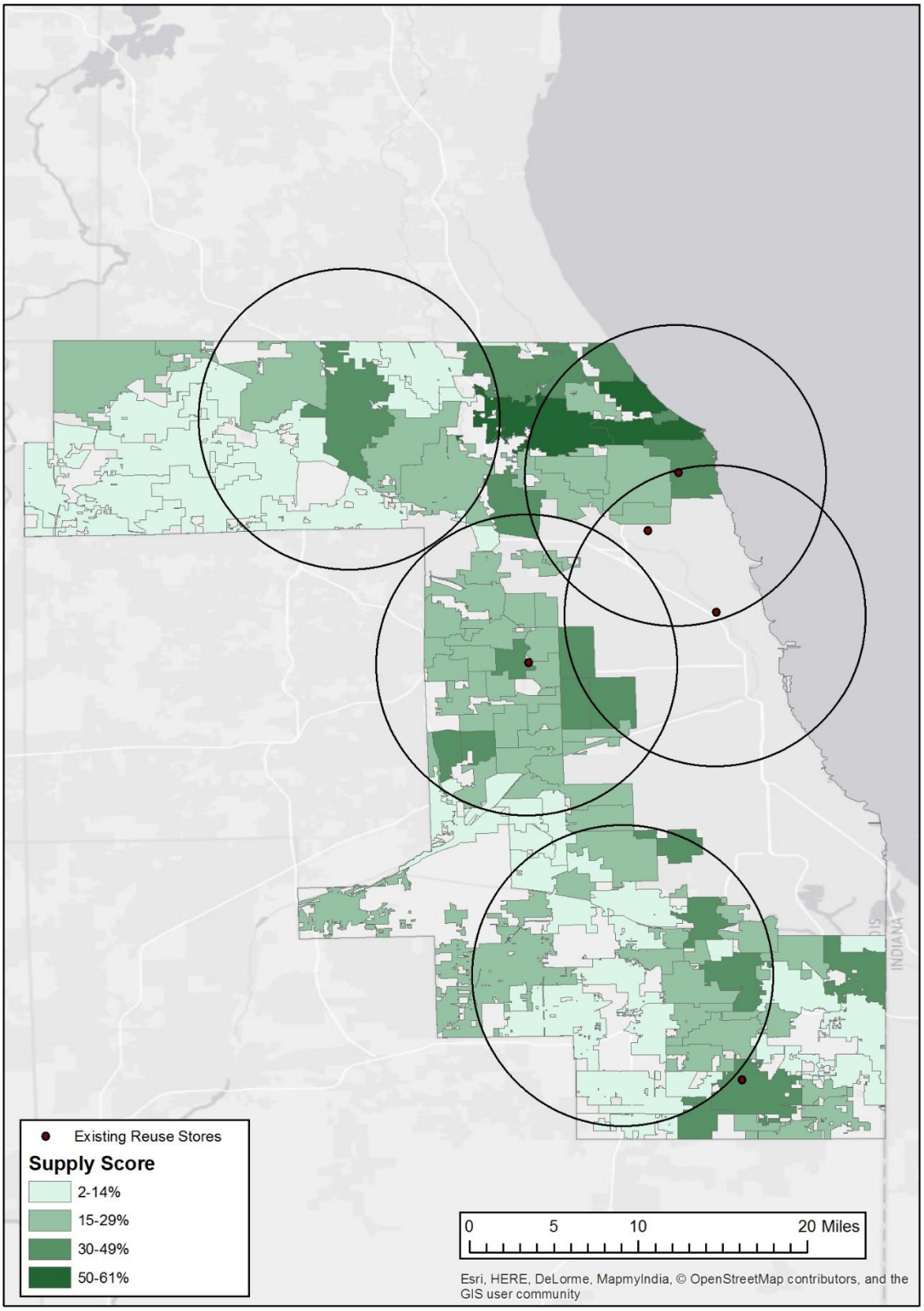
[20] Delta Institute, January 2012 *Customer Analysis for Reclaimed Building Materials from Deconstruction and Renovations January 2012*

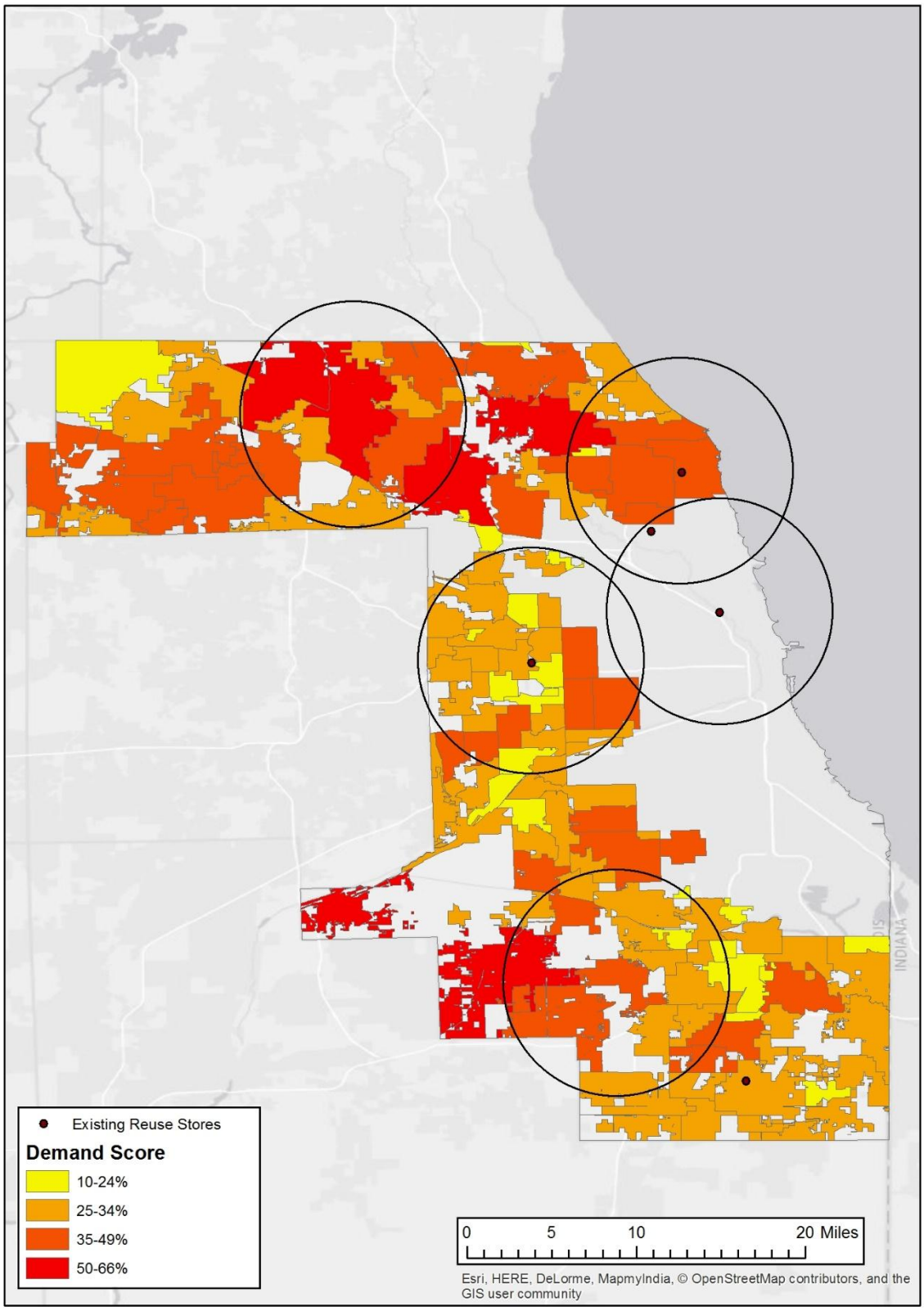
suggests that an additional north suburban warehouse facility, or at least a collection facility, is badly needed in this area.

