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# Examining the Feasibility of Implementing a Deconstruction Nonprofit in East St. Louis, IL

David M. Hoag Jr.  
*Governors State University*

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Examining the Feasibility of Implementing a  
Deconstruction Nonprofit in East St. Louis, IL

David M. Hoag, Jr.

Capstone Document Submitted in Partial Fulfillment of the Requirements  
for the Degree of  
Doctorate of Interdisciplinary Leadership

Governors State University

May 27, 2016

Capstone Committee

Dr. Dwight Vick

Dr. Toney Ford

Dr. Robert Sinclair

## Abstract

**Background:** According to an environmental justice case study by Kozol (2005), East St. Louis is considered the country's most distressed city. It has suffered from environmental and economic misfortunes for several decades. Many residents of the city have left due to the economic conditions of the city, which resulted in a loss of tax base. According to Hou (2010), the loss of tax base has had a severe impact on the community; the city that once had flourishing parks, streets, and businesses has now become blighted with condemned, abandoned, and foreclosed structures. Poor maintenance and neglect has led to decay of many of the structures within the city. While the local government works diligently to improve the economic conditions of the city, it is fiscally constrained (Hou, 2010).

**Purpose:** The purpose of this study is to examine the feasibility of implementing a nonprofit organization in East St. Louis, Illinois with a mission of deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community. This study examines the market conditions of the city as well as potential barriers to entry of a deconstruction nonprofit in East St. Louis.

**Methods:** This qualitative study includes a case study of a local St. Louis-based deconstruction nonprofit organization to analyze regional market conditions. The study further consists of semi-structured interviews of deconstruction nonprofit leaders throughout the nation to realize day-to-day challenges faced with meeting organizational missions. Local public officials are interviewed as well in order to examine what public policies or local government involvement is in place in the community that may attribute to the success or failure of a deconstruction nonprofit.

**Results:** An analysis of the data gathered in the study demonstrates that it would be feasible for a deconstruction nonprofit to exist in East St. Louis, Illinois; however, the mission of the organization would have to be expanded to focus more on employment opportunities and civic engagements. While the organization could still aid in deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community as well as divert materials from landfills, the primary focus would have to be the economic and social benefit provided to the citizens of the city of East St. Louis. While challenges exist with working with the city, they can likely be overcome with steady communication and education regarding the benefits of deconstruction.

**Conclusions:** Replicating the Refab nonprofit model with the support of the city of East St. Louis is the most appropriate way forward. Establishing a used building material retail operations (UBMRO) in East St. Louis aids in instilling confidence in city leaders and residents that the nonprofit is there to aid in the development of the city. In order to be successful the nonprofit would need to work closely with the city of East St. Louis.

WE, THE UNDERSIGNED MEMBERS OF THE COMMITTEE,  
HAVE APPROVED THIS CAPSTONE PROJECT

**EXAMINING THE FEASIBILITY OF IMPLEMENTING A  
DECONSTRUCTION NONPROFIT IN EAST ST. LOUIS, IL**

By

David M. Hoag, Jr.

COMMITTEE MEMBERS

  
Dwight Vick, Ph.D. (Chair)

Business/Public Administration

  
Robert Sinclair, Ph.D.

Business/Public Administration

  
Foney Ford, Ed.D.

Education

Governors State University  
University Park, IL 60484

May 2016

Governors State University  
Doctor of Interdisciplinary Leadership Program

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## **Chapter 1. Introduction to the Project**

The purpose of this study is to examine the feasibility of implementing a nonprofit organization in East St. Louis, Illinois with a mission of deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community. The organization is to divert reclaimed materials from landfills and provide an economic benefit to the residents of the area. According to Hofstrand and Holz-Clause (2009), a feasibility study is an analysis of an idea to determine if it is appropriate to implement. It is important to note that a feasibility study is not a business plan, rather it is a means of investigating if an idea can be successful. As such, this study examines the market conditions of the city as well as potential barriers to entry of a deconstruction nonprofit in East St. Louis. This study examines a local St. Louis-based deconstruction nonprofit organization to analyze regional market conditions. The study further consists of semi-structured interviews of deconstruction nonprofit leaders throughout the nation to realize day-to-day challenges faced with meeting organizational missions. Local public officials are interviewed as well in order to examine what public policies or local government involvement is in place in the community that may attribute to the success or failure of a deconstruction nonprofit.

