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COOK COUNTY DECONSTRUCTION STRATEGY REPORT

**Market Analysis of Construction and Demolition Material Reuse
in Suburban Cook County**

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EXECUTIVE SUMMARY

Construction and demolition (or C&D) debris makes up almost 40% of the national solid waste stream and is the single largest category of waste by weight in Cook County and the State of Illinois.

This report highlights the opportunity to turn this waste stream or liability into an economic opportunity or asset by identifying strategies and policies for supporting the emerging deconstruction and building material reuse industries in Cook County.

According to building material audits conducted through Cook County on a sample set of 8 single-family homes (See page 10 of this report), an estimated 85 to 177 tons¹ of C&D waste per home is generated during demolition. With hundreds of homes demolished in Cook County each year, the potential for diversion and reuse is substantial. Before the foreclosure rate rose dramatically in 2009, the U.S. Environmental Protection Agency (USEPA) estimated that 250,000 single family homes were demolished nationwide every year. Over 4,500 demolition permits for single-family homes and duplexes were issued by the City of Chicago in 2006. Deconstruction of a fraction of these homes would produce hundreds of thousands of tons of reusable lumber, doors, windows, flooring, lighting and plumbing fixtures.

In order to stimulate demand for more sustainable deconstruction practices, local government is well positioned to provide the necessary data about economic opportunities for deconstruction and reuse, and provide incentives or mandates that support deconstruction and building materials reuse in their jurisdictions.

Supply & Demand: Market Potential for Additional Building Material Reuse Centers

This report attempts to capture the potential market and economic development opportunities in the Cook County region by evaluating criteria that create a hospitable environment for deconstruction and building material reuse activities.

The first section of this report identifies areas in Suburban Cook County that may be especially well-suited for deconstruction and building material reuse activities, given an assessment of these criteria both on the supply and demand side.

The criteria used to evaluate strong supply dynamics in this analysis were most strongly linked to higher-income levels. However, a more fine-tuned analysis might also find that higher education levels tend to correlate with higher levels of

¹ A significant portion of the C&D waste is often concrete from foundations. The U.S. Environmental Protection Agency also estimates that a single family home demolition can generate 111 lbs/s.f. of C&D waste.

environmental awareness. The criteria used to evaluate material reuse demand include older housing stock, high levels of homeownership and average or higher income levels. Suburban locations that scored highest on all criteria and are therefore potentially promising locations for new deconstruction or building material reuse market opportunity include:

- **Northern suburbs:** Lincolnwood (high supply and high demand), Arlington Heights, Glenview, Northfield, Park Ridge, and Wilmette (high supply and medium demand)
- **Western suburbs:** Oak Park (high supply and high demand), LaGrange, River Forest, and Western Springs (all high supply and medium demand)
- **South suburbs:** Flossmoor (high supply and medium demand), Chicago Heights (high demand only) and Thornton (high demand only)

The ReBuilding Exchange in Chicago launched in early 2009 and has benefitted from both a strong supply and demand marketplace. While full-scale deconstruction projects have slowed due to a soft housing market, the number of interior deconstruction projects and renovations has grown considerably. In its first two years of operation, the ReBuilding Exchange has diverted nearly 4,000 tons of reusable building materials from the landfill and generated close to \$400,000 in revenue from the sale of these materials. The store has created a marketplace for contractors to donate or sell deconstructed building materials on a consignment basis. The store itself employs 4.5 full-time equivalent employees but also supports several crews of contractors that supply materials to the store through more sustainable, labor-intensive deconstruction work. Future growth for the ReBuilding Exchange seems certain given that it has only captured less than half of one percent of the estimated 700,000+ tons of C&D waste generated annually by rehab, demolition and new construction activities in the City of Chicago.

A key question this report sought to answer is whether there is an adequate potential supply of materials in Suburban Cook County to support additional suburban building material reuse centers. There is currently only one that is somewhat similar to the ReBuilding Exchange – a Habitat ReStore in Chicago Heights. A 2008 market study by the University of Illinois at Chicago estimated a volume of only 20,000 tons per year of C&D waste generated by a short list of high-income suburban communities. A new reuse store that sells roughly 2,000 tons of material per year would need to capture 10% of that waste stream – an ambitious assumption.

This report includes a similar analysis of the potential supply of C&D material for a longer list of suburban communities and found potential for roughly 100,000 tons of C&D waste generated annually in targeted “high supply” communities. Capturing 5% of this waste stream for reuse, or 5,000 tons per year, could

potentially support at least one additional reuse store with a large volume of relatively bulky, low-cost lumber (similar to the ReBuilding Exchange) or 2-3 smaller satellite stores with some higher-priced inventory. A new store located near communities with high foreclosure risk could also reduce public safety costs associated with abandoned housing.

In addition to diverting waste from deconstruction of 25-30 homes per year, each new store could result in the creation of 3-5 full-time equivalent jobs at each center and as many as 30 full-time construction jobs on deconstruction crews in a good year.

Barriers to Growth in Deconstruction & Building Material Reuse

Realizing the potential opportunities for growth will require some effort to remove barriers to more widespread adoption of deconstruction and reuse practices. Barriers that were discussed at a forum sponsored by Cook County in February 2011 included: the higher cost and time needed for deconstruction versus demolition, cheaper, easier traditional landfill disposal, lack of awareness about deconstruction as an alternative to disposal, labor issues and contamination of salvaged materials. This forum resulted in some key recommendations.

Key Recommendations

Key recommendations where Cook County could play a lead role in supporting the widespread adoption of deconstruction and reuse practices in the marketplace include ideas from a public forum hosted by Cook County in February 2011 and targeted outreach to local solid waste agencies.

1. **Develop incentives for deconstruction.** These might include expedited permits or lower permit fees for demolition contractors who submit a waste management plan or tracking sheet detailing plans to divert material for reuse or recycling. The County might also encourage communities that receive Neighborhood Stabilization Program (NSP) grants to include deconstruction as a preferred use of some demolition and rehab funds.
2. **Adopt a Construction & Demolition Waste Recycling Ordinance.** The County has is drafting an ordinance modeled after an existing City of Chicago ordinance. Based on preliminary feedback from some demolition contractors and examples from other places around the country, the County might consider strengthening the proposed ordinance to require diversion of some materials for reuse in addition to recycling, and consider stronger pre-demolition planning and enforcement measures than the City of Chicago's ordinance².

² Refer to Chapter 4 for examples of ordinances that feature pre-demolition planning and enforcement measures.

3. **Support planning for additional reuse centers in suburban Cook.**
The first two chapters of this report included an analysis of communities that have potential to support deconstruction and building material reuse activities. Cook County could play a lead role in coordinating with high potential communities to assess contractor support and retailer readiness for additional reuse centers.
4. **Create awareness and provide tools to promote deconstruction & material reuse.** Deconstruction is a new industry and awareness of deconstruction and reuse as an alternative to demolition and disposal is limited in most locations to a relatively small niche market. Educating a wider range of customers, whether homeowners or market intermediaries, about the concept and how it works, along with the financial and environmental benefits, is a critical component of a contractors' marketing strategy. Government can provide support by publicizing the benefits and locations for donating used building materials and a directory of contractors that provide deconstruction services. This may require technology or communications capacity building to implement effectively.

Some additional recommendations where the County may not play a lead role but could help build partnerships and provide support include:

- Workforce development: provide on-going training for contractors,
- Labor reform: support recognition of deconstruction as an occupation with the Department of Labor and deconstruction certification,
- Incentives to encourage donation of building materials: support new appraisal standards to encourage larger donations,
- Advocacy for clear public health policies for redistributing salvaged materials, and
- Support research and development on the reuse and recycling of additional C&D materials.

Any combination of these key recommendations, once implemented, will ensure that the deconstruction and building material reuse industry in Cook County grows and flourishes, resulting in reduced waste, job creation, and economic benefit for residents County-wide, particularly those in disadvantaged communities. A more complete list of recommendations and analysis can be found in the recommendations section of this report.

I. ESTIMATING SUPPLY OF CONSTRUCTION & DEMOLITION MATERIALS

The main source of C&D debris is from construction, renovation and demolition of buildings or infrastructure from residential, commercial and industrial projects. Commercial and multi-family residential demolition projects in the City of Chicago and a few suburbs are already required to recycle more than 50% of C&D material. Demolition firms that bid on larger demolition jobs are familiar with well-defined markets for larger volumes of recyclable materials. However smaller contractors that focus on residential rehab or demolition are not required to recycle C&D waste,³ often work without permits and have fewer convenient markets for smaller volumes of less uniform C&D debris, resulting in lower levels of reuse or recycling.

Supply estimates were generated based on similar methodology as *UIC's 2009 Market Analysis*. UIC's study (conducted for the Delta Institute in 2008 and completed in January 2009) estimated the total residential supply in the City of Chicago in 2007 was approximately 742,000 tons (most from renovation⁴ rather than new construction or demolition) but only approximately 20,000 tons from Cook County suburbs. The UIC analysis assumed that only the 14 communities with the highest household income levels and the greatest potential motive for seeking a tax deduction for charitable donation of materials would be good sources of supply. The experience of the ReBuilding Exchange after its first full year of operations suggests that donations come from a broader range of income levels. This study also assumed that renovations made up a significant portion of the C&D supply, whereas the early experience of the ReBuilding Exchange is that renovation may be a less significant source of supply than full-scale deconstruction of homes.

This analysis uses some of the same data sources as the UIC study, but includes a larger pool of suburban communities with relatively high household incomes or other indicators that homeowners have a higher level of environmental awareness and may be more likely to donate rather than dispose of building materials. The 24 wealthiest Suburban Cook County communities, or the top 20% in terms of median income, were included in the pool along with two that have a high number of Green Party voters (Evanston and Oak Park) and 24 that have high foreclosure rates. See Table 1 and Table 2 below.

Building permit data from the year 2007 (pre-recession) was used to estimate post-recession supply. New construction permit data was gathered from the 2007 US Economic Census. Demolition permit data was partially gathered from the 2007 US Economic Census and partially extrapolated. Although the UIC Study also considered renovation permit data from Chicago, this data was not

³ Chicago's C&D Recycling Ordinance does not apply to buildings with less than 4 units

⁴ Multifamily renovations contributed 71%

available from existing suburban sources. Permit data is used to estimate post-recession activity. This analysis also considered foreclosed homes as another possible source of used building materials. Data on the likelihood of foreclosure was obtained from Cook County's Bureau of Community Development (See Table 2), but was not used to calculate typical annual supply, as foreclosure data reflects activity during an atypical economic year (2010).