Finally, supply and demand are heavy at the exterior perimeters of the western suburban and proposed south suburban-area warehouses, both at the boundaries of Cook County. Western Springs is at the exterior edge of the supply area for the ReUse People's facility in Maywood and not within its trade area. Orland Park is partially within the supply area of the proposed Midlothian-Oak Forest facility and outside of its trade area. These potential opportunities require assessment of the surrounding DuPage County (Western Springs) and Will County (Orland Park) communities to determine whether such facilities are feasible and where best to locate them.

The maps below show the combined supply and demand ranking for each community in Cook County. The green supply map shows the ten-mile supply area for the proposed warehouses in Midlothian-Oak Forest and Arlington Heights-Palatine, as well as the ten-mile supply areas for the RX, The ReUse People, and Evanston ReBuilding Warehouse. The red demand map shows the seven-mile trade area for these same facilities and also reveals the gap in coverage in the high supply and high demand Glenview area.

The Habitat for Humanity ReStore in Chicago Heights and the new ReStore on the northwest side of Chicago are identified on the maps, but they do not have supply and demand circles as their product mix, comprised heavily of overstock materials from large retailers, is significantly different than, and complementary to, the other existing and proposed reuse warehouses.


Existing Reuse Stores
Supply Score
2-14%
15-29%
30-49%
50-61%
0
5
10
20 Miles
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
INDIANA


Existing Reuse Stores
Demand Score
10-24%
25-34%
35-49%
50-66%
0
5
10
20 Miles
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
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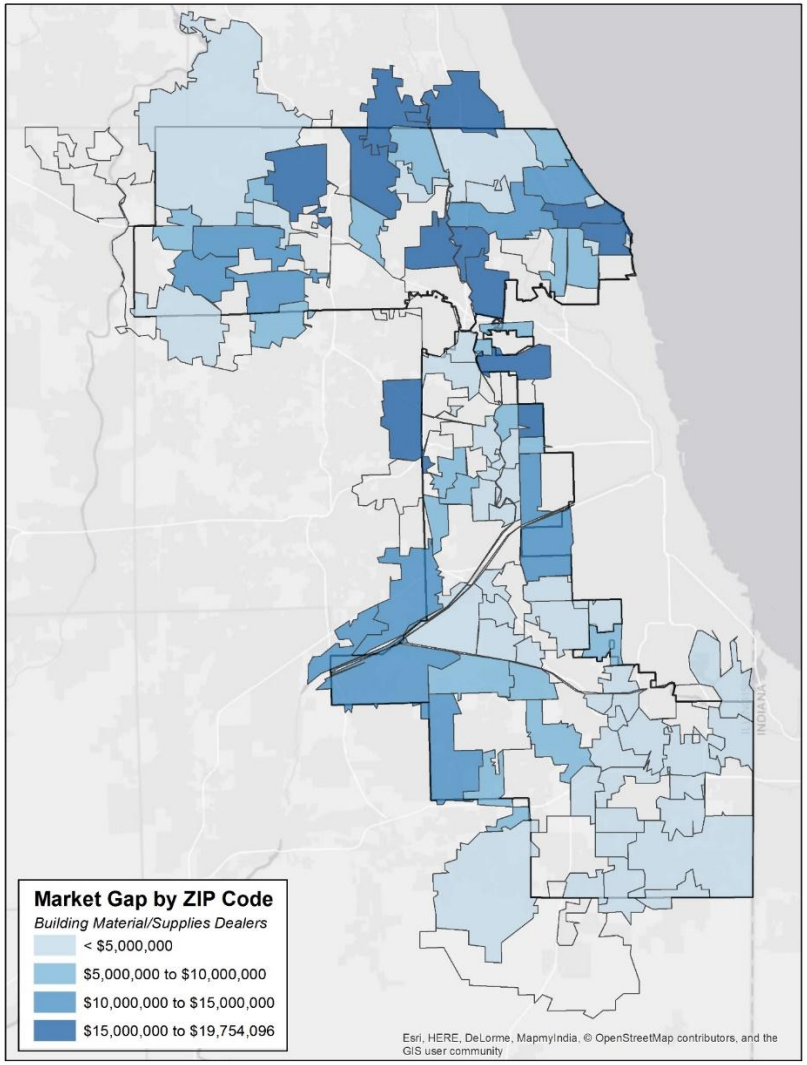
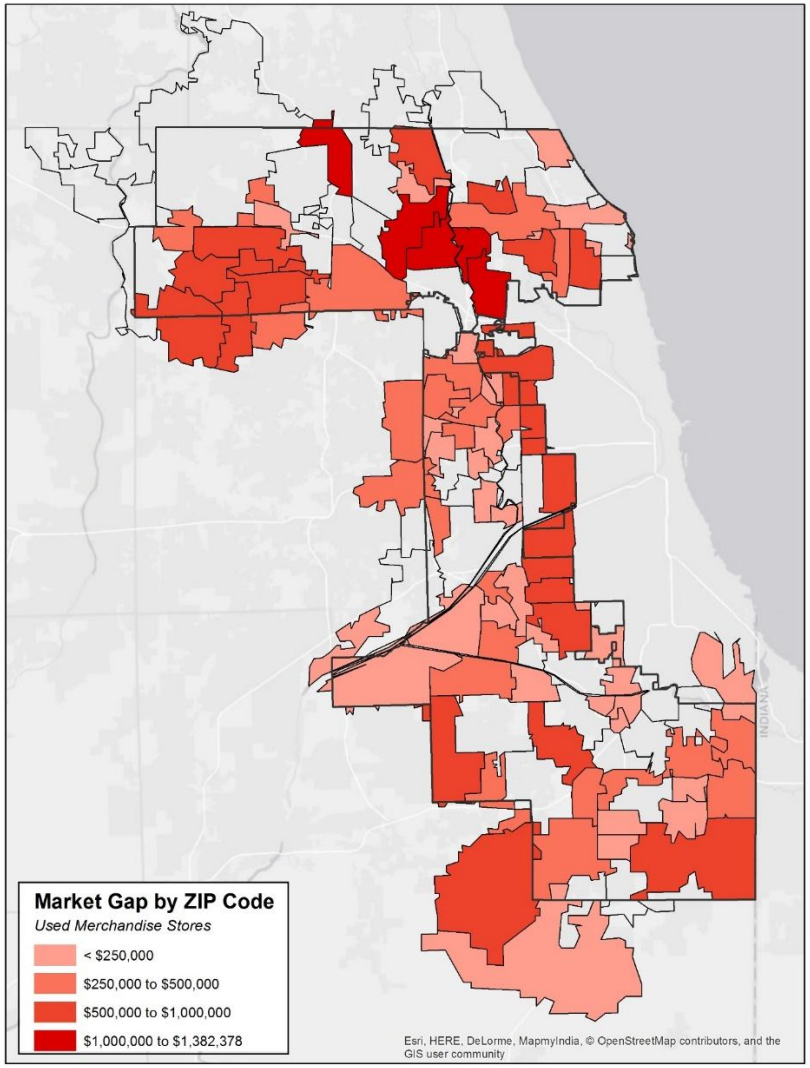
Appendix 11 and Appendix 12 categorize Cook County municipalities according to their supply and demand scores depicting the following: low supply, low demand; low supply, high demand; high supply, low demand; and high supply, high demand communities.