### **1.1 Problem Statement**

According to an environmental justice case study by Kozol (2005), East St. Louis is considered the country's most distressed city. It has suffered from environmental and economic misfortunes for several decades. While the local government works diligently to improve the economic conditions of the city, it is fiscally constrained (Hou, 2010). Furthermore, the citizens of the community have much ill-will towards the municipality due to many years of ineffectiveness and the perception of corruption (Hou, 2010). Many residents of the community



depend on local nonprofit and neighborhood organizations that provide community services where gaps exist in services provided by the local, state, and federal government.

### **1.1.1 Background of the Problem**

The city of East St. Louis was originally founded in the 1790s as a place for ferries to transport goods and people across the Mississippi River (Hou, 2010). The city grew with the Industrial Revolution, becoming a railroad hub. According to Hou (2010), East St. Louis was Illinois' fourth largest city in the 1910 census. It had a very diverse population and a vast urban infrastructure that consisted of parks, schools, and other civic conveniences. Unfortunately, the city government "maintained a pro-business focus that limited social reform and led to machine politics, organized crime, and minimal social reform" (Hou, 2010, p. 257).

Beginning in the mid-1950s, East St. Louis encountered an economic decline for which it has not recovered. (Hou, 2010). The city dropped over 61 percent of its population from 1960 to 2000 (p. 2). As the city began to lose businesses, residents left as well. The tax base and revenue declined to the point where it was so bad that basic city services such as trash pickup were eliminated. The decline led to fewer job opportunities. As of 2006, the once predominantly Caucasian city, consists of less than 30,000 residents, 98% of whom are African American (p. 5). Thirty-five percent of the citizens of East St. Louis live below the poverty line (p. 5). According to Hou (2010), the loss of tax base has had a severe impact on the community; the city that once had flourishing parks, streets, and businesses has now become blighted with condemned, abandoned, and foreclosed structures. Poor maintenance and neglect has led to decay of many of the structures within the city.

According to the Illinois Blighted Areas Redevelopment Act of 1947, blighted areas contribute to the "spread of disease, crime, infant mortality and juvenile delinquency, and

constitute a menace to the health, safety, morals and welfare of the residents” (Illinois General Assembly, 2013, n.p.). The deteriorating infrastructure is a contributing factor of residents of East St. Louis having “one of the highest rates of child asthma in the country” as well as having “a disproportionate burden of lead poisoning, educational disparities, unemployment, and toxic exposure among the residents of East St. Louis” (Kozol, 2005, n.p.). The blight within the community not only dissuades new business development, but also deters population growth.

The city of East St. Louis is working diligently to clean up the municipality. Through annual Community Development Block Grant funds offered by the Department of Housing and Urban Development (HUD) the city of East St. Louis has procured the demolition of 133 blighted structures in the past three years, but much blight still remains (City of East St. Louis, 2016, n.p.). Unfortunately, this mass demolition contributes to an increase of waste entering landfills. According to a 2013 U.S. Environmental Protection Agency (EPA) report, the Milam Recycling and Disposal Facility in East St. Louis ranked fifth in the state for waste receipt. According to the report, “three St. Louis Metropolitan East facilities received almost 18.3 percent of solid wastes disposed of in landfills statewide” (U.S. Environmental Protection Agency, 2013, p. 1). The report claims that only 16 years’ worth of landfill life remain in the East St. Louis metropolitan area and that a new landfill is proposed to be opened within the next couple of years.

## **1.2 Purpose of Research**

According to the National Association of Home Builders (NAHB) Research Center (2001), deconstruction is currently being used as a means of economic development for communities. The purpose of this research is to determine if it feasible for a deconstruction nonprofit to be implemented in the community of East St. Louis. It is important to conduct a

feasibility study to identify entrance barriers as well as conditions that may suggest a successful entrance into the market for any firm, including a nonprofit organization (Bain, 1959). For the purpose of this study, the market is the city of East St. Louis and the surrounding metropolitan area. If feasible conditions exist, this study may lead to the development of a business plan, and possible implementation of, a deconstruction nonprofit in the community of East St. Louis that aids in community development by deconstructing condemned, abandoned, and foreclosed structures. Reclaimed materials would be diverted from landfills and sold to the public at discounted prices. It is also likely that the deconstruction nonprofit would provide economic benefit to the residents of the area through the teaching of deconstruction technology which in turn would provide community members with quality craftspeople skills.

Additional benefits could be gained by this study. The methods of this study could be used by researchers, practitioners, and public policy decision makers as a way of determining feasibility of implementing a deconstruction nonprofit, but also as a means of selecting what type of nonprofit to put into action. Furthermore, the results of this study may demonstrate to community leaders that deconstruction is one viable means assisting to revitalize or develop a community.