TABLE 1. Potential Supplier Communities

Top 20% of Suburban Cook County communities with high median household income
Source: 2010 U.S. Census

	Community	Population	Median Household Income
1	Kenilworth	2,494	\$200,000+
2	South Barrington	3,760	\$170,755
3	Winnetka	12,419	\$167,458
4	Glencoe	8,762	\$164,432
5	Barrington Hills	3,915	\$145,330
6	Inverness	6,749	\$141,672
7	Golf	451	\$131,742
8	Northfield	5,389	\$114,274
9	Wilmette	27,651	\$106,773
10	Western Springs	12,493	\$98,876
11	Northbrook	33,435	\$95,665
12	Olympia Fields	4,732	\$94,827
13	Flossmoor	9,301	\$94,222
14	River Forest	11,635	\$89,284
15	Barrington	10,168	\$83,085
16	Glensview	41,847	\$80,730
17	Buffalo Grove	42,909	\$80,525
18	La Grange	15,608	\$80,342
19	Bartlett	36,706	\$79,718
20	Palos Park	4,689	\$78,450
21	Park Ridge	37,775	\$73,154
22	Lincolnwood	12,359	\$71,234
23	Arlington Heights	76,031	\$67,807
24	Orland Park	51,077	\$67,574
25	Oak Park	52,524	\$59,183
26	Evanston	74,239	\$56,335

TABLE 2. Communities with Foreclosure (FC) Rates of above 10%.

Source: Cook County Bureau of Community Development, Neighborhood Stabilization Program Data 2010.

	Community	FC rate (%)		Community	FC rate (%)
27	Chicago Heights	15.6	39	Country Club Hills	11.9
28	Harvey	14.5	40	Park Forest	11.4
29	Calumet City	13.6	41	Robbins	11.4
30	Dolton Village	13.4	42	Blue Island	11.4
31	Markham	13	43	Matteson	11
32	Maywood	12.5	44	Dixmoor	10.8
33	Riverdale	12.3	45	Posen	10.7
34	Sauk Village	12.1	46	Burnham	10.7
35	Ford Heights	12.1	47	Glenwood	10.4
36	Hazel Crest	12	48	Bellwood	10.4
37	Phoenix	11.9	49	Richton Park	10.3
38	South Holland	11.9	50	Lynwood	10

The analysis in this report generally follows the same methodology used in UIC study whereby the volume of estimated C&D waste is determined by multiplying the number of square feet of residential homes built or demolished by an estimate of the pounds per square foot of waste for each type of activity. The multipliers (lbs/s.f.) were taken from the same source as the UIC Study – the EPA report, *1998 Characterization of Building-Related C&D Debris in the U.S.* This report found new demolition of single family homes generated debris at an average rate of 111 lbs/s.f., while renovation generated much less (23 lbs/s.f.) and new construction even less (4.38 lbs/s.f.). The assumption on the average size in square feet of a single-family home was somewhat lower than the assumption in the UIC study based on a sample pool of homes slated for demolition in Suburban Cook County. Both this study and the UIC Study assumed typical home size based on NAHB average new single family home size in the Mid-West of 2,262 s.f. and an average single family demolished size of 1,600 s.f.

Table 1 estimates a much higher volume of C&D materials are likely to come from demolition activities in or near “Supplier Communities” than new construction. Assuming a waste generation rate of 111 lbs/s.f., demolition of an average 1,600 square foot house would generate roughly 89 tons of waste. Not all waste generated is reusable or recyclable, however. The deconstruction experts who were consulted for this study generally assume it is possible to salvage a minimum of 10-20 tons or 11-22% of the estimated waste from a fully *deconstructed* house, but could be much higher if the house is in good condition. Estimates of potential generation rates from new construction and demolition activities for “Supply Communities” based on national waste generation

assumptions and permit data from 2006 (a pre-recession year) are summarized in Table 3.⁵

TABLE 3. C&D Materials Generated from Construction and Demolition Activity in Sample of Suburban Areas

Municipality	Suburban Region	New Construction Activity			Demolition Activity			total ann. tonnage from C&D	5% reusable bldg material
		Building Permits	Total Sq Ft	Weight (tons)	Demo. Permits	Total Sq Ft	Weight (tons)		
Arlington Heights	north	19	42,978	94	18	28,800	1598	1,693	85
Barrington	north	2	4,524	10	5	8,000	444	454	23
Barrington Hills	north	4	9,048	20	6	9,600	533	553	28
Bartlett*	north	2	4,524	10	36	57,600	3197	3,207	160
Buffalo Grove*	north	7	15,834	35	147	235,200	13054	13,088	654
Evanston	north	20	45,240	99	81	129,600	7193	7,292	365
Glencoe	north	7	15,834	35	10	16,000	888	923	46
Glenview	north	19	42,978	94	53	84,800	4706	4,801	240
Golf	north	1	2,262	5	10	16,000	888	893	45
Inverness	north	5	11,310	25	60	96,000	5328	5,353	268
Kenilworth	north	1	2,262	5	1	1,600	89	94	5
Lincolnwood	north	1	2,262	5	25	40,000	2220	2,225	111
Northbrook	north	21	47,502	104	3	4,800	266	370	19
Northfield	north	4	9,048	20	1	1,600	89	109	5
Park Ridge	north	27	61,074	134	13	20,800	1154	1,288	64
South Barrington	north	10	22,620	50	1	1,600	89	138	7
Wilmette	north	11	24,882	54	117	187,200	10390	10,444	522
Winnetka	north	18	40,716	89	65	104,000	5772	5,861	293
All Northern Suburban supply communities								58,784	2,939
Flossmoor	south	0	0	0	131	209,600	11633	11,633	582
Olympia Fields	south	1	2,262	5	2	3,200	178	183	9
Orland Park	south	13	29,406	64	115	184,000	10212	10,276	514
Palos Park	south	6	13,572	30	12	19,200	1066	1,095	55
All South Suburban supply communities								23,187	1,159
La Grange	west	15	33,930	74	63	100,800	5594	5,669	283
Oak Park	west	4	9,048	20	2	3,200	178	197	10
River Forest	west	2	4,524	10	18	28,800	1598	1,608	80
Western Springs	west	11	24,882	54	110	176,000	9768	9,822	491
All Western Suburban supply communities								17,297	865
TOTAL COOK SUBURBS				1,144			98,124	99,268	4,963

* These municipalities are not completely within Cook County (Buffalo Grove is also in Lake County; Bartlett is also in DuPage and Kane Counties)

⁵ Renovation activity in these communities is also a potential source of material, but could not be estimated due to the lack of renovation permit data.

Recent building material audit data from the Cook County Deconstruction project provided estimates of material that could be diverted from a sample group of 8 foreclosed and abandoned homes in two suburban communities (six smaller ranch-style homes without basements in south suburban Park Forest and 2 two-story homes with basements in north-suburban Evanston). Although the estimated volume of reusable material from the smaller homes was less than 10 tons per house due to the small size and poor condition of these abandoned homes, the two larger Evanston homes each had an estimated diversion rate of over 50 tons of reusable material each. The estimated diversion rate from the landfill for the sample group also ranged from 86%-96% of total weight. While this is a small sample set of homes from two specific communities, this audit data can give a sense of the potential to divert a significant volume of building materials from the landfill from deconstruction and demolition of even abandoned homes that are in poor condition. (See Figure 1 and Table 4 below.)

FIGURE 1. Building Material Audits - Cook County Deconstruction Program

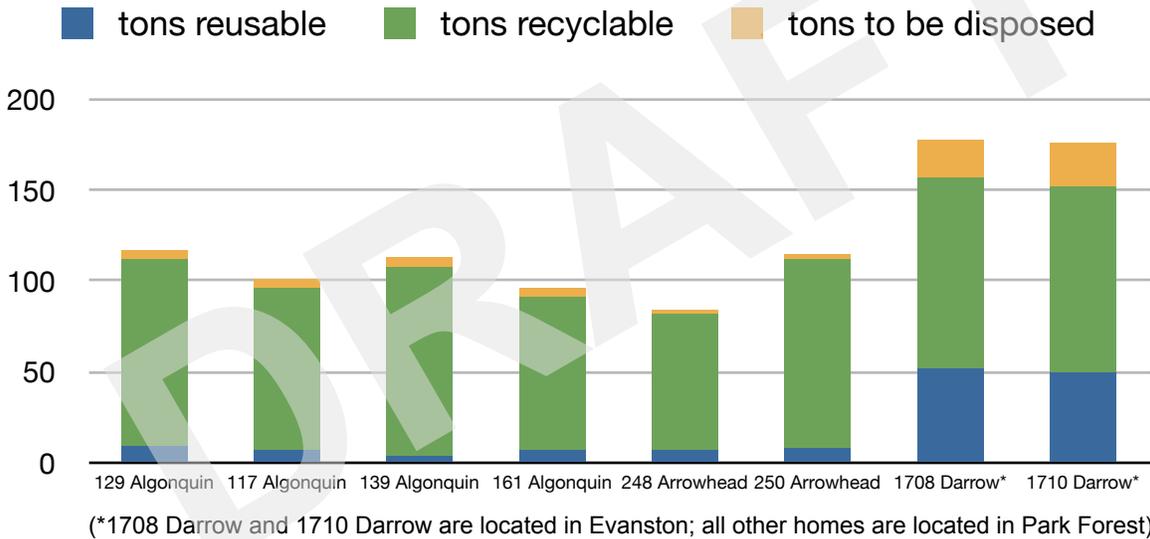


TABLE 4. Building Material Audits - Cook County Deconstruction Program

	area (s.f.)	total weight (lbs)	tons reusable	tons recyclable	tons to be disposed	% reusable	landfill diversion rate	diversion lbs/s.f.
129 Algonquin	1138	117	9	103	5	8%	96%	197
117 Algonquin	960	101	7	89	5	7%	95%	200
139 Algonquin	1138	113	4	104	5	4%	96%	190
248 Arrowhead	1080	85	7	75	2	8%	88%	152
250 Arrowhead	1476	114	8	104	3	7%	88%	152
1708 Darrow	1518	178	52	105	21	29%	88%	207
1710 Darrow	1430	177	50	102	24	28%	86%	213
average	1249	126	20	97	9	13%	91%	187
TOTALS	8740	885	137	682	65			1310

An important observation from this building audit data is that an average of 13% of the total building weight was estimated to be reusable. It should also be noted that the homes in this sample set were abandoned and not well maintained by its owners. In fact, the quality and condition of the homes is a major factor in determining the potential for reusable materials. Well-maintained homes in good quality will very likely result in a higher rate of reusable materials.