Our second methodology to gauge high demand to support reuse warehouse sales. The maps below show the geographic distribution of retail sales of building materials by ZIP code for Cook County. This is another way of looking at demand for the supply and demand areas for the existing and proposed reuse warehouses. These maps are very similar to each other and to the red demand map shown in above.





Maps of market gaps for building materials and used merchandise stores by zip code.

Feasibility Assessment for Potential Need-Based Solution

Reuse Warehouses

Interviews with existing reuse warehouses revealed a consensus that there is sufficient room in the marketplace for growth and expansion of existing enterprises, as well as additional business opportunities. Growth and expansion trends are described below.

The growth trend at the RX for material sales has slowed in recent years after significant increases in growth in its earlier years, which may be due to its approaching maturity. The RX is strikingly similar to the likely dollar-per-square-foot revenue estimated by the ReUse People for mature facilities. In the past two years, RX revenue growth has occurred almost exclusively in additional services. RX Made, its custom furniture line, grew over 100% between 2013 and 2014 and now comprises 20% of its revenue. Workshop revenue increased nearly 100%, while the amount of space rented has remained constant. The ReStore, ReUse People and Evanston ReBuilding Warehouse have all recently expanded. The ReStore is opening a new facility on the northwest side of Chicago. The ReUse People opened an initial warehouse in Bellwood and recently relocated to a larger facility in Maywood. The Evanston ReBuilding Warehouse is planning to expand into additional adjacent space.

Size and Facility Type

The existing reuse warehouses have similarities and differences in their business models that define the unique nature of each enterprise. On the supply side, the ReUse People obtain a significant share of their inventory through associated deconstruction services. The RX, which does not provide deconstruction services, obtains its supply largely through renovations.

On the demand side, inventory and lumber sales influence the amount of necessary space and potential value-added opportunities. According to a 2014 interview with RX staff, it now obtains 50% of its revenue through lumber sales, and it has used its lumber inventory to start RX Made and to provide customer workshops that share RX Made equipment. Its original 15,000 square-foot location was not adequate to rack and display lumber, so they moved to a 25,000 square-foot facility, which allows them to display lumber and provide additional services. Based on their experience, RX staff reported that 25,000 square feet is the minimum size for a reuse warehouse that sells lumber.

The initial Evanston ReBuilding Warehouse was 5,500 square feet; it did not sell lumber and was at capacity in 2.5 months. After receiving a deconstructed house, they expanded to 11,000 square feet. They are currently planning another expansion to 13,500 square feet. The Evanston ReBuilding Warehouse did not pay salaries for the first 14 months of operation. Evanston ReBuilding Warehouse staff reported that 25,000 square feet would be optimal, but no facility of that size is currently available at an affordable price in Evanston. From their perspective, a minimum start-up size is 5,000-7,500 square feet. The ReUse People's new facility is 43,000 square feet, but the entire facility is not being used at this time.

Experts from the ReUse People, a leading deconstruction and building material reuse organization, report that annual sales revenue needed to support a modest 10,000 square feet store are of $250,000-$300,000 at minimum.[21] This can be achieved by fully deconstructing 25-30 single-family homes

[21] Delta Institute. July 11, 2011. *Cook County Deconstruction Strategy Report: Market analysis of construction and demolition material reuse in suburban Cook County.* http://blog.cookcountyil.gov/sustainability/cook-county-deconstruction-strategy-report/

generating 250-500 tons, assuming most of the materials are in good condition, which would yield approximately $10,000/home ($500-$1000/ton).[22] [23]

Considering these factors[24], sites with 20,000 to 25,000 square feet available would eliminate the need for frequent moves which are costly and disruptive. Facilities of this size can, theoretically, generate sufficient revenue to support the staffing required to operate without relying significantly on volunteer labor or on-going operating grants. Ideally, a new reuse warehouse could pay escalating rent as its market builds, or initially lease a smaller amount of space and expand into additional space on-site as needed.