### **1.3 Identification of Stakeholders**

According to Stringer (2007), “incorporating the perspectives and responses of key stakeholders as an integral part of the research process” (p. 20) as action research calls typically requires much collaboration to gain a full understanding of what is necessary to come to an efficient resolution to the problem at hand. Greenwood and Levin (2007) concur with these ideas. They suggest that action research involves “local stakeholders as full partners in mutual learning processes” (p. 1). Multiple researchers assert that action research is typically

community-based (Greenwood & Levin, 2007; Stringer, 2007). For this study, members of the community, particularly public administrators and community leaders of East St. Louis who desire to see the city develop and prosper, are considered stakeholders.

#### **1.4 Research Questions**

According to Creswell (2012), the purpose of a research questions is to guide a study by narrowing and focusing the purpose of the study to definitive questions that the researcher seeks to answer. The central question for this study is:

Is it feasible to implement a nonprofit organization in East St. Louis, Illinois with a mission of deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community?

As the study is qualitative in nature, the following procedural subquestions specify the steps in analyzing the data:

PSQ1: What factors and challenges exist in East St. Louis that may influence the feasibility of implementing a deconstruction nonprofit?

PSQ2: What are the main challenges in meeting the mission of a deconstruction nonprofit?

PSQ3: Are public policies in place in the community that support deconstruction practices or waste reduction?

PSQ4: Is revitalization a goal of the community?

PSQ5: Is public sector funding available to support deconstruction activities?

PSQ6: Is there a demand for either low-cost, low-quality reused materials or high-end repurposed materials in the area?

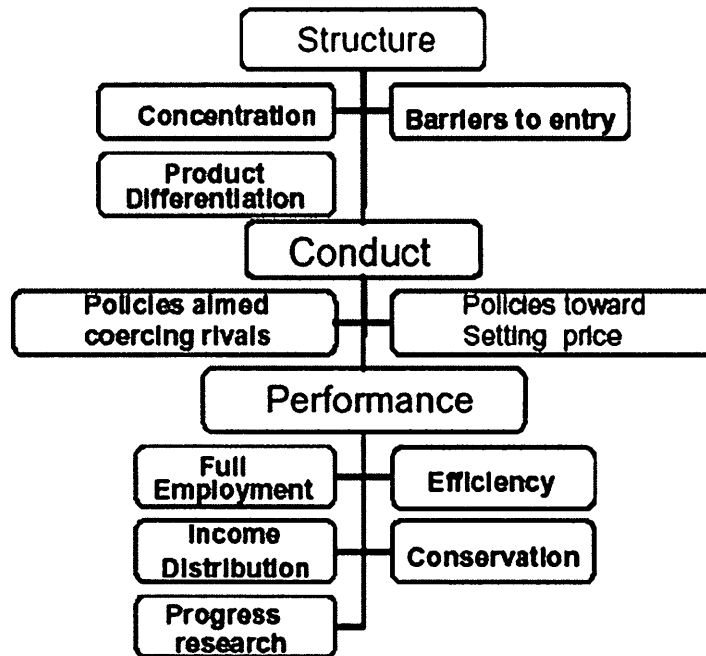
The procedural subquestions are drawn from previous research conducted by a study completed National Association of Home Builders (NAHB) Research Center (2001). The study explains challenges and barriers of deconstruction firms as well as what factors play a role in the “feasibility of using deconstruction as a vehicle for economic development” (NAHB Research Center, 2001, p. v). The report explains the necessity for understanding the factors and challenges to be faced by newly implemented deconstruction firm so that they can either be overcome or one could make the decision that it is not feasible to implement the firm in a particular area. The report also highlighted the importance of public policies being in place that supports deconstruction services as well as public sector funding and revitalization being a concern for the community. Finally the report demonstrates that a deconstruction firm cannot be sustainable with a demand for either low-cost, low-quality reused materials or high-end repurposed materials in the area, or both.

### **1.5 Theoretical Framework**

As previously stated, a significant portion of this study is the examination of the market conditions of East St. Louis, Illinois to determine if it is feasible to implement a deconstruction nonprofit focused on developing the community through the careful dismantling of condemned, abandoned, and foreclosed structures. As such, the Structure, Conduct, and Performance paradigm of the Industrial Organization Theory by Bain (1959) establishes the framework for this study. According to Tirole (1998), “to study industrial organization is to study the functioning of markets” (p. 1). Bain’s (1959) Structure, Conduct, and Performance paradigm suggests that market structure determines conduct, which in turn yields performance. Bain (1959) emphasized the necessity to study the market, especially behaviors and entrance barriers. A full understanding of the market allows for one to determine whether it is feasible to standup

an organization and what barriers may exist for entry into the marketplace (Bain, 1959). Figure 1 below depicts Bain's (1959) Structure, Conduct, and Performance paradigm.