However, the type of construction is another factor that can affect the rate of reusable material. Of the sample set, the rate of reusable material varies greatly between Park Forest (4-8%) and Evanston (28% and 29%) homes. While homes in both locations were of similar condition, the exterior walls of the Park Forest homes were wood-framed with a brick veneer, whereas the exterior walls of the homes in Evanston built of solid brick. This volume of brick, which could be reused, contributed significantly to the higher rate of reusable material.

Based on these observations and the experience of other reuse centers, several factors can influence the source, quantity, and character of C&D supply.

- **Economic Conditions.** Homeowners are more likely to renovate than to conduct full-scale demolition or new construction in a bad economy. More renovation may mean that a reuse store receives more used appliances and less lumber during economic downturns.
- **Type of Activity.** (new construction, renovation, or demolition) Demolition generates the highest supply per square foot but the materials generated lack consistent quality. Renovations generate more material per sf than new construction. Deconstruction can either be the full disassembly of a structure, or a “soft strip” of a structure, where only a portion of the materials, usually the most valuable, are salvaged.
- **Season.** Construction activity can fluctuate according to the season. During the height of construction season, spring in the Midwest, C&D supply will increase.
- **Housing Types.** Depending on the age and character of housing, C&D material will consist of different materials. For example, the City of Chicago and certain suburbs are likely to have an older housing stock, where buildings were constructed of brick and masonry.
- **Condition and Quality of Property.** Buildings that are well-maintained or with higher starting property values can generate more material per square foot than those left abandoned or left to deteriorate.
- **Local Regulations.** Ordinances requiring recycling, reuse, or waste management plans will affect the amount of C&D material generated or disposed.
- **Environmental Awareness.** In the absence of ordinances, the amount of C&D material available for reuse can increase with more

public awareness. Some individuals simply want to get rid of their waste, no matter whether it is disposed or reused. Others feel a larger sense of responsibility or moral obligation and are willing to pay a fee to have the C&D debris recycled or taken to a reuse center. Emerging green building certification systems, such as USGBC's LEED have introduced rating systems specifically for homes. These rating systems may encourage homeowners to find alternatives to disposing of C&D debris.

Data gaps mean possible underestimates of supply. The 2009 UIC study estimated much higher supply volumes in the City of Chicago from renovation than demolition or new construction, but renovation was not easily attainable for the 126 communities in Suburban Cook County. Permit data was only readily available for new construction, the lowest waste generator of all project types. There was a lack of complete suburban data for demolition permits.

In addition, although communities with high risk of foreclosure would logically have potential for increased future rehab or demolition activity, additional survey work would be needed to determine if these communities have plans or funding to conduct demolition activities.

Finally, even in locations where renovation permit is available, small-scale renovations may not require permits, even though small-scale renovations can contribute greatly to the amount of C&D supply. If additional data were available, the estimated volume of potential supply could be substantially higher than the estimate in this report.

The next chapter of this study identifies 22 existing reuse and salvage centers in the region, including 4 in Suburban Cook County.⁶ A key question for this study is whether there is sufficient potential supply of reusable building materials to support additional centers. Interviews with experts from a national organization (the ReUse People) and the Delta Institute's own experience managing its two-year old ReBuilding Exchange were considered in estimating the volume of materials needed to support a reuse store. The volume needed per store was then compared to the total estimated volume of supply from Table 3 to determine the potential number of reuse centers that could be supported.

Experts from a leading deconstruction and building material reuse organization (The ReUse People) were asked their opinion on the volume of materials or sales revenue needed to support a modest (10,000 s.f.) reuse store. They felt a

⁶ See Figure 4 in Chapter 3. Reuse and salvage centers in Suburban Cook County include: 2 in northern Cook (Vintage Brick Salvage in Palatine and the ReBuilding Warehouse in Evanston), Murco Recycling in west suburban LaGrange and a Habitat for Humanity ReStore in south suburban Chicago Heights.

minimum of \$250,000 - \$300,000 in annual sales could support one center with 3 full-time equivalent employees. They felt this level of sales could be achieved by fully deconstructing 25-30 single-family homes, assuming most materials are in good condition. They cautioned against setting a goal for volume (or weight) of materials as this can vary greatly depending on the condition of the building or the nature of the materials. Variations notwithstanding, if demolition of an average-sized home has potential to generate a minimum of 10-20 tons of reusable material, deconstruction of 25-30 homes would result in diversion of 250-500 tons of reusable material.

The Delta Institute's ReBuilding Exchange (RX) sold roughly 1,500 tons of C&D material in its first full year of operations, generating \$160,000 in revenue. It expects to earn roughly \$200,000 and divert a total of 2500 tons by the end of its second year (ending in June 2011). Over \$300,000 in grants and loans have supplemented sales in the start-up years, but the RX expects to achieve sales of more than \$250,000 after three years.

While the level of sales needed to become self-sustaining is similar to the estimates from The ReUse People experts, the volume of materials that the RX expects to divert – 2,500 tons – is substantially higher than the estimated minimum volume of 10-20 tons that could be generated by 25-30 deconstructed houses.

There is a total estimated annual supply of roughly 100,000 tons of C&D material being generated from new construction and demolition activity from the pre-identified supply municipalities (in Table 3, above). Again, this does not include estimated supply from renovation activity, since this permit data was not available. If we assume that only 5% of this supply is diverted for reuse, that means 5,000 tons would potentially be able to supply at least one new store with a similar volume of materials as The Rebuilding Exchange. A higher percentage of materials seems achievable though, considering that the two larger homes in our sample group were from the higher-income community of Evanston and had an estimated material reuse rate of more than 25%. Older homes in Evanston are likely to be more similar to the size and condition of homes in other higher-income supply communities than the smaller derelict homes in south suburban Park Forest

According to experts from The ReUse People, one reuse store of about 10,000 square feet can create as many as 33 jobs (3 full-time warehouse jobs and 25-30 full-time deconstruction crew jobs) in a good year with 25-30 deconstruction jobs.

Assuming there is potential supply to support at least one new reuse center in Suburban Cook County, the next question is whether communities that have high potential to supply materials are also the best locations for customers who demand the materials.

II. ESTIMATING DEMAND FOR CONSTRUCTION & DEMOLITION MATERIALS

A. EXISTING DEMAND FOR CONSTRUCTION AND DEMOLITION MATERIALS

To understand the existing demand for C&D Materials in Suburban Cook County, one must understand the typical routes C&D materials take from the building site to the market. If they are not reused on-site, C&D materials are likely to end up in one of two places - the landfill or back on the marketplace. By avoiding landfilling and instead moving C&D materials back into the marketplace, new economic and environmental opportunities and benefits are created. The following diagram demonstrates the various paths C&D material can take. At each step and at each location in the process, there are points of intervention that can maximize the amount of C&D reuse.

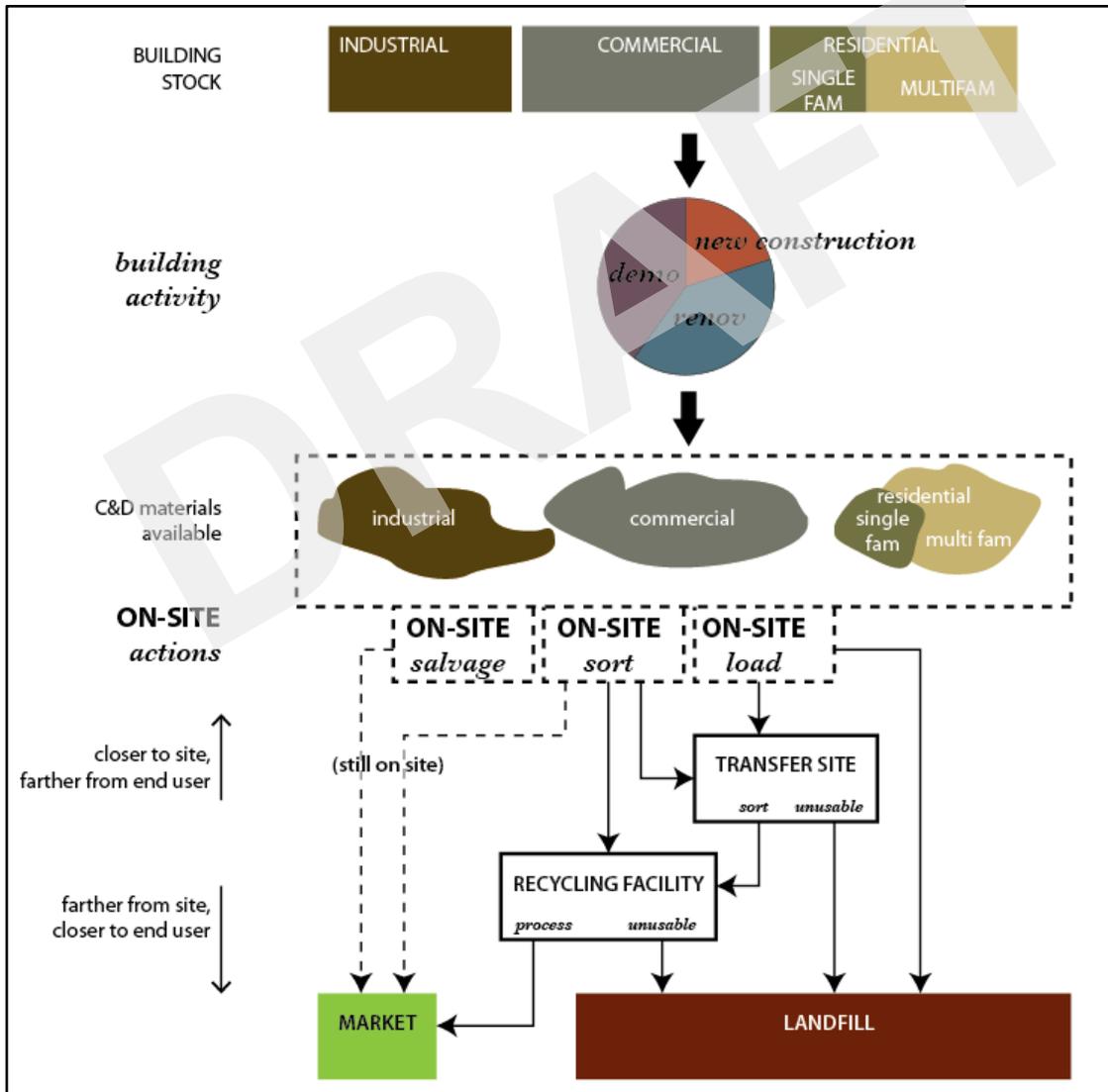


FIGURE 2. Flow of Waste Management Options

There are several ways that C&D materials can be managed on site. Debris can be reused as sub-base for site infrastructure or the foundation of newly planned construction on the same site. Pre-demolition salvage auctions can be held, where the site is opened to the public and in-tact residential materials are sold to end users. C&D materials that are being prepared for new markets are in some cases, sorted on site to facilitate its transport and future processing. Since sorting requires added time and labor in comparison to a throwing all materials in one dumpster, demolition contractors only sort if the materials are of high market value or if they are under contract to do so.