All of the existing reuse facilities are located on major streets which promotes visibility and often in industrial facilities that are equipped with high ceilings, open layouts, loading docks, and are affordably priced. Convenient parking and access to public transportation are also important. The proposed new warehouses should seek these same advantages in choosing additional locations.

A start-up strategy is necessary for each new reuse warehouse. A solid inventory of materials is necessary to attract customers. The RX stored materials in donated temporary warehouse space until it had a sufficient inventory to open to the public. An alternative strategy is to open first to suppliers while accepting donations in the warehouse space before opening to the public.

Co-location and Collaboration Considerations

Co-location or collaboration opportunities are also potential considerations in selecting a business model and location.

Product and sales synergies – In Oakland, California, the ReUse People's reuse warehouse is located across the street from a Habitat for Humanity ReStore. The ReUse People have indicated that they believe that the proximity, overlapping product lines, and similar customer bases of the two businesses bring more customers to both. Easy access to the ReStore in Chicago Heights may be considered in choosing a south suburban facility location.

Customer synergies – Park Forest officials have received a grant to establish a maker space in their community. The maker space could house woodworkers and designers who use salvaged materials in their business. Additionally, the maker space could house shop equipment that the south suburban reuse warehouse could use for customer workshops to help build demand for their products and generate income. This would save the reuse warehouse the expense of renting enough space for

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[22] Delta Institute. July 11, 2011. *Cook County Deconstruction Strategy Report: Market analysis of construction and demolition material reuse in suburban Cook County.* http://blog.cookcountyil.gov/sustainability/cook-county-deconstruction-strategy-report/

[23] Renovation, which produces roughly one quarter of the salvageable tonnage as deconstruction, would require 100 to 120 renovated homes to supply similarly sized reuse warehouse for one year.

[24] The RX sold 1,500 tons for $160,000 and roughly 2,500 tons for $200,000, which equates to a range of $80-$107/ton. Rebuilding Exchange Venture Overview says 8,000 tons have been sold over five years, yielding $2 million in sales revenues which equates to $250/ton. The discrepancy between the ReUse People estimates and the RX experience may be due to the high volume of lumber sold by the RX, which has a lower margin than other higher-value products, such as cabinets. For example, in previous years, when lumber comprised 60% of RX sales, it produced only 15% of revenue before pricing changes were implemented in 2012. Additionally, Green Institute in Minneapolis diverts approximately 400 tons per year, which is consistent with ReUse People's estimate, and has a business model that is similar to the ReUse People in that it relies on deconstruction, which likely yields higher-value materials as well.

workshops and obtaining shop tools and equipment. The RX workshops generated $40,000 in income in 2013 and almost $80,000 in 2014.

Examples from Detroit and Cleveland provide an additional customer synergy model. Both cities now house furniture design and manufacturing businesses that use salvaged wood to produce high-end products. Reclaim Detroit and Rust Belt Reclamation both have large warehouse facilities to stockpile wood and ensure that they have future supplies for their businesses. This model has not developed in Chicago. For example, both RX Made and Icon Modern, which use reclaimed wood in their product design, focus on custom orders and contract out large orders to other woodworking businesses.

Supply synergies – Relationships with demolition/deconstruction contractors and home renovators are critical to maintaining adequate supply. These relationships may take the form of collaborations, formal partnerships, or even co-location and co-ownership arrangements. The ReUse People have used partnership, co-location and co-ownership models to ensure supply with deconstruction businesses. The proposed new reuse warehouses should consider how to build supplier relationships and how those relationships will impact their product mix, space requirements, and future options.

These co-locations strategies have not figured heavily into the new reuse warehouse locations recommended in this study because of the overriding need to build the reuse infrastructure throughout Cook County. However, in other circumstances, these strategies could be important factors in assessing and choosing a location.

Potential Sites

An internet search identified surprisingly few facilities that meet the criteria identified above. For example, most available industrial locations are not on major arterial streets. Heavy commercial zoning may be an option depending upon the zoning code of the municipality, but is also likely to be more expensive than industrial space.

According to *Colliers International Research & Forecast Report,* for the second quarter of 2014, there were over 102 million square feet of industrial space in the south suburbs where Midlothian and Oak Forest are located. The vacancy rate was 8.64% and the average rent was $4.04 per square foot annually. For the same time period, there were over 34 million square feet of industrial space in the northwest suburbs where Arlington Heights and Palatine are located. The vacancy rate was 7.46%, and the average rent was $4.95 per-square-foot annually. Smaller spaces and spaces located on arterial streets are often more expensive than larger industrial spaces with low visibility. Furthermore, lease rates are triple net; owners frequently pass taxes, utilities, and common maintenance costs to the tenant. Thus, the rent for these proposed reuse warehouses is likely to be significantly higher than these averages cited above. A cost of $6.50 per-square-foot was used in the sample budget in Table 5 below. Given the constant change in the available real estate inventory, sites should be identified when a timeframe for the start-up of each new warehouse is established.

Nonetheless, in the south suburban area, there is a building on a three-acre site at 14500 South Cicero Avenue – an abandoned Chrysler auto dealership – near the Midlothian/Oak Forest border that is a potential location for the reuse warehouse. This site is owned by the Village of Midlothian and is zoned B-3 which allows heavy retail and mini-warehouses. The site analysis map from the Village of Midlothian's website is provided in Appendix 7. Because this site is publically owned, a discussion about its suitability for a reuse warehouse should occur as soon as possible. There are also County-owned sites in Oak Forest that should be evaluated for their suitability for a reuse warehouse.

Potential capital and operating costs

The operating budget shown in Table 5 below was developed for a 20,000 square foot reuse warehouse and shows the projected revenue and expense changes from its start-up through four years of operation. Revenue is based upon a $3,000 per week increase in material sales each year until Year 4, when, given the 20,000 square-foot size of the warehouse, material sales are likely to top out at just over $600,000 per year. This is consistent with the ReUse People's estimate of $300,000 of material sales revenue per 10,000 square feet and also with the RX's experience of minimal sales growth after reaching similar sales-per-square-foot. This operating budget indicates that considerable equity or grant money ($450,000) is required to sustain the enterprise over its first two to three years of operation. This amount may be offset by using volunteer labor, renting fewer square feet initially, or negotiating cheaper rent early in the operation. Profits in the fourth year are likely to be lower than projected due to the reinvestment needs of the enterprise. Budgetary notes and assumptions are identified in Table 7 below.