*Figure 1: Structure, Conduct, and Performance Paradigm*



(Rodríguez & Lewis, 2005)

This particular study focuses on the market structure portion Bain's (1959) Structure, Conduct, and Performance paradigm to determine the feasibility of implementing a deconstruction nonprofit in East St. Louis, Illinois. The market structure includes supply and demand concentration, barriers to entry, product differentiation, and economies of scale (Bain, 1959). By understanding the market structure, one is able to determine the appropriate type of organization to implement and, in turn, determine if it likely to successfully perform.

## 1.6 Operational Definitions

**Blight.** According to Gordon (2003), blight is "any one of a number of conditions, including buildings which were substandard, unsafe, insanitary, dilapidated, or obsolescent,

discontinued industrial uses, unimproved vacant land "not likely to be developed through the instrumentality of private capital, and lack of proper utilization" (p. 312).

**Deconstruction.** Deconstruction is defined as 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" (Delta Institute, 2012, p. 6). Deconstruction is labor intensive, but an environmentally friendly process as it reduces construction and demolition materials from waste streams (Leroux & Seldman, 1999).

**Non-structural Deconstruction.** Non-structural deconstruction is a form of deconstruction that does not involve the complete removal of a structure (NAHB Research Center, 2001). This type of deconstruction is commonly referred to as skimming or partial deconstruction. Non-structural deconstruction is prevalent in renovation projects to save materials such as cabinets, appliances, flooring, fixtures, and many more items to be reclaimed and resold.

**Structural Deconstruction.** Structural deconstruction is a form of deconstruction that does equate to the complete removal of a structure (NAHB Research Center, 2001). This type of deconstruction removes all construction materials from a site to include framing, roofing, brick/masonry, rafters, beams, and floor joists.

**Used Building Material Retail Operations (UBMRO).** UBMROs are a retail store for reclaimed materials extracted from deconstruction projects (Chini & Bruening, 2003). The most common UBMRO is the Habitat for Humanity ReStore (Delta Institute, 2012).

The next chapter of the study is a review of current literature regarding deconstruction services and the benefits it provides to a community, to include the removal of blighted structures. Literature is examined regarding the demand for services as well as what type of

services exist to date. Also examined is literature regarding the appropriate implementation of deconstruction services.



## **Chapter 2. Literature Review**

This literature review represents relevant material spanning from sources including books, peer reviewed journal articles, scholarly journals, nonprofit and public reports, and research studies. The review was an examination of relevant literature regarding deconstruction practices and initiatives. The purpose is to contribute to the understanding of the study by providing a foundation what deconstruction is, its benefits, its impacts, what barriers exist, and how deconstruction nonprofits operate in differing market conditions.

### **2.1 Process of Deconstruction**

According to the Delta Institute (2012), “deconstruction 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” (p. 6). Much of today’s society is familiar with the term demolition, which is a highly mechanized method of tearing down buildings and other structures (Leroux & Seldman, 1999). This method requires much capital and generates a lot of waste; deconstruction on the other hand, is very labor intensive, does not require much machinery, and is very environmentally friendly. In the end, both processes achieve a cleared site that can be prepared for new construction. The main difference, however, is that all waste from demolition is typically sent to landfills, while approximately 75-90% of materials that have been deconstructed can be reclaimed and resold (Leroux & Seldman, 1999, p. 3).

According to Leroux and Seldman (1999), deconstruction is not a new idea. In fact, prior to the development of heavy machinery, deconstruction was the only process of taking apart a structure. Recently, there has been a push from local, state, and federal governments as environmental and economic benefits are being realized; legislation is being passed in support of

deconstruction as well as a push for contacts and grant funding. Furthermore, a demand exists for many reclaimed products to be used in new construction and renovations.

how deconstruction nonprofits operate in differing market conditions.

## **2.2 Deconstruction Reduces Waste Stream**

A review of deconstruction literature quickly reveals that reducing waste entering our landfills is the number one benefit of choosing deconstruction. According to the American Institute of Architects (2008) construction and demolition (C&D) debris consume “anywhere from 25 to 40 percent of the national solid waste stream” (n.p.), which is more than any other contributor. The Construction and Demolition Recycling Association (2015) estimates that “more than 325 million tons of recoverable construction and demolition materials” (n.p.) are generated annually in the U.S. According to the U.S. Environmental Protection Agency (EPA) (2009), 40 percent of all C&D material is “reused, recycled, or sent to waste-to-energy facilities” (p. 1) while the other 60 percent is sent to landfills, which would mean that approximately 195 million tons of C&D material enter landfills every year. These numbers would indicate that the amount of C&D materials entering into landfills are on the rise. In comparison, a 2003 study by the EPA reflected 52 percent of all C&D materials were sent to landfills equating to approximately 170 million tons, which rose from 135.5 million tons in 1996 (U.S. Environment Protection Agency, 2009, p. 18).