Landfills

25-45% of C&D materials end up in landfills. There are a total of 7 active landfills in IEPA Region 2 which includes Will County, Grundy County, Kankakee County, Kendall County, DuPage County, Kane County, McHenry County, Lake County, and Cook County. Currently active landfills are only located in Cook, Will, Grundy, and Lake Counties. The only remaining landfill within Cook County is the River Bend Prairie Landfill in Dolton, which has a remaining life expectancy of only 2 years and is expected to close in 2012. (See Figure 3) There are no remaining landfills in the City of Chicago, due to a ban on siting landfills within the city limits and a shortage of space.

Landfills accept all waste with little regard for the condition of the materials. Once materials are designated for landfills, there is no chance of recovery because of high costs and labor associated with separation and contamination of materials, no matter how valuable or reusable the material.

Landfill disposal is still the most common method of municipal solid waste management. According to the UIC report, local tipping fees have increased about 40% since 1995. Generally in the Midwest, fees have increased from about \$30/ton since 2000 to \$45/ton⁷. However, these tipping fees are still lower than other parts of the country, such as the West, the Mid-Atlantic, and the Northeast. In the Northeast, tipping fees are well over \$70/ton.

Landfills accept large amounts of C&D debris, especially materials for which there are not many current recycling markets, such as wood, drywall, and asphalt. Moreover, a large portion of the C&D debris that is recycled is often CCDD, or clean construction and demolition debris, which when processed is considered recycling and often ends up being used as daily cover for landfills. In other words, C&D materials that are considered recycled often end up in landfills anyway, simply in a different form.

⁷ Cook County estimate

With low rates and high capacities, landfills have little incentive for C&D reuse. Their revenue is generated from hauling and tipping fees, which are based on a per-ton or per-volume pricing. Landfills also have anti-scavenging policies which discourage materials from being diverted from the landfill for any reason.

Transfer Stations

With fewer but larger landfills, transfer stations have become integral in the waste management process. Transfer stations act as an intermediary between the site and the end-user, whether it be the market or the landfill. Hauling companies transport waste from homes, businesses, and construction sites to a transfer station, where it is temporarily stored or sorted, before making its way to on-site or off-site recycling facilities or landfills. Transfer stations may have numerous contracts with hauling companies or waste agencies, which are required to bring waste through their facility.

There were 73 transfer stations active in IEPA Region 2 according to the 2008 Landfill Capacity Report. Of these, 53 in Cook County handled 6,273,313 tons of MSW in 2008. Many of the largest hauling companies in the U.S. own and operate many of the facilities in Cook County, such as Allied, Waste Management, Veolia, and Groot.

Recycling Facilities

There are recycling facilities of many scales, from small metal scrap yards to large facilities which only take C&D debris. Of the 75 IEPA registered transfer stations in Region 2, or the Chicago Metropolitan Area, 25 of them collect common recyclables, 18 of those are in Cook County, and 10 of those are in Suburban Cook County, not in the City of Chicago. In Suburban Cook County, there are 11 facilities which accept C&D debris. Of those, 1 states that it accepts "Clean Construction and Demolition Debris"⁸. It is not clear if this is typical C&D debris or simply concrete processed for daily cover. Only 2 of the 11 facilities that accept C&D debris state in their IEPA status report that they recycle it as well. Also of those 11 facilities, 7 of them also accept recyclables, so it is assumed that they most likely recycle a portion of the C&D debris they accept. The following table was generated from the 2008 IEPA Landfill Capacity Report, where each facility reports its activity on a one-page form.

⁸ Clean construction or demolition debris (CCDD) is uncontaminated broken concrete without protruding metal bars, bricks, rock, stone, or reclaimed asphalt pavement generated from construction or demolition activities.

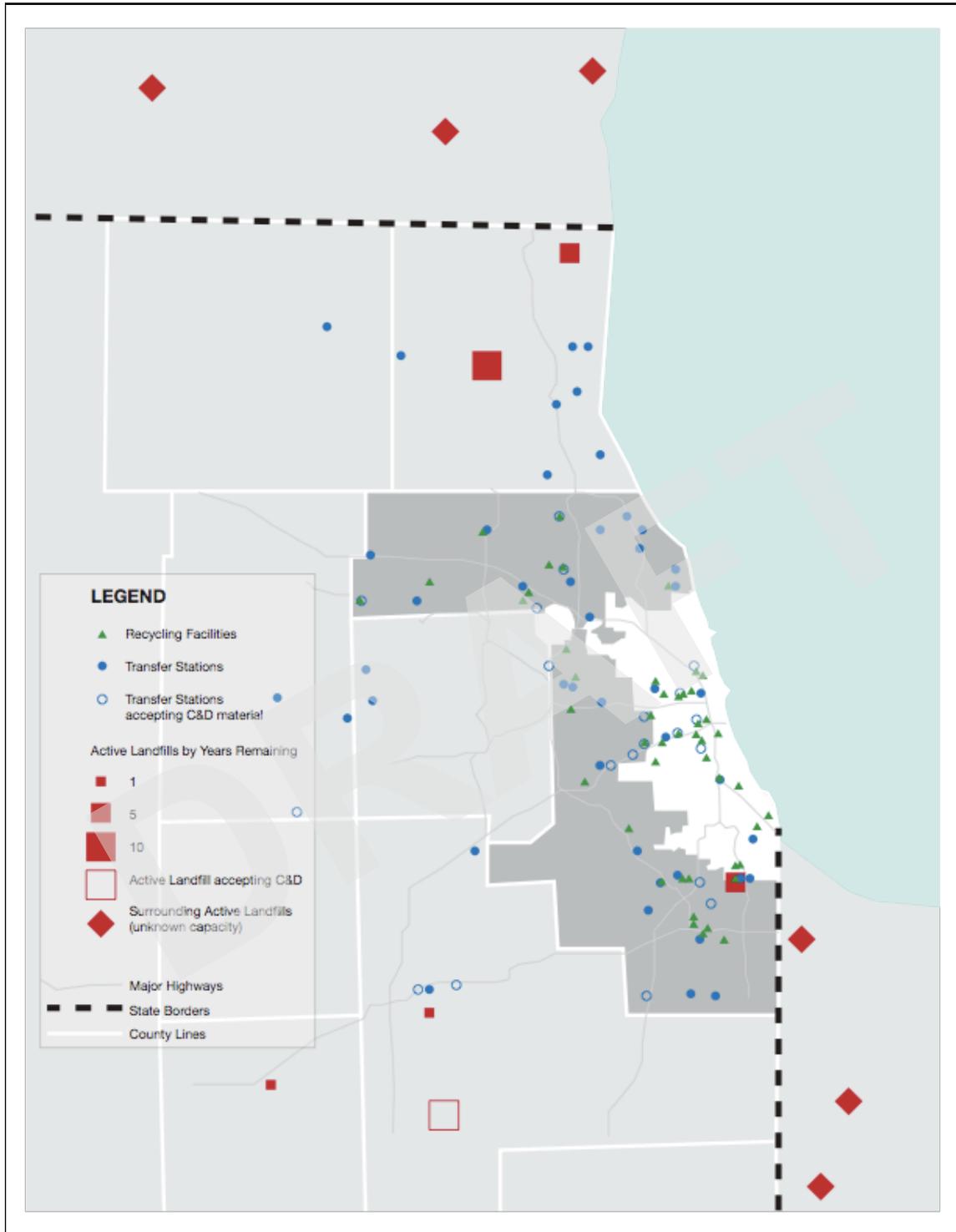


FIGURE 3. Landfill and Transfer Stations in Chicago Region
Source: 2009 UIC Market Analysis of C&D Material Reuse in the Chicago Region

TABLE 5. Regional Transfer Stations 2008 Activity

	NAME OF FACILITY	MUNICIPALITY	TYPE OF WASTE ACCEPTED	GENERAL RECYCLING	TOTAL TONS ACCEPTED
1	Recycling Systems Inc. 1	Chicago	MSW, LW, C&D		583,913
2	Waste Management/Bluff City TS 1	Elgin	MSW, recyclables, C&D	yes	268,815
3	West Cook Transfer Station	Forest View	MSW, C&D recycling		252,000
4	Waste Mgt.-Northwest/W	Wheeling	MSW, LW, recyclables, C&D	yes	251,087
5	Loop Transfer-Laflin	Chicago	MSW, C&D, commercial		247,993
6	Medill Mat'l. Rec. & Recy.	Chicago	MSW, recyclables, C&D recycling	yes	190,121
7	Riverdale Recycling Inc.	Riverdale	MSW, recyclables, C&D, tires	yes	183,261
8	Liberty Waste	McCook	MSW, LW, recyclables, C&D	yes	81,378
9	SRS North Lot	Chicago	C&D		47,337
10	Northlake Transfer Station 2	Northlake	MSW, LW, recyclables, C&D	yes	561
11	Des Plaines Trans. Stn.	Des Plaines	LW, CCDD from muni		545
12	Ravenswood Disposal Service Transfer Station	Chicago	C&D		0
13	Kucera Disposal Company	Cicero	MSW, recyclables, C&D	yes	0
14	Groot Industries/Chicago TS	Elk Grove Village	MSW, C&D		0
15	Harvey Transfer Station	Harvey	C&D, LW		0
16	Prairie Lakes Recycling and Transfer 3	Matteson	LW, C&D, recyclables	yes	0

Source: IEPA 2008 Landfill Capacity Report
 * shaded facilities are located in Chicago

Some recycling facilities are owned by national waste management facilities, and others are independent, such as Recycling Systems Inc. and Riverdale Recycling Inc. These facilities 1) process the C&D materials, 2) sell the commodities to a final or intermediate user, or 3) send the residual to a disposal facility. Whether C&D materials are sent to a recycling facility or the landfill often depends on the value of materials, size of project, timing, ability to separate and segregate materials and regulatory policies.