Table 5: Sample Operating Budget for Start-up Reuse Warehouse, Years 1-4

	Year 1	Year 2	Year 3	Year 4	Total	Notes
Income						
Product Sales	$156,000	$312,000	$468,000	$624,000	$1,560,000	See note 1
Grants/Equity	$300,000	$150,000	$0	$0	$450,000	
Events and Contributions	$0	$0	$0	$0	$0	tbd
Net Workshop Fees	$0	$10,000	$20,000	$30,000	$60,000	income minus expenses
Net Pickup and other fees	$0	$0	$0	$0	$0	income minus expenses
Total Revenue	**$456,000**	**$472,000**	**$488,000**	**$654,000**	**$2,070,000**	
Expenses						
Salaries - Warehouse/Store	$105,000	$108,150	$111,395	$114,736	$439,281	See note 2
Executive Director/Owner	$50,000	$50,000	$55,000	$65,000	$220,000	
Fringe Benefits	$23,250	$23,723	$24,959	$26,960	$98,892	
Workforce trainee stipends	$46,000	$46,000	$46,000	$92,000	$230,000	See note 3
Rent and Utilities	$130,000	$130,000	$130,000	$136,500	$526,500	See note 4
Cost of Materials	$3,000	$6,000	$9,000	$12,000	$30,000	
Communications/Marketing	$15,000	$15,000	$15,000	$15,000	$60,000	
Tools & Supplies	$5,000	$5,000	$5,000	$5,000	$20,000	
Equipment Rentals	$6,000	$6,000	$6,000	$6,000	$24,000	forklift
Building improvements/supplies	$3,000	$3,000	$3,000	$3,000	$12,000	
Disposal fees	$2,500	$3,750	$5,000	$6,250	$17,500	
Insurance	$10,000	$10,000	$10,000	$10,000	$40,000	
Computers, Software, internet and telephone	$5,000	$5,000	$5,000	$5,000	$20,000	
Accounting services	$15,000	$15,000	$15,000	$15,000	$60,000	
Travel	$2,000	$500	$500	$500	$3,500	
Credit card fees	$4,680	$9,360	$14,040	$18,720	$46,800	
Office Expenses	$1,000	$2,000	$2,000	$2,000	$7,000	
Depreciation Expense	$3,500	$3,500	$3,500	$3,500	$14,000	
Training materials	$1,000	$1,000	$1,000	$1,000	$4,000	
Total Expenses	**$430,930**	**$442,983**	**$461,394**	**$538,167**	**$1,873,473**	

	Year 1	Year 2	Year 3	Year 4	Total	Notes
Income over Expense	**$25,070**	**$29,018**	**$26,606**	**$115,833**	**$196,527**	
Loan payments for equipment/capital costs	**$22,631**	**$22,631**	**$22,631**	**$22,631**	**$90,524**	See note 5
Net Profit	**$2,439**	**$6,387**	**$3,975**	**$93,202**	**$106,003**	See note 6

The capital budget for the same 20,000 square foot reuse warehouse, shown in Table 6 below, assumes that all of the capital costs are incurred in Year 1 and that the building improvement costs are low, because improvements are made to accommodate the end-use of the space. This budget assumes 100% financing for an equipment loan at 8% interest over seven years with principle and interest payments due each month. These terms are available through the Chicago Community Loan Fund. A loan of this nature for a start-up business is likely to be available only through public or non-profit sources, through a Program Related Investment by a foundation, or possibly a social venture fund. Budgetary notes and assumptions are identified in Table 7 below.

Table 6: Sample Capital Costs for Start-up Reuse Warehouse

Item	Year 1	Notes
Income		
Loan	$121,000	See note 5
Total Income	**$121,000**	
Expense		
Pallet Racking	$90,000	
Vehicle Purchase (Used truck)	$15,000	
Equipment Purchases	$6,000	
Building Improvements	$10,000	
Total Capital Costs	**$121,000**	

Table 7: Notes and Assumptions for Analysis of Operating and Capital costs

1. Year 1 =$3000/week/52 weeks; Year 2 =$6,000/week/52 weeks; Year 3= $9,000/week/52 weeks; Year 4= $12,000/week/52 weeks.
2. 4 full time employees include: 1 Executive Director/CEO, 1 Warehouse Manager, $45,000/year; 1 Foreman, $36,000/year; 1 Cashier, $24,000/year.
3. Two full time apprentices: (($10/hour * 2000 hours)*.15 fringe benefits) for Years 1-3. Increases to 4 full time apprentices in Year 4.
4. 20,000 square feet of space at $6.50 per square foot annually.
5. Loan at 8% over 7 years. Based on CCLF Equipment and Working Capital Loans.
6. Final Year 4 net profit in would likely be lower due to reinvestment in the enterprise.

It is important to note that additional grant or equity capital may be needed during the business planning stage for each warehouse prior to start-up. These funding needs are not covered in the operating and capital budgets above.

Potential Benefits

Below are potential positive impacts of establishing additional reuse centers.

- The new reuse warehouse facilities would encourage compliance with Cook County's Demolition Debris Diversion Ordinance requiring 5% reuse of construction and demolition debris by providing the infrastructure for contractors to drop materials at a reuse warehouse within ten miles of nearly anywhere in the County. This could also encourage contractors to drop off materials in excess of the 5% requirement.