Table 1 below reflects the amounts of C&D materials by sector that entered U.S. landfills in 2003. As reflected in the table, renovation projects accounted for 71 million tons of C&D materials that entered landfills in 2003, whereas demolition projects accounted for 84 million tons. Nonresidential demolition was responsible for the largest amount of C&D debris with 65 million tons.

*Table 1: 2003 Construction and Demolition Materials Entering Landfills*

Source	Residential		Nonresidential		Totals	
	Million tons	Percent	Million tons	Percent	Million tons	Percent
Construction	10	15%	5	5%	15	9%
Renovation	38	57%	33	32%	71	42%
Demolition	19	28%	65	63%	84	49%
Totals	67	100%	103	100%	170	100%
Percent	39%		61%		100%	

(U.S. Environment Protection Agency, 2009, p. 17)

According to the EPA (2009), demand for construction, renovation, and demolition projects continues to grow. The EPA (2009) estimates that 3.3 billion tons of C&D debris will be generated over the next 50 years which will likely have a long-lasting environmental impact (p. 1). Deconstruction can not only greatly reduce the amount of C&D debris that enter landfills and takes up valuable land space, but it also reduces the strain on virgin resources through the repurposing of the reclaimed goods. Every window, door, or cabinet that is repurposed reduces the need for new lumber.

### **2.3 Other Benefits of Deconstruction**

There are multiple benefits to be had by deconstruction efforts beyond reducing the amount of materials that enter the waste stream. The benefits include positive environmental, economic, and social impacts to society. Many reports exist explaining the numerous benefits deconstruction. Table 2 below highlights the advantage and disadvantage differences between deconstruction and demolition.

*Table 2: Comparison of Deconstruction vs. Demolition – Advantages and Disadvantages*

	<b>Advantages</b>	<b>Disadvantages</b>
<b>Deconstruction</b>	<ul style="list-style-type: none"> <li>• Decrease waste</li> <li>• Create local, low skilled, green jobs</li> <li>• Create green business opportunities</li> <li>• Supply affordable renovation products</li> <li>• Generate revenue from material resale</li> <li>• Save disposal and transportation costs</li> </ul>	<ul style="list-style-type: none"> <li>• 15 to 30% higher in cost</li> <li>• 2 to 10 times longer in project duration</li> <li>• Require a larger crew (4 to 8 members)</li> <li>• Few local suppliers to choose from</li> </ul>
<b>Demolition</b>	<ul style="list-style-type: none"> <li>• Lower cost</li> <li>• Shorter project duration</li> <li>• Require only 2-member crew</li> </ul>	<ul style="list-style-type: none"> <li>• Increase waste volume by 30 to 70%</li> <li>• Require high capital investment in machinery and highly skilled operator</li> <li>• Lack of green job or business opportunity creation</li> </ul>

(Dan, 2013, p. 3)

The above chart reflects that while deconstruction services offer more advantages than demolition, the cost, project time, and labor force is somewhat greater. The primary advantages of deconstruction is a decreased waste stream and creating local, low-skilled job opportunities. One must also recognize other benefits of deconstruction as stated below.

### **2.3.1 Environmental Impacts Beyond Waste Stream Reduction**

As previously stated, deconstruction efforts typically require much less machinery than demolition projects. This equates to a reduced spread of dust emissions and “contaminants such as lead-based paint, mercury, refrigerants, paint and oil” (Fieber, 2009). Furthermore, a reduced amount of machinery means that less fossil fuels are used and less greenhouse gases are emitted. According to Telander (2014) deconstruction projects in Detroit reduced the spread of 147,420 pounds of carbon dioxide entering the air.

### **2.3.2 Social Impacts**

Deconstruction is less disturbing and upsetting to communities versus demolition (Fieber, 2009). Demolition creates unwanted noise, increased traffic, and spread of pollutants. A significant goal of deconstruction is to minimize disturbance through the maximum use of hand labor and tools (Guy, 2003). Deconstruction also allows for community involvement through volunteer opportunities (Leroux & Seldman, 1999).