Reuse and Salvage Facilities

Used Building Material Reuse Operations, or UBMROs, receive building materials from deconstruction agents. These agents can be deconstruction contractors, demolition contractors, renovation contractors, property management firms or private individuals. UBMROs may recover building materials from demolition, deconstruction, or renovation activities or they may purchase materials through on-site sales. UBMROs then resell building materials and appliances to property owners and contractors. These UBMROs differ in material stock and organization structure.

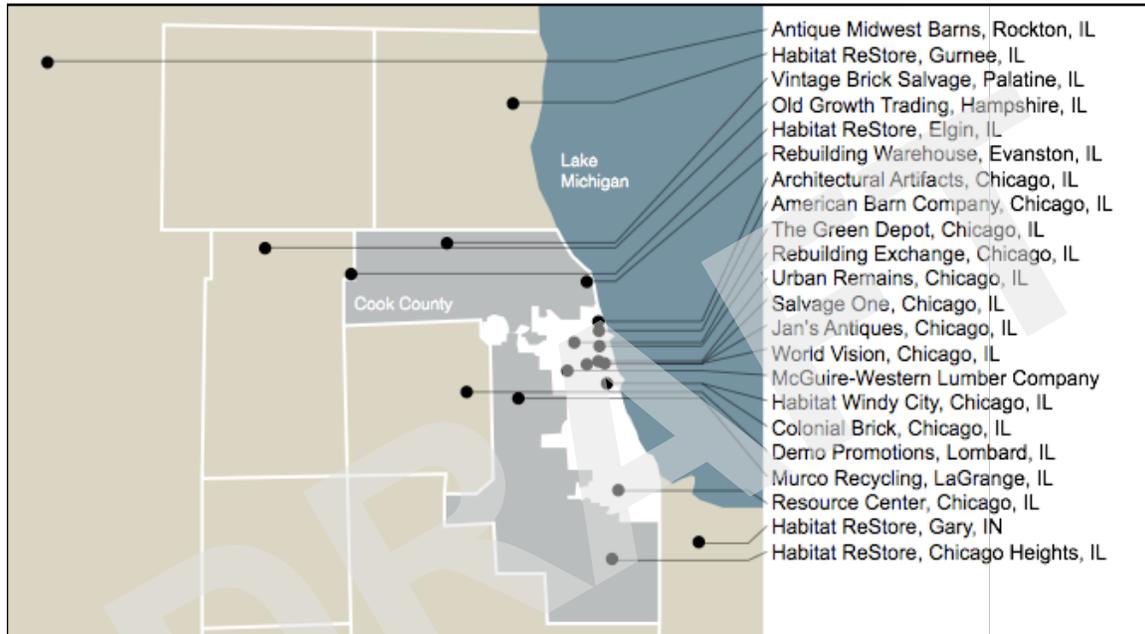


FIGURE 4. Regional Reuse and Salvage Centers

For-profit reuse centers in Cook County include Architectural Salvage, Murco, Urban Remains, and Salvage One. These retail centers often focus on a higher-end market of salvaged materials, such as architectural artifacts and hard-to-match historic features of homes. Rarely do they sell large volumes of lumber for structural use, wood flooring, trim, appliances, or kitchen cabinetry.

Online markets like Planet Reuse, DiggersList.com, Builder2Builder.com, and Craigslist have operations in Cook County, but are not tied to a specific region. These operations have the benefit of being able to make large amounts of building material accessible to a wide range of customers.

Non-profit reuse centers that serve the Cook County area include the ReBuilding Exchange and Habitat for Humanity's ReStores in Chicago, Chicago Heights, Elgin and Gary, Indiana.

B. POTENTIAL DEMAND FOR ADDITIONAL SUBURBAN REUSE CENTERS

Reuse operations and retail centers fill the gap between supply and demand of C&D materials. When C&D materials are donated or aggregated, reuse centers allow for the storage of these materials and their resale to a variety of clients who use them in building projects. Deconstruction also plays an integral role in the C&D reuse process. It is the process by which materials are salvaged from the original building site and become a commodity for the reuse centers. As determined by the first section of this report, there is an adequate supply of C&D materials from potential Suburban Cook County sources. This analysis argues that there is also great demand for additional reuse centers in Cook County that can stimulate economic development, create a large number of jobs in the green collar market, and encourage the increased diversion of C&D materials from landfills.

Demographic data from the 126 Suburban Cook County communities were analyzed for potential demand for used building materials. The same 5 criteria were used as UIC's 2009 Market Analysis, which were based on a typical consumer profile (as defined by interviews with reuse center directors) but a higher income level of households was used for this analysis based on the experience of The Delta Institute's ReBuilding Exchange. Each of the Suburban Cook County communities was assigned a total ranking of high, medium or low based on aggregation of rankings for each of the 5 characteristics of a neighborhood in demand of a reuse center.

- Share foreign born population, 2000 (high, medium, low)
- Share of population that are homeowners, 2000 (high, medium, low)
- Share of housing stock built before 1959 (high, medium, low)
- Construction and demolition permits issued, 2007
- Share of households whose median income target above-average (100-120%) income levels (adjusted, instead of middle income (80%-120%) levels based on ReBuilding Exchange's recent customer base.)

The resulting map shows suburban communities with a high demand for used building materials, or "high demand areas":

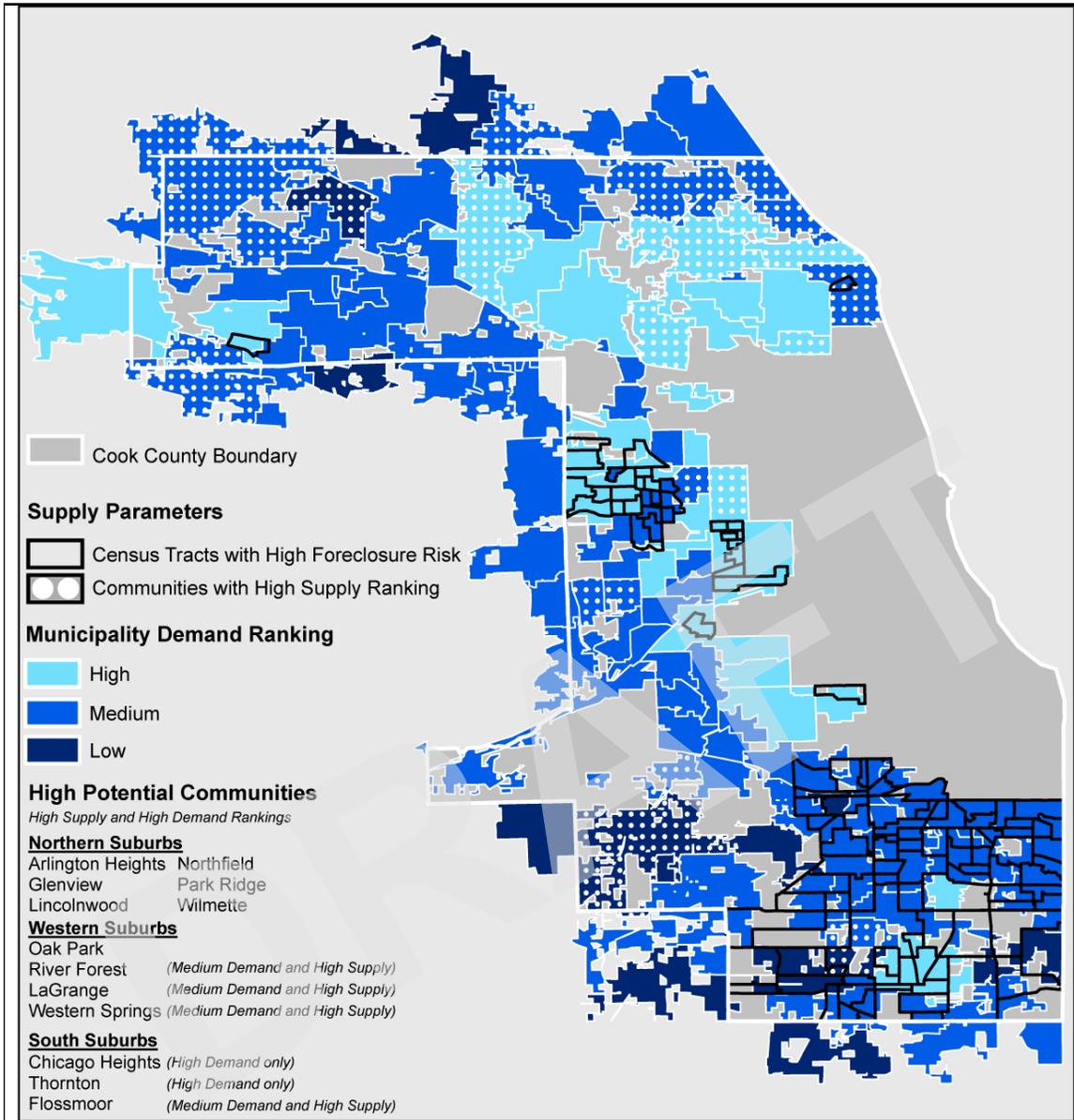


FIGURE 5. Suburban Municipalities with High Potential Supply & Demand for Used Building Material

Ideal market areas for deconstruction or demolition activity and additional reuse stores are medium or high demand areas that also align with or adjoin high supply communities. These include:

- Northern suburbs: Arlington Heights (medium), Glenview (medium), Lincolnwood (high), Northfield (medium), Park Ridge (medium), and Wilmette (medium)
- Western suburbs: LaGrange (medium), Oak Park (medium), River Forest (medium), and Western Springs (medium)
- South suburbs: Chicago Heights (medium), Flossmoor (medium), and Thornton (medium)

Assuming existing stores are only capturing a small percentage of estimated total waste from high demand areas, there is enough supply to support at least one additional store, (See previous section “Estimating Supply of Construction and Demolition Materials.”) However, certain market barriers to growth in deconstruction and building material reuse may need to be addressed. These are discussed in the last two sections of this report.