- New reuse centers will expand the marketplace to additional trade areas, the customer base through marketing, and the reuse of building materials overall.
- Both the RX and The ReUse People have the potential to divert 2,500 tons/year of building materials from landfills into reuse markets; over a ten-year period that amounts to a combined total of 50,000 tons, or 25,000 tons per warehouse.
- Deconstruction and material reuse are much more labor-intensive than demolition. Deconstruction creates six to eight times as many jobs for every job created in demolition as a direct labor comparison.[25] Based on industry standards, 20 jobs are created throughout the supply chain for each demolition job replaced by a deconstruction job. These include employment opportunities in deconstruction, logistics, warehousing, retail, furniture-making, and marketing.[26]
- Initially, each facility may directly support up to six full-time jobs; by Year 4, for each facility this number could increase to eight full-time jobs.
- Apprentice trainees could receive marketable job skills in deconstruction, warehousing, logistics, retail sales, inventory management, and woodworking, along with training stipends.
- Customers would save money through purchasing used materials in good condition instead of new materials. According to the UIC's 2012 Rebuilding Exchange Market Analysis, the average savings for customer purchases at the RX were: 70% on clawfoot tubs; 67% on old-growth lumber; 68% on sinks; 58% on doors; and 34% on reclaimed lumber.[27]

Collection Center Alternative

Collection infrastructure improvements will also contribute to further development of the building material reuse industry throughout the County. One option for improving infrastructure, or as an interim market development strategy until more reuse warehouses are established, is to provide additional distributed collection opportunities and to transport salvaged materials for sale at the existing reuse warehouses.

One model for this approach is to establish collection centers to drop off salvaged materials. These centers could be conveniently located in high-supply areas and contractors could drop off various-sized loads from multiple demolition and renovation sites. Drop-off centers could be as simple as a low-cost, used truck supplied by an existing reuse warehouse. When full, these materials would be moved in the collection truck to the sponsoring reuse warehouse. One full-time employee to staff the center, if necessary, would cost approximately $30,000-$35,000 per year. In addition to manning the collection center during hours of operation, this employee could meet with potential suppliers to promote the center and pick up materials from sites with larger donations.

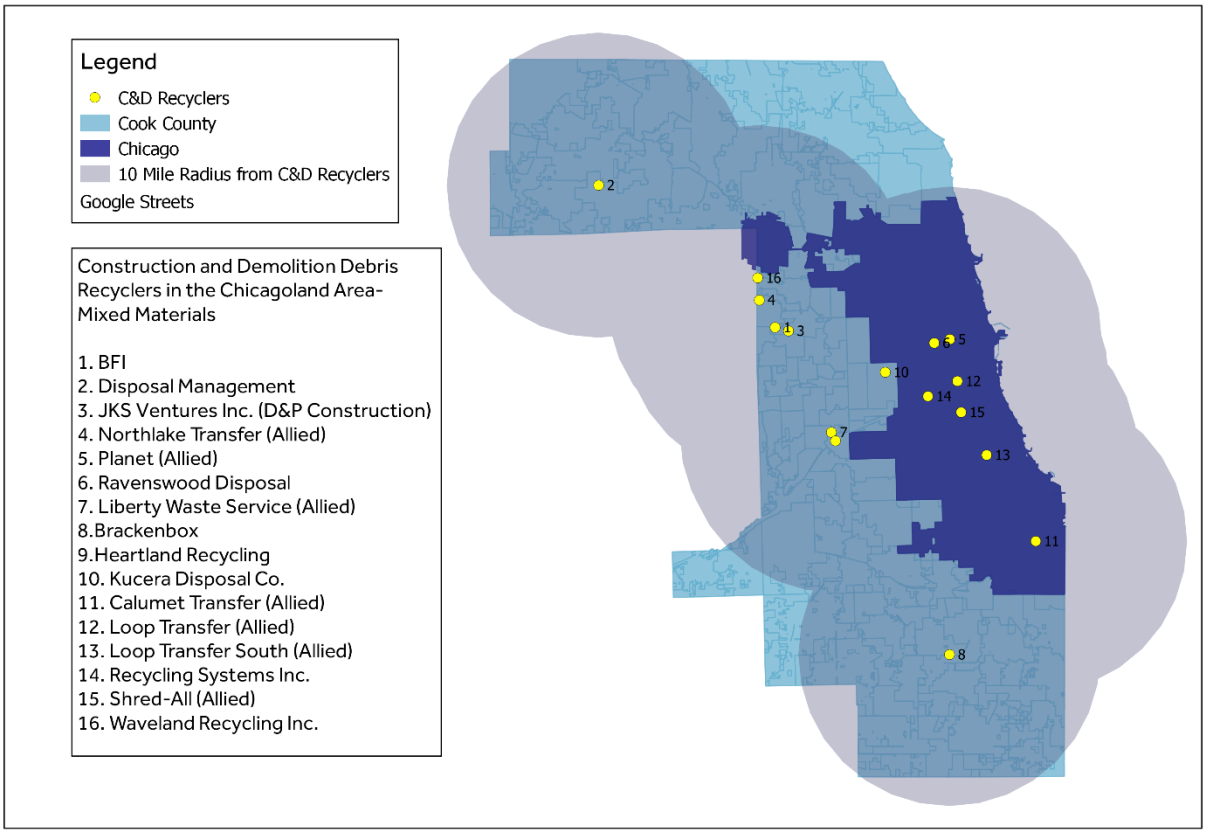
Ideally, these collection centers could be co-located at C&D recycling facilities that already exist within ten miles of everywhere in Cook County. Contractors already supply materials to these facilities to meet the recycling requirements of Cook County's Demolition Debris Diversion Ordinance. In addition, collection centers for do-it-yourself (DIY) renovation salvage could be established at municipal recycling

[25] The Rebulding Center, http://rebuildingcenter.org/deconstruction-services/
[26] Deconstruction and Reuse Go Guide, October 2012 (Zelechowski, Ducharme and Gifford)
[27] Dr. Weber, R. and Ludwig, I. January 2012. *Customer Analysis for Reclaimed Building Materials from Deconstruction and Renovations*

centers, where residents already bring other materials for recycling, other municipal facilities or yards, county-owned properties, or mission-based organizations, such as non-profits or churches.

Co-location with these types of facilities has many advantages. It is geographically convenient, takes advantage of existing industry infrastructure, and ensures that there are employees or security measures on-site to safeguard the materials and to receive and verify donations. Collection center location sponsors could be paid for their assistance or, as in the case of a municipality, add the service to their current recycling portfolio or another municipal location for free. Co-location could provide easy advertising to suppliers through the location sponsor's typical marketing activities and through on-site exposure when potential suppliers visit for other reasons.

The collection centers strategy would require training of demolition contractors, so the materials collected are reusable and stacked in a manner that the value of the materials is preserved. Existing C&D recycling centers in suburban Cook County are shown in the figure below.



Reuse Warehouse Options

Cook County's Demolition Debris Diversion Ordinance, full and partial deconstructions, and renovation activity all contribute sufficient C&D waste to support a robust market in Cook County. The challenge is to build the market by educating potential suppliers and customers about the availability of reused building material and to develop a market infrastructure that is convenient to use. Both steps are necessary to build the market for reused building materials.