Deconstruction does more than just tear down communities, it serves to preserve the rich history of community (Guy, 2003). Telander (2014) conducted a case study demonstrating the benefit gained from deconstructing in Detroit, Michigan versus utilizing demolition services. The study reflected that materials such as brick and wood from mid-century homes were popular amongst home owners looking to do renovation projects. A sense of pride is gained through the repurposing of community materials.

Telander (2014) found deconstruction to be a community effort. Not only did members of the community volunteer services, but multiple nonprofit and public agencies partnered together to ensure success of deconstruction projects. Not only did volunteers play a key role, but many local grants and donations were received to fund projects.

### **2.3.3 Economic Impacts**

Deconstruction provides employment opportunities. According to Leroux and Seldman (1999), deconstruction may provide as much as 10 to 15 times more labor than traditional demolition (p. 5). A great benefit of deconstruction is that unskilled and low-skilled laborers can “can receive on-the-job training in use of basic tools and techniques for carpentry, construction, and materials recovery, as well as critical thinking, problem-solving, good work habits, and team work” (Leroux & Seldman, 1999, p. 11). Deconstruction activities increase employment

opportunities for positions such as Deconstruction Workers, Reclaimed Building Materials Retail Associates, and craftspeople who repurpose reclaimed materials (Delta Institute, 2012). The case study by Telander (2014) further suggests that employment opportunities opened up in the fields of construction, demolition, and asbestos removal for former deconstruction project volunteers. Deconstruction serves as an excellent educational or vocational experience in basic use of hand tools, construction techniques, and engineering processes (Kaufman, Rios, & Geroy, 2010).

The below list demonstrates who economically benefit the most from deconstruction and how –

- Property owners can obtain a tax deduction by donating materials or gain income from reselling materials;
- Remodelers can get a large stream of quality materials at lower costs;
- Traditional demolition contractors can use deconstruction as an additional or new revenue source;
- Architects, engineers and design professionals can innovate designs and find cost reductions by incorporating reclaimed building materials, that can also help achieve Leadership in Energy and Environmental Design (LEED) points;
- General contractors can use deconstruction to meet LEED requirements, gain a competitive edge from reduced waste fees and obtain valuable materials for resale;
- Developers can save money, reduce environmental impacts, contribute toward community development and potentially command higher prices given the reuse aesthetic in new design trends; and

- Cities and local governments can help improve management of solid waste, meet C&D waste diversion and recycling objectives, and redevelop brownfields and other vacant properties thereby increasing sales and real estate tax revenues (Delta Institute, 2012, p. 7).

#### **2.4 Deconstruction as a Means of Blight Removal**

Of much importance to this study is the fact that deconstruction serves as a useful tool in the removal of unsightly blight in order to assist in the development of the community. While demolition is a proven method of blight removal, deconstruction is the preferred method recommended by the Detroit Blight Removal Task Force (2014). By deconstructing condemned, abandoned, and foreclosed structures, communities are being cleaned up and development can occur. In September 2013, the city of Detroit received \$300 million in federal funding to address key concerns, to include blight removal. At that time the Detroit Blight Removal Task Force (2014) was created from a mix of “private, philanthropic, nonprofit, federal, and state” (p. 2) to develop a plan to address every blighted structure within the city. By May 27, 2014 the plan was developed and recommendations were presented to the leaders of the city.

The Detroit Blight Removal Task Force (2014) found that 84,641 of 377,602 properties surveyed either met the task force’s definition of blight or presented indicators which required intervention (pp. 52-53). Of the 84,641 blighted properties, 78,506 structures existed the needed intervention; 98 percent of the structures were neighborhood homes (Detroit Blight Removal Task Force, 2014, pp. 132-134). Knowing this information, the task force considered four major activities to resolve the neighborhood blight issues, which include:

- Environmental measures
- Deconstruction opportunities

- Demolition needs
- Recycling potential (Detroit Blight Removal Task Force, 2014, p. 135)

While the Detroit Blight Removal Task Force (2014) concurred the preferred method of blight removal is deconstruction for a number of reasons already explained above, the task force recommended plan was that only ten percent, or about 7,000 of the blighted structures be partially deconstructed (p.149). This recommendation was made based on the realization that the current market conditions of the community from a resale perspective could only handle about ten percent of the materials that could be reclaimed from deconstruction projects (p. 149). Furthermore, the decision was based on available funding, where demolition per structure was found to be between \$8,500 to \$16,000 per structure, deconstruction projects could be between 10 to 50 percent higher depending on whether it would be a full deconstruction or partial deconstruction followed by demolition (pp. 134-150).