III. MARKET BARRIERS TO DECONSTRUCTION AND MATERIAL REUSE

There is a great potential for a construction and demolition material salvage and reuse in Suburban Cook County, but a number of challenges lie in the path of the industry's growth potential. The following section highlights the market barriers that are considered to be significant and needs to be overcome by the building material reuse industry. The barriers are divided into four major categories and confirmed during the Cook County Market Barriers Forum: Deconstruction and Building Material Reuse, held on February 10, 2011, attended by almost 40 local stakeholders.

1. Higher Costs and Increased Time
2. Labor Issues
3. Contamination of Salvaged Materials
4. Cheaper and Easier Traditional Disposal and Lack of Awareness

1. Higher Costs and Increased Time

- High cost associated with the deconstruction process has remained as a major barrier for the industry. Deconstruction has higher upfront costs than demolition, because it is a labor intensive process compared to demolition.
- Depending on the type and size of the building, full deconstruction can, in many cases, take longer than demolition. When crews are not skilled or incomplete, full deconstruction can take two weeks while demolition of the same structure can take only 2-3 days. This can affect the build schedule, in an industry where contractors are used to a quick demolition. Moreover even when crews are skillful, they need to be more careful about source separation of salvaged materials, handling and transportation of the same for reuse and resale, which adds to the length of the process.
- The actual reuse of materials may involve higher costs. Since salvaged materials often do not have standard dimensions like new materials, it might take additional effort to prepare or design the material for the reuse project. Sometimes salvaged materials must also be inspected or reinforced if used for structural applications.
- Besides time, high labor wages also contribute significantly to the cost of deconstruction activities. This issue is discussed in more detail in following sections of this chapter.
- Finally funding and tax incentives that might be available to subsidize costs remain uncertain and not well-known. Grants that are available for deconstruction are often undermined by high labor wages.

2. Labor Issues

- There is a lack of knowledge or training for contractors on clearly differentiating between traditional salvage and more comprehensive deconstruction. There is a need to expand their idea of “valuable” materials. While most demolition contractors salvage perceived high-value material such as metals from homes before demolition, they might not realize the potential value of other materials. Moreover a knowledgeable labor force is essential in assuring that valuable materials are not overlooked and facilitating the efficient transport of materials to retail centers without damaging them.
- There is also a lack of workforce industry standards. There are no current nationally recognized or standardized certification systems for deconstruction contractors or workers. It is difficult to value the service of a deconstruction agent if there is no such workforce standard.
- Deconstruction often carries a higher or uncertain labor wage. It is also not currently defined as an official occupation by the U.S. Department of Labor. The Building Materials Reuse Association (BMRA) is currently seeking occupational definition. Until this occurs, deconstruction workers are often considered typical construction workers and must be paid prevailing wage. This is a barrier during training programs, which are designed to train a large number of workers at a lower overall cost than a typical project. These programs are also often grant-funded. In order for large scale deconstruction to occur, the role of large union general contractors must also be addressed.

3. Contamination of Salvaged Materials

- Contamination of salvaged materials is a significant barrier for reuse of those materials, and often renders them non-reusable. When lead and asbestos are found in buildings slated for deconstruction or demolition, abatement is required.
- Lead is perceived as a larger hazard than it actually is and there are many resources available regarding lead management. However, these resources address lead management in existing buildings or demolition, but not specifically for the safe reuse of salvaged materials. Currently, if assessments show abatement is necessary, lead abatement occurs before deconstruction begins. Valuable salvaged materials are often older in age, and therefore have a good chance of containing lead. This is especially true for painted or treated wood. During the salvage process, as long as there is no flaking, peeling, or cracking, lead-based materials are still often sent to retail centers and sold to customers. In these cases,

customers are directed to a wide range of existing lead-management resources.

- There is a lack of best management practices for the removal of lead for building materials slated for resale. While there are many environmental abatement contractors knowledgeable in managing these materials for a demolition, there are no uniform practices for deconstruction.

4. Cheaper and Easier Traditional Disposal and Lack of Awareness

- Traditional disposal is often cheaper and easier to arrange than deconstruction. This is aided by low local tipping fees and high availability of landfill space making the overall process more economic for haulers or demolition contractors.
- C&D materials that are of obvious value, like metals, or those that are currently re-processed, such as concrete and asphalt, for the road building or waste industries, have strong markets and easily fulfill many C&D recycling ordinance requirements. Since recycling opportunities are more available and more established than reuse opportunities, there is less incentive for debris haulers to send C&D material to reuse centers. Also, there are still relatively few markets for “less-valuable C&D materials, such as drywall, wood, and asphalt, among many others.
- There is a significant lack of awareness about deconstruction and reuse opportunities among the public, government stakeholders, and the private sector. If these entities were more aware of the economic and environmental benefits of deconstruction and reuse, it would certainly become more widespread.
- There is also a cultural penchant for “the new”, as most consumers believe that “newer is better”. There is a need to redefine and redirect this idea to show consumers that reused can mean better quality and can most certainly mean a better economy and environment.

IV. RECOMMENDATIONS TO SUPPORT BUILDING DECONSTRUCTION AND MATERIAL REUSE

In order to promote the widespread adoption of the deconstruction and reuse industry in Cook County, the following policy recommendations were developed to provide Cook County with best practice strategies for near-term and long-term implementation. These recommendations were developed with input from public and private sector stakeholders, including participants of a Cook County sponsored deconstruction forum, County officials and representatives from local waste agencies.

Cook County can provide much-needed leadership in supporting the deconstruction industry by implementing these first four recommendations. Each recommendation is followed by local or national best practices.

- 1. Develop incentives for deconstruction. Offer lower permit fees, expedited permit process, or subsidies from sources such as NSP⁹ grants.** Cook County and local government within Cook County should provide expedited permits and/or lower permit fees for deconstruction versus traditional wrecking ball demolition. This would require a formal deconstruction plan to be submitted with the permit application and would provide a strong incentive for contractors and owners to use more sustainable waste management practices. This would also allow the market to gradually adopt deconstruction and produce some early adopted case studies to demonstrate the viability of deconstruction.

Precedents for this Recommendation:

- Los Altos Hills, CA** - The town of Los Altos Hill, California eased their permitting process in favor of deconstruction. If a deconstruction contract is attached to the permit application, permit fees are waived and the process is expedited for building plans that include salvaged materials.
- Evanston, IL¹⁰, Highland Park, IL¹¹ and Winnetka, IL¹²** - These Northern Cook County municipalities have extremely high demolition taxes for residential structures - \$10,000, \$10,000 and \$16,000 respectively. These high demolition taxes create disincentives to pursue traditional demolition. While this tax is currently used for other purposes in these municipalities, these examples illustrate that a high demolition tax alongside a lower deconstruction permit fee could directly encourage deconstruction as an alternative to demolition.

⁹ Neighborhood Stabilization Program

¹⁰ City of Evanston, 2011. Demolition Instruction Form

¹¹ City of Highland Park, 2011. Affordable Housing Demolition Tax

¹² Village of Winnetka, 2011. Resolution No. R-9-2011

- c. **Chicago, IL** - Instead of going through a typical permit process, green building projects that meet certain LEED¹³ or Chicago Green Homes requirements can receive expedited permits through Chicago's Green Permit Process. In some cases, permit fees may also be reduced through the Green Permit Process. While this expedited process applies to building permits, the same concept can be used for an expedited demolition permit when deconstruction is utilized.
- d. **Seattle, WA** - Seattle introduced its Priority Green permitting option in 2008. This demolition permitting process "provides early site access to applicants who agree to remove a structure through deconstruction rather than through a standard demolition process." By allowing a demolition permit to be issued before the new construction permit is issued (in a typical permit process, they must be issued simultaneously), the developer has more time to deconstruct the existing structure and salvage reusable building materials.

2. Adopt a Construction & Demolition (C&D) Waste Recycling Ordinance and encourage other local green building ordinances and policies.

Mandates are especially important in the Chicago region and other parts of the Midwest where landfill costs are relatively low. Even in areas of the county where landfill disposal costs are relatively high, local governments are creating additional disincentives for landfilling construction & demolition materials by passing ordinances that require recycling and encourage the use of recycled materials in new construction and major renovation of public buildings. In addition to the City of Chicago, other examples of communities that have already adopted similar ordinances and policies follow. Note that most of the other examples include stronger or more specific reuse and recycling requirements, pre-demolition submittal requirements or enforcement than Chicago's ordinance.

Precedents for this Recommendation:

- a. **Chicago, IL** – Chicago's C&D Debris Recycling Ordinance was came into effect in March 2006, with the aim to divert C&D debris from the waste stream by promoting considerable recycling of debris. Initially the recycling target for C & D waste was 25%, which was soon increased to 50% in January 2007 (excluding wastes containing lead, asbestos or other hazardous material). The ordinance applies to "construction of new residential buildings with four or more units, non residential building which are more than 4,000 total square feet, any rehabilitation of a building that will require a certificate of occupancy to issue from the department of buildings, demolition of a residential building with four or more units that includes the demolition of at least one outside wall, demolition of a non residential building, more than 4,000 square feet". Contractors must keep track of the amount of C & D debris that is generated on project sites, recycle at least 50% of the debris (that is recyclable) generated, at end of each project submit a "recycling compliance form" to the DOE along with an affidavit from the waste hauler or recycler. Failure to meet requirements of the ordinance will result in penalty.
- b. **Madison, WI** — Construction Recycling Ordinance (2010): Madison's Construction and Recycling Ordinance took effect on January 2010. The goal of the ordinance is to save resources by curbing the amount of waste going to the landfills. The ordinance applies to new construction, remodeling projects that costs over \$20,000, and all roofing projects where old shingles are removed. The ordinance also specifies what materials must be recycled from various projects, and for concrete and steel construction

¹³ US Green Building Council's rating system for buildings, Leadership in Energy and Environmental Design

projects sets a goal of 70% recycling of all debris. Recyclers in all cases will be inspected and certified by the city