Significant gaps exist in the market infrastructure on both the supply and demand side in the south and northwest suburbs. Gaps also exist in the north central suburbs, at the western and southwestern edges of the suburbs, and on the south side of Chicago. The Midlothian/Oak Forest area in the south suburbs

and the Arlington Heights-Palatine area of the northwest suburbs are critical gap areas, along with Glenview-Northbrook in the north central suburbs of Cook County.

Establishing reuse warehouses in these areas would help build both local supply and demand for reused building materials simultaneously. This is the ideal growth scenario. However, a capable entrepreneur is needed to establish and successfully run a used building material business. In addition, significant grant or equity capital of about $450,000 is needed to sustain the business through the first two to three years once the business is up and running, while the business grows to capacity at a 20,000 square foot location. In addition, loans of about $121,000 are needed to purchase the equipment and make the building improvements necessary to start each warehouse. In addition, business planning funds will be needed prior to opening each warehouse. A new reuse warehouse may be able to break even in the third year without additional grant or equity investment and make a profit in its fourth year and beyond, even while paying the principle and interest on an equipment loan for the first seven years of operation.

This economic model requires patience and, potentially, a social mission. It is not an accident that the existing reuse warehouses are all connected to non-profit organizations. Grants, volunteers, and tax-deductible charitable donations of used building materials are important elements of their business models that are not available to for-profit entrepreneurs.

Collection Center Option

Establishing collection centers in these, and possibly additional, areas has other advantages. They require significantly less investment capital, are more flexible and nimble to change as conditions change, and use the existing industry infrastructure more fully. They would also be cheaper to operate. Revenues from the additional donated materials could potentially offset all or part of the cost of the collection center for the sponsoring reuse warehouse.

The significant disadvantage of the collection center model compared to the reuse warehouse model is that it does not build demand along with supply, and it does not provide benefits to nearby communities, such as apprenticeship opportunities for job trainees, DIY workshops, or low-cost building materials for home improvements. These benefits, while important to all communities, are likely to be even more important to less advantaged communities in the south suburbs than to the more affluent suburbs in the northwest and north central suburban gap areas.

The reuse warehouse model and the collection center model are not mutually exclusive of each other. New warehouses and new collection centers can both be established, allowing new market actors to enter and existing players to expand. The potential size of the used building material market is unclear, but it is clear that there is room for growth. All of the existing centers confirmed there is plenty of room in the market for everyone to succeed.

Funding Options

Some potential sources of grant, loan and social venture capital funding for new and/or expanding reuse warehouses are described below.

Private Grant Funding – Foundation grants fund are available to non-profit corporations only and are typically focused on providing benefits to low-income communities. These grants are more likely available to help start a south suburban reuse warehouse than a north or northwest suburban warehouse. The Chicago Community Trust (CCT) and the Grand Victoria Foundation are examples of foundations that might fund development of the reuse infrastructure in Cook County, while others would be more likely to fund the job training/apprenticeship aspects of the warehouse. The foundations

at select corporations with synergistic interests, such as waste haulers or banks with sizeable workout portfolios, are potential sources of grant funding.

Public Grant Funding – The Office of Community Service at the U.S. Department of Health and Human Services offers grants for "employment and commercial development projects designed to provide economic self-sufficiency for low-income residents and their communities." Eligible applicants are non-profit community development corporations. Award amounts vary from $160,000 to $800,000 and can be used for startup or expansion of businesses, capital expenditures such as the purchase of equipment or real property, allowable operating expenses, and loans or equity investments.

Loan Funding – The Chicago Community Loan Fund (CCLF) offers an Equipment and Working Capital Loan with up to 100% loan-to-value at 7-9% interest over a maximum term of 7 years. Monthly payments must include both interest and principle. Borrowers must be non-profit corporations or joint ventures with or subsidiaries of non-profit corporations. (These are the terms for the loan in the sample budget in Table 5 above.)

Loan Funding - Cook County Bureau of Economic Development- Built in Cook County Loan – The $30 million BUILT in Cook Loan Fund supports strategies for realizing greater business and economic development opportunities in suburban Cook County.

Loan and Equity Funding – Table 8 below is derived from a list of social venture firms on the Cause Capitalism website that could be applicable to reuse warehouse funding. These funders may be appropriate for new or expanding ventures. These may be available in all of the geographic locations identified in this report, or may focus on low-income communities.

According to the website, "There's a small pool of social venture firms that evaluate a business on its social and environmental performance as well as its financial success. Who are these firms, what types of social enterprises are they looking to support and how can you connect with them?" [28] Table 8 below provides an excerpt relevant opportunities from progressive firms funding innovative projects.

Table 8: Social Venture Funding Opportunities

Funding Source	Previously Funded Start-ups or Expansion of Non-profits?	Statement on Funding Sources
Calvert Foundation	Do not lend to startups, but do lend to existing non-profits	"We lend to established community organizations, including CDFIs, loan funds, microfinance institutions, affordable housing developers, and social enterprises. Through your work, we are building strong, healthy communities."
Central Funds	No: funded mostly venture capital funds (funds of funds investment), or expansion of for-profit businesses (co-funding)	"Provide equity capital to businesses in underinvested markets, seeking market-rate financial returns, as well as the creation of jobs, wealth, and entrepreneurial capacity."
Investors' Circle	Provide funding to for-profit entrepreneurs and startups. Does not provide funding for non-profit organizations	"Our network of investors look for enterprises that are both for-profit and offer social and/or environmental solutions. IC companies strive to solve some of the world's toughest challenges through creative, sustainable and scalable business models. "

[28] Khalili, O. April 2, 2010. *15 Social Venture Capital Firms That You Should Know About.* http://causecapitalism.com/15-social-venture-capital-firms-that-you-should-know-about/