The plan by the Detroit Blight Removal Task Force (2014) would require five years to remove over 72,000 blighted structures (p. 182). This plan creates over 430 job opportunities, of which 32 positions would be created for deconstruction projects to partially deconstruct 7,000 blighted structures (p.182). Furthermore, the deconstruction projects would lead to partnering and aid in sustaining seven nonprofit agencies within the city.

The actions being taken in Detroit are being noticed by other communities and nonprofit agencies. The Delta Institute (2015) is currently working the city of Gary, IN to deconstruct between 12-24 blighted homes (n.p.). The Delta Institute (2015) has high hopes for the deconstruction projects and wishes to create a financial guide at the completion of the projects to assist communities to determine if deconstruction is economically viable for them. Moreover,



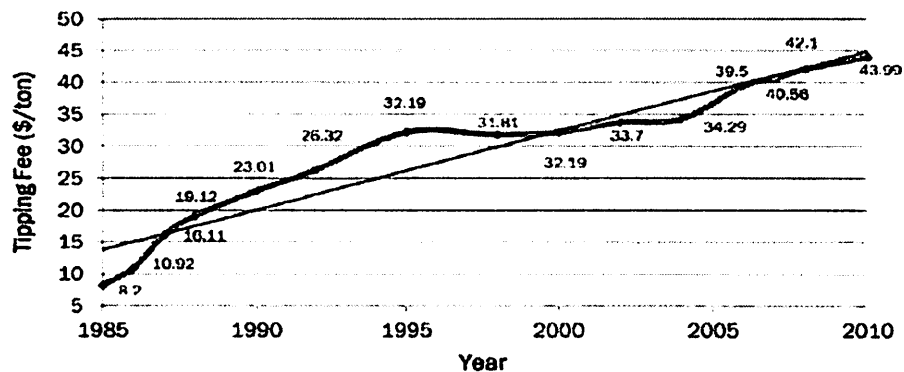
Delta Institute (2015) hopes that more deconstruction projects occur in the future in the city of Gary as a result this initiative.

### **2.5 Increased Demand for Deconstruction**

The 2012 Delta Institute study suggests that there are four primary reasons for increased demand for deconstruction services: (1) a movement towards green building, (2) rising landfill costs, (3) a rise in vacant and abandoned property, and (4) government policies, regulations and programs (pp. 9-13). The Delta Institute (2012) contends that since the inception of LEED practices launched by the U.S. Green Building Council in 1998 there is a continual demand for the building of green structures which adds to the use of reclaimed or recycled materials. According to the EPA (2016), “green, or sustainable, building is the practice of creating and using healthier and more resource-efficient models of construction, renovation, operation, maintenance and demolition” (n.p).

It has previously been stated that the greatest benefit of deconstruction is reducing waste entering landfills. This is important as landfill fees have climbed mightily over the three decades (Delta Institute, 2012). This hike in fees can be greatly attributed to diminishing landfill space and increased taxes and surcharges. Figure 2 below shows the average rise in national landfill fees from 1985 to 2010.

Figure 2: Average National Rise in Landfill Tipping Fees from 1985 to 2010

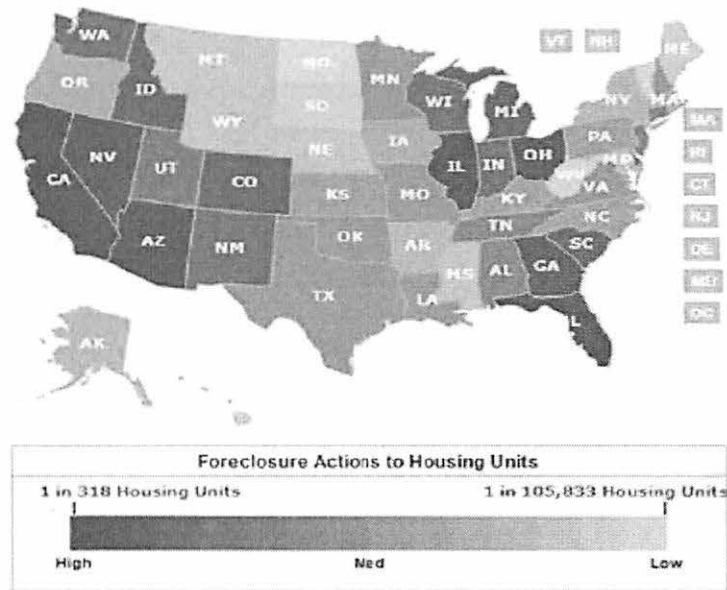


(Delta Institute, 2012, p. 10)