- c. **City of Boulder, CO** — Green Building and Green Points Program: The Green Building and Green Points program of Boulder, Colorado was adopted by the City Council on November 2007 (ordinance 7565) and went into effect on February 2008 in order to extend the lifecycle of materials and to reduce waste and overall resource use, reduce energy use and limit pollution from transportation of construction materials. The program emphasizes the preservation of existing building structures and requires that any person applying for permit for the development of new building, or remodeling a dwelling to recycle at least 50% of the construction waste that will be generated by the project, or at least 65% of material by weight should be diverted from landfill if more than 50% demolition of exterior walls is proposed. The Deconstruction Plan and Construction Waste Recycling application involves a free deconstruction assessment with a deconstruction professional. Once the application is approved, the project owner must have a registered deconstruction contractor sign off on the form and submit documentation that 65% C&D diversion has been met, either through reuse or recycling.
- d. **City of Concord, CA** — C&D Materials Recycling Ordinance: The City of Concord adopted a local C&D Materials Recycling Ordinance effective July 1, 2007. The ordinance requires that “at least 50% of the waste materials generated by a construction or demolition project be diverted from the landfill through waste management options such as reuse or recycling. The Ordinance also requires that at least 75% of all inert debris generated by a construction or demolition project be diverted from the landfill. Inert debris includes concrete, asphalt, brick and similar masonry products.”
- e. **Orange County, NC** — Regulated Recyclable Materials Ordinance: The Regulated Recyclable Materials Ordinance (effective since October 1, 2002), was developed as a response to the county’s imminent landfill crisis. The ordinance requires contractors and home-owners to recycle certain C&D materials, including corrugated cardboard, clean wood (that has not been treated or painted) and scrap metal. A double tipping fee is charged for loads going to the landfill that contain these materials. It also requires C&D projects to have a waste management plan in place and to have licensed waste-haulers. Individuals conducting building activities without the appropriate Recyclable Material Permit “will be issued a “civil citation.”
- f. **City of San Jose, CA** — Construction Demolition Debris Deposit (CDDD) Program: The CDDD program is an incentive to encourage the minimization and recovery of debris generated from construction and demolition projects. When a contractor or remodeler submits an application for a project permit, the city assesses a deposit fee for C&D debris that can be generated during the project, based on type and square footage of the project. The deposit fee is collected during the issuance of the permit and is fully refundable with proper documentation of the diversion of C&D debris from burial in the landfill.

3. Support planning for additional reuse centers in suburban Cook. The first two chapters of this report included an analysis of communities that have potential to support deconstruction and building material reuse activities. Cook County could play a lead role in coordinating with high potential communities to assess contractor support and retailer readiness for additional reuse centers. County support of private-sector businesses might include planning and development support for new reuse stores or expansion of existing reuse stores, or providing funding or access to funding for business development activities. The County should also dedicate resources to educating contractors in areas that have the greatest potential for deconstruction and building material reuse. Refer to the Appendix for a list of existing local and national used building material retail centers.

Precedents for this Recommendation:

- a. **ReBuilding Exchange** - The Delta Redevelopment Institute solicited the help of a deconstruction expert, The ReUse People of America, to launch the ReBuilding Exchange in Chicago in 2009. The ReUse People (or TRP) is a non-profit organization that deconstructs residential and commercial buildings. TRP has become the ReBuilding Exchange's major source of building materials.
- b. **Recycling Market Development Zones** - The Recycling Market Development Zone (RMDZ) is a state government program that promotes recycling and waste diversion as a tool to foster economic development. The State of California provides loans, technical assistance and free product marketing through the "ReCycle Store" to businesses that use materials from the waste stream to manufacture their products and that are located in a designated "zone" within the various counties. Assistance is provided by local zone administrators and the board's referral team. Various local government incentives include relaxed building codes and zoning laws, streamlined local permit processes, reduced taxes and licensing, and increased and consistent secondary material feedstock supply. While this program primarily focuses on recycling, it could also be applied to reuse.

4. Create awareness and provide tools to promote deconstruction & material reuse. Deconstruction is a new industry and awareness of deconstruction and reuse as an alternative to demolition and disposal is limited in most locations to a relatively small niche market. Educating a wider range of customers, whether homeowners or market intermediaries, about the concept and how it works, along with the financial and environmental benefits, is a critical component of a contractors' marketing strategy.

Government can provide support by publicizing the benefits and locations for donating used building materials and a directory of contractors that provide deconstruction services. In Cook County's case, this may require technology or communications capacity building to implement effectively.

Public information and awareness is also needed to support building material reuse centers. Although there is a long-standing public preference for new goods, the recent economic downturn and changing tastes are increasing demand for salvaged and reclaimed materials. A small but growing group of artists, crafters, do-it-yourselfers and architects are embracing the reclaimed aesthetic and making it a norm of the green building movement. Education and marketing by government and advocacy groups is needed to increase awareness among homeowners and building managers about deconstruction and reuse opportunities.

In most parts of the country, non-government practitioners such as Habitat for Humanity are leading the way in expanding awareness, however, King County, Washington is an example of a local government that is effectively educating the public about deconstruction. King County's Solid Waste Division provides web-based information on deconstruction as an alternative to demolition.

Precedents for this Recommendation:

- a. **King County, Washington** provides extensive information and assistance aimed at increasing diversion rates for construction, demolition and deconstruction projects. The County provides “jobsite waste guidelines, a waste management plan template, sample waste recycling specifications, demonstration of workers working on building material reuse, salvage, and recycling, site visits, and directory of local construction waste recyclers”.
- b. **The Deconstruction Institute**, created for Charlotte County, Florida, through a grant from the Florida Department of Environmental Protection, offers information on various issues of deconstruction. Resources include educational materials, tools and techniques, networking, case studies, articles, and stories of real life experiences. It also functions as an online “training vehicle” for anyone interested in getting involved in the deconstruction industry.
- c. **GO Guide to Deconstruction and Reuse** - The Delta Institute published this guide to provide policy-makers, designers, homeowners, contractors, salvage retailers and other groups with step-by-step advice and recommendations on how to create a thriving deconstruction and reuse industry. It provides a snapshot of the economic, environmental and job creation opportunities offered by this evolving industry, along with information, recommendations and resources that will help each stakeholders advance the field.
- d. A number of other guidebooks provide case studies and provide valuable information and guidance to architects and contractors on deconstruction techniques. Some include: “*Recycling Construction and Demolition Wastes: A Guide for Architects and Contractors*” (2005), sponsored by the Boston Society of Architects, Associated General Contractors of Massachusetts, and the Massachusetts Department of Environmental Protection; “*A Guide to Deconstruction*” (2000), prepared by the National Association of Home Builders (NAHB) for the U.S Department of Housing and Urban Development. Most recently, “A Design for Reuse Primer” was published by Public Architecture and funded by the U.S. Green Building Council, showing the design industry creative and contemporary ways of incorporating reused materials into building design.
- e. A number of case studies have been published by organizations, government agencies, and research institutions, sharing lessons learned and demonstrating the financial benefits of deconstruction. For example, USEPA funded a the Susquehanna Residence Project in Philadelphia, PA, as a pilot project to explore innovative techniques for dismantling urban row houses and determine cost-effective methods to remove lumber and other structural materials from abandoned buildings.

Additional Recommendations Where Cook County Could Provide Support:

While Cook County could play a primary role in implementing the key recommendations listed above, the County could also play a supporting role in implementing the following five recommendations.

- 1. Provide On-Going Training for Contractors to support the workforce development of the deconstruction industry.** Deconstruction training programs should be offered to all demolition contractors that do business in the County. Skilled contractors are needed to meet the demand for deconstruction versus traditional demolition. Not only will contractors have a business opportunity to offer another service to their clients, but with more contractors offering deconstruction, more building owners will become aware of this alternative to demolition. Just as the County currently requires licensed general contractors to register before conducting business in

unincorporated Cook County and lists them on their website¹⁴, the County can provide the public with a running list of deconstruction-trained contractors. To build this deconstruction workforce, the County should support deconstruction training for contractors. Training topics should include:

- The value and markets for a broad range of reusable materials.
- Methods for carefully handling and packaging reusable materials for resale markets
- Risks and regulations in handling materials that may contain lead-based paint or other potential contamination
- Labor standards for deconstruction workers and risks relating to work in areas where these standards have not yet been defined formally
- Various degrees of deconstruction, which may combine manual deconstruction to maximize reuse and recycling and traditional machine-operated demolition techniques. Using varying degrees of deconstruction, such as salvage, strip out or structural, can be helpful in expediting work and overcoming such barriers as higher labor cost and longer project time span.
- Potential tax incentives for donation of building materials by higher-income homeowners or commercial building redevelopers.

Precedents for this Recommendation:

- a. **Second Chance Inc., Baltimore, MD:** Second Chance Inc., besides doing deconstruction activities, offers a training and workforce development program that involves classroom instruction and hands on training from highly trained professionals. Successful trainees upon completion of the program and graduation are awarded a Baltimore City Mayor's Certificate of Completion. Qualified trainees also receive additional, specialized training in lead abatement and other hazardous materials removal and handling, and forklift operation.
- b. **Architectural Salvage Warehouse, Detroit, MI:** A nonprofit salvage and resale organization that was started as a response to the tremendous amount of waste generation through demolition of houses located in Detroit and its suburbs. In addition to outreach and advocacy efforts, deconstruction projects, and managing a reuse center, the organization provides training and employment opportunities for local residents in the deconstruction industry and partnered with Youth Build Detroit to expose dozens of young construction apprentices to the process of deconstruction. They also collaborate with Focus Hope, Wayne State University and The University of Detroit Mercy, School of Architecture to formalize training and educational partnerships to enrich the economic prospects of Detroit's youth and neighborhoods.
- c. Other deconstruction contractors, including The ReUse People of America and RE-USE Consulting, offer their own training programs, whereby individuals can learn basic deconstruction skills. Local governments that invest in deconstruction efforts often partner with deconstruction consultants to administer training programs or manage the deconstruction of government-owned buildings.

2. Support recognition of deconstruction as an occupation with the Department of Labor and deconstruction certification. Lower-cost trainee labor is critical in building the deconstruction workforce. In Illinois a House

¹⁴ http://legacy.cookcountygov.com/zoning_clean/contractors_info.php

Bill (IL House Bill 165) has been proposed that amends the existing “Prevailing Wage Act”. The Bill states that “prevailing wage need not be paid to workers engaged in the construction or demolition of public works when employed by or working on behalf of nonprofit organizations for educational purposes”. The County should advocate for and support organizations that actively lobby for such reforms to address the issue of prevailing wage and make deconstruction economically competitive with business as usual.