Funding Source	Previously Funded Start-ups or Expansion of Non-profits?	Statement on Funding Sources
Echoing Green-Impact Investing	Offer funding for startups, does not fund expansion of existing organization. Does fund non-profit organizations.	"Echoing Green is one of the few seed funders for social enterprises. Through regional site visits and thought leadership, we are spreading urgency around this lack of appropriate capital, and are encouraging others to join us and also provide follow-on investment."
Renewal2	funds startup businesses, not non-profits	Funding Criteria: 1) Operate in one of our primary sectors of: Organic and natural foods, Green Products, Environmental, and Social innovation. 2) Have scalable business model, 3) generate annual revenues of $1MM- $20MM, 4) seeking investment between $500,000 and $2MM, 5) headquartered in US or Canada.
Sustainable Jobs Fund	Funds entrepreneurs and startups. Does not fund non-profits	"Through its investment funds, the firm provides equity financings from $1MM to $10MM, solo or in syndicates, to companies seeking growth capital." "Representative investment areas include efficiency and infrastructure, asset recovery including reuse and recycling."
Mission Markets	yes	"We provide access to an impact investor network empowering funds, public and private companies, non-profits, CDFI's, and project developers in a variety of sectors to raise capital. Our marketplace supports funding for a variety of impact and impact-related investment securities, structures and geographies."
William James Foundation	Yes	"Our Sustainable Business Plan competition is different because it is not about *competition*. It's about astounding *collaboration* between mentors and social enterprise creators. It's the investment in expertise that defines the Mentor Capital Network. Through our competition, we connect entrepreneurs who are passionate about their ideas and inventions with a team of mentors who have the experience and perspective to support these entrepreneurs to create and grow successful enterprises. The skills and knowledge this network of people share is something we call *mentor capital*."

Recommendations

Cook County Policy and Program Recommendations

Cook County should take steps to build the reuse market and market infrastructure. These steps should be taken quickly given the projected 90% increase in demolitions in 2014 and additional 89% increase in 2015. The County should make the following considerations:

- Establishing a south suburban reuse warehouse should be the top priority to build the reuse infrastructure in Cook County. While this is not the top supply or demand area, there is more than sufficient supply and demand to support a reuse warehouse. The south suburbs are cited as the top priority, because there is no reuse infrastructure anywhere in the area, requiring long trips through significant traffic to achieve the 5% reuse mandate. Additionally, given the proximity of the proposed center to low-income communities, it would have greater impact to surrounding communities than a warehouse in the more affluent northwest and north-central suburbs. Locating the warehouse in an area that serves low-income communities will also increase the likelihood of securing charitable grant funds for start-up.

Cook County should confer with the Village of Midlothian about the site of the former dealership at 14500 S. Cicero to determine whether it is available for a reuse warehouse. It should also explore whether any of the County-owned facilities located in Oak Forest are appropriate for a reuse warehouse. Discussions should be held with the Cook County Land Bank Authority, South Suburban Land Bank Development Authority, and the Sheriff's office to determine whether any of them have an interest in co-locating in this space in conjunction with their demolition or deconstruction activities. An RFP should be issued, preferably with an escalating lease rate and some business planning and start-up funding, to identify an entrepreneur for a reuse warehouse pilot in the south suburbs at this or an alternative location in the Midlothian/Oak Forest area.

- If adequate resources and entrepreneurs can be identified first for Arlington Heights-Palatine and secondly for Glenview-Northbrook, move forward with RFPs similar to the one described above for the south suburbs to identify entrepreneurs for these warehouses. The Arlington Heights facility would provide reuse infrastructure in the northwest suburbs which, while not as disconnected from the market as the south suburbs, is beyond the ten-mile supply area recommended in this analysis. Arlington Heights is the second highest supply and demand community in Cook County, and there is adequate supply and demand there and in the surrounding area to support a reuse warehouse. Glenview is the highest supply and demand community. While it is at the outer boundaries of the Arlington Heights-Palatine and Evanston supply areas, it is not within their demand areas. Efforts should be made to better capture the supply and demand in Glenview and the surrounding area.

  A lower-cost alternative to reuse warehouses is to incentivize collaborations of existing reuse warehouses with C&D recyclers and municipalities (particularly Glenview and Arlington Heights) to establish pilot collection centers for contractors and DIY-ers in the northwest and north central suburbs. Based on the experience with the collection centers, determine whether to continue with the collection center strategy and/or to encourage reuse warehouses in each area. Pay close attention to any increasing mismatch between supply and demand, because this strategy will increase supply but not necessarily increase demand. Better marketing to potential customers may not overcome the large distances to reuse warehouses for potential customers.

- In partnership with the reuse warehouses, recognize demolition contractors who consistently exceed the 5% mandate for reused materials. Initially contractors who salvage 10% or more for reuse could be recognized with future increases needed for recognition (for example, 15% salvage in Year 3 and 20% in Year 5). Recognized contractors should be rewarded through a program that encourages local and county government units to rank them as preferred vendors for selection in their demolition bidding processes.

- For all community development block grant-funded demolition administered by the Cook County Department of Planning and Development, the Department of Planning and Development should increase the reuse mandate to 20% and encourage utilizing reuse facilities in Cook County.

- Provide workshops, public service announcements, marketing materials, and other initiatives aimed at potential customers to educate the public and to grow the industry for all actors.

- Modify the County's Demolition Debris Diversion Ordinance to exclude bricks from the eligible reused materials.

- Revise Green Halo System to break out key materials, such as bricks and lumber, from larger material categories.

- Track projects by percent reuse achieved.
- Where 20% reuse is exceeded, provide an exemplar project designation, where firms that execute exemplar performance received expedited permit processing.

Recommendations for Existing and Proposed Reuse Warehouses

- Meet regularly to promote collaborative action among reuse warehouses and to build the industry for all.
- Develop joint marketing initiatives to build demand in the region for reused building materials.
- Develop joint marketing initiatives to build supply in the region for used building materials.
- Consider collaborating on a pilot project to determine if lumber grading services increase demand and income beyond its cost.
- Explore the potential benefits of establishing collection centers in high-supply areas. Build relationships with C&D recyclers and municipalities (or other mission-oriented organizations) to pilot them at low cost.
- Build relationships with demolition contractors to encourage deconstruction, soft-stripping, and/or reuse beyond the 5% mandate through pick-ups or drop-and-haul to increase supply.
- Build relationships with government bodies managing residential demolitions to encourage deconstruction, soft-stripping, and/or reuse beyond the 5% mandate through pick-ups or drop-and-haul to increase supply.
- Beyond the suburban Cook County opportunities in Midlothian/Oak Forest, Arlington Heights and Glenview explore expansion on the south side of Chicago and in the Western Springs (DuPage County) and Orland Park (Will County) areas.