In recent years the number of vacant properties has been on the rise. According to Leonard and Mallach (2010), today's vacancy rates are about 3 percent, while rental vacancies are approximately 11 percent (p. 9). It is important to note that there is a difference between vacant properties and abandoned properties. According to Leonard and Mallach (2010), vacant properties are either on the market for sale or rent, but currently uninhabited, whereas, the U.S. Census Bureau titles vacant properties that are abandoned as "other vacant properties" (p. 12). The number of these properties have greatly risen. The number other vacant properties between 1970 and 2000 "more than doubled, going from just under one million units to 2.3 million (Leonard & Mallach, 2010, p. 10). Between 2000 and 2008, this number nearly more than doubled and reached "4.7 million, or one of every 28 dwellings" nationally (Leonard & Mallach, 2010, p. 10). As previously stated, deconstruction services as a mechanism for eliminating abandoned properties. According to the Delta Institute (2012), the number of abandoned structures is attributed to the trending rise in foreclosures as a result of our nation's recent recession attributed to the housing crisis. Figure 3 below reflects the number of foreclosure

actions compared to housing units recorded in August 2012. It is noted the state of Illinois recorded one of the highest rates.

*Figure 3: Foreclosure Map, August 2012*



(Delta Institute, 2012, p. 11)

Government policies, regulations and programs also play a role in the increased demand for deconstruction services (Delta Institute, 2012). Local recycling ordinances and requiring green or LEED-related building have increased the amount of deconstruction projects. For example Cook County passed an ordinance in 2012 that requires “70% of all commercial and residential demolition material be recycling, with an additional 5% reuse requirement for residential projects” (Delta Institute, 2012, p. 13).

## 2.6 Barriers to Deconstruction

According to Guy (2003), the primary barrier to deconstruction is not having a market for the reclaimed materials before the deconstruction project begins. There are multiple reasons for a lack of demand for reclaimed products. According to a 2009 report by the EPA, many markets do not have a high regard for reclaimed materials as they view them to be low-quality. Many

markets prefer high-quality virgin materials over what consumers may consider as waste products, even though the EPA claims, in many cases, that reclaimed materials are far superior due to construction practices of the past.

Another significant reason for a lack of demand within a market is a lack of discretionary income to renovate homes (Baker, 2016). Although renovation projects are rebounding from a sharp decline following the recent recession, lending for home renovations remains difficult to attain. Baker (2016) asserts that home renovation projects today are heavily reliant on cash, with an expected 70% of home renovations from April 2015 to April 2016 to be funded by cash payments (p. 15).

According to 2001 study by the National Association of Home Builders (NAHB) Research Center, there are multiple reasons consumers may choose not to use reclaimed material in either home renovations or new construction. One reason is simply that the reclaimed materials may not fit properly within the structure. For example, reclaimed cabinets may not meet the necessary dimensions to fit with the existing space. Another issue is a lack of supply. While a customer may desire a particular product, there may not be enough of that reclaimed product available to fit within the area needed. Furthermore, the product may not match or coincide with the other décor, which could potential decrease the value of the home or building. It takes time and resources to find the right materials and fit them properly within a home, this may be “impractical for low-income housing projects” (NAHB Research Center, 2001, p. 28). The final issue addressed the NABH Research Center (2001) is that reclaimed materials may not be appropriate “due to strict code requirements” (NAHB Research Center, 2001, p. 28).

### **2.6.1 Contractor's Negative Perceptions of Using Reclaimed Products**

According to the NAHB Research Center (2001) many contractors have a negative perception of using reclaimed products for the following reasons:

- Expense – too expensive due to labor costs, transportation, and storage issues;
- Economy of Scale – not cost effective for demolition contractors unless there is a large quantity of material that can be resold;
- Market – inconsistent resale market for materials;
- Safety and Environmental Concerns – handling material manually may increase company worker compensation rates and liability; and
- Competition – demolition contractors and salvage businesses compete over project time and the revenue generated from material salvage (p. 28).

The EPA (2009) adds to safety and environment concerns by stating that many middle century homes may have been built with “harmful materials, such as asbestos, lead-based paint (LBP), and polychlorinated biphenyls (PCBs)” (p. 21). According to the 2009 EPA report, as many as 38 million homes may still have LBP somewhere in the structures (p. 21). The time and cost to deal with these harmful materials can significantly outweigh any potential gains to be had by any products that may be reclaimed from the structure.

### **2.7 Structural versus Non-Structural Deconstruction Firms**

In 2001, the NAHB Research Center completed a study on behalf of the U.S. Department of Housing