Similarly, the County should engage in the wider scope of such labor reform, which involves supporting the recognition of deconstruction as an official occupation (with clear demarcation from demolition) at the Federal level (which will then be translated to the State level) with the Department of Labor Office of Apprenticeship. This type of recognition will help to set a standardized wage structure for deconstruction worker, and therefore, address the prevailing wage issue.

The County should also encourage standardized training and certification programs for deconstruction workers and other positions involved with the deconstruction industry. Certification is key to ensuring quality services are being provided and standards are set and achieved in any industry (contractors, energy auditors, teachers, etc.), and the deconstruction industry is no exception.

Precedents for this Recommendation:

- a. **The Building Materials Reuse Association (BMRA):** BMRA is a non-profit educational and research organization located in Chicago, Illinois. The first of its kind, the Building Materials Reuse Association has established a “national deconstruction accreditation program” to create job opportunities and train workers with skills required for deconstruction. It has also been advocating for the establishment deconstruction as an occupation through the US Department of Labor.

- 3. Support incentives to encourage donation of building materials and support new appraisal standards to encourage larger donations.** The County should support efforts that make donating building materials accessible and easy to understand. Finding a qualified appraiser that has education and experience in valuing used building materials may be a challenge given that national appraisal organizations do not yet have specialized certification programs for this type of personal property. Most personal property appraisers specialize in art, antiques, jewelry, or specialized equipment. To increase the number of appraisers capable of valuing reusable materials, the County should encourage appraisal groups to offer training in appraisal of building materials. Outreach is also needed to encourage appraisal organizations to provide new standards for valuing donated building materials. In order to facilitate and promote the donation of building materials by property owners, the County should encourage a federal standard through the Internal Revenue Service for reporting building material donation activity on tax returns.

The County should also publicize local tax benefits and locations for donating materials as well as provide a list of certified appraisers. In order to make deconstruction more appealing to their clients, the County should provide a list of the current markets for salvaged materials to contractors. Further, the County should support organizations to do more research and development to find new, untapped markets for salvaged materials.

Precedents for this Recommendation:

- a. **Bellingham, WA** - Those who apply for Deconstruction/Demolition Permit receive with their application form a matrix, "Construction Recycling & Reuse Options", documenting local companies to recycle, sustainably dispose (such as woodchipping), or incinerate common building materials.
- b. Material exchanges and directories provide contractors with easy access to local recycling and reuse options, and therefore make building material donation and recycling more accessible to property owners. Online directories also provide a platform to sell and trade building materials to a wider clientele. Expected to launch soon, the Waste to Profit Network is a Chicago-based network aimed at creating synergies between generators of road and construction debris with potential markets.

4. ***Advocate for clear public health policies for redistributing salvaged materials.*** Advocate for Clear Environmental and Public Health Policies for Handling and Selling Salvaged Materials. The County should support the clarification of legal barriers regarding lead-contaminated building materials at the state, county, and municipal levels. The County should support industry leaders and advocacy groups, like the USEPA, to develop best management practices regarding the handling and salvaging contaminated materials during deconstruction, abatement procedures during deconstruction, and the safe reuse and/or encapsulating of contaminants of lead-contaminated building materials after deconstruction. The County should also advocate for the development of a market analysis by an industry agency that addresses lead management and education and includes a cost-benefit and comparative risk analysis.

Precedents for this Recommendation:

- a. USEPA Region 5 is the regional agency's office with jurisdiction over the Great Lakes, including Illinois, Indiana, Wisconsin, Michigan, Ohio, and Minnesota. USEPA Region 5 has been integral in leading the research and development of best practices for lead management in various context and making noteworthy attempts to address lead management during the deconstruction process and used building material resale activities. The municipal governments that have made the most progress in expanding the deconstruction industry, particularly those on the West Coast, have worked closely with their regional USEPA office to better understand existing lead management policies and develop new policies that relate to deconstruction and building material reuse.

5. ***Support research & development on the reuse and recycling of additional C & D materials.*** Concrete from foundation slabs or structural members of buildings are often broken down and sold as various materials for road building. Asphalt shingles are processed into rubber-based materials used in the asphalt-paving industry. Road specifications were changed to

support these markets for recycled asphalt and concrete. Research and development is needed to develop new markets for other problematic waste materials such as sheet rock or gypsum. This material is not only taking up large volumes of space in landfills but is also the source of unpleasant (sulfuric) odors when combined with other landfilled materials. Also, despite the fact that they end up in the landfills, this material is still counted as “recycled” when contractors are mandated to meet diversion requirements. The ease by which demolition contractors can currently meet recycling and waste diversion requirements discourages building material reuse. If this practice was more restrictive, building material reuse and deconstruction would become more appealing options for demolition contractors.

No Precedents for this Recommendation

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APPENDIX

Reuse Centers and Resale Stores:

Examples of some successful reuse centers and resale operations.

Habitat for Humanity ReStores: The Habitat for Humanity currently has 700 ReStores in 48 states across the nation. Their successful ReStore outlet program has become a model and an excellent tool for both community development and resource conservation. The ReStore primarily focuses on home improvement goods like furniture, home accessories, building materials and appliances. Collected or donated goods are sold to the public at a fraction of the retail price which makes them very affordable for communities, especially low-income people.

Chicago South Suburbs: <http://www.hfhchgosouth.org/restore.html>

The ReBuilding Center, Portland, OR: The ReBuilding Center is a project of “Our United Villages,” a non-profit organization, has a ReUse warehouse which is visited by about 300 people every day. The Center’s “ReFind Furniture program” offers a diverse line of green furniture and home accessories to be used in new and remodeled homes and other commercial properties. The program uses about 99% salvaged building materials from local, Portland-area homes to make furniture and home ornamentation suitable for resale. They also offer “Deconstruction Services” (an EPA Lead-Safe Certified Firm) that provides assistance to various projects by providing skilled crew members for salvaging materials from buildings for reuse.

<http://www.rebuildingcenter.org/>

The ReUse People, Oakland, CA: The ReUse People began its operation in 1993 in San Diego, CA as Building Materials Distributors and later changed their name. The organization has remained involved in deconstruction industry by offering deconstruction services as building material salvage, work training for the unemployed and underemployed, offering certification to qualified deconstruction contractors and through the operation of a retail center for salvaged materials.

<http://thereusepeople.org/RetailSales>

ReBuilding Exchange, Chicago, IL: The “ReBuilding Exchange” (RX), Chicago's first building material reuse center, was established in February 2009 by the Delta Institute, as a significant step of the institute’s “building material waste diversion” initiative. The “Exchange” aides in the diversion construction and demolition wastes from landfills and the salvaged, recycled building materials are made available to low income communities at a significantly low cost for home improvement and development. It also provides education and training on deconstruction activities and creates job opportunities for the local population. As reported by The Delta Institute in 2010, “since early 2009, the ReBuilding Exchange has diverted more than 3,000 tons of reclaimed building

materials from landfills. Delta is working towards replicating the model of their ReBuilding Exchange in other communities of the Great Lakes Region.

<http://www.rebuildingexchange.org/>

The Green Institute, Minneapolis, MN: The Green Institute offers a range of programs and initiatives, viz., ReUse Center and DeConstruction Services, Green Building, Community Energy and Consulting Services. The institute's "ReUse Program" was selected for the 2008 Best of Minneapolis Award in the Building Materials category by the U.S. Local Business Association (USLBA).

The ReUse Center was the first program of the institute. Currently it has multiple retail locations, online inventory of available products, and a workforce training program that involves carpentry and business operations. The program on an average diverts about 400 tons of reusable building materials from the landfill per year. The institute's "deconstruction services" dismantles residential and commercial buildings to salvage and reclaim building materials for The ReUse Center.

<http://www.thereusecenter.com/>

IM Salvage Co., Milwaukee, WI: A member of BMRA, the organization has a resale outlet as well as offers online purchase options for certain items. Their inventory consists of a wide range of materials including used machinery, equipments, building salvage, building supplies, hvac, plumbing, electrical, lumber, and collectibles.

<http://imsalvageco.com/>

Green Building Ratings Systems:

Some prominent Green Building rating systems include:

LEED (Leadership in Energy and Environmental Design): The LEED program developed by the U.S. Green Building Council, is the most prominent one that encourages sustainable building practices and recognizes them through a suite of rating systems. The program evaluates performance in five key issues of building construction: sustainable site development, water savings, energy efficiency, indoor environmental quality, and materials selection, through which buildings are awarded points for reuse of materials.

<http://www.usgbc.org/LEED>

The Green Globes program developed by the non-profit Green Building Initiative, is a green building guidance and assessment program that offers practical solutions and affordable means for ensuring sustainability of commercial buildings. The program also places a relatively strong emphasis on deconstruction and material reuse (Green Building Initiative, 2011).

<http://www.greenglobes.com>

The “National Green Building Program,” an effort of the National Association of Home Builders, is another example that includes both model green home building guidelines and a Green Scoring Tool that offers points leading to three possible levels of certification. Activities for which points can be earned include, using advanced framing techniques that reduce the amount of building material while maintaining the structural integrity of the home; using pre-cut or pre-assembled building systems or methods; disassembling existing buildings instead of demolishing; reusing salvaged materials where possible; providing on-site bins and/or space to facilitate the sorting and reuse of scrap building materials; conducting onsite recycling efforts; developing and implementing a C&D waste management plan; and using a life-cycle assessment tool evaluate the environmental costs of building materials and accordingly use most environmental-friendly building materials (NAHB, 2011).

<http://www.nahbgreen.org>

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Links to Featured Organizations:

Architectural Salvage Warehouse
url: <http://www.aswdetroit.org/>

Deconstruction Institute
<http://www.deconstructioninstitute.com/>

The Delta Institute
<http://www.delta-institute.org>

Habitat for Humanity ReStores
<http://www.habitat.org/cd/env/restore.aspx>

IM Salvage Co.
<http://imsalvageco.com/>

North Carolina Department of Environment and Natural Resources, Division of Pollution Prevention and Environmental Assistance
<http://www.p2pays.org/>

ReBuilding Exchange
<http://www.rebuildingexchange.org/>

The Building Materials Reuse Association (BMRA)
<http://www.bmra.org/>

The Green Institute
<http://www.greeninstitute.org/>

The ReBuilding Center
<http://rebuildingcenter.org/>

The ReUse People
<http://thereusepeople.org/>

Cook County Deconstruction Strategy Report

Second Chance Inc.
<http://www.secondchanceinc.org/>

Waste Cap Resource Solutions
<http://www.wastecapwi.org/>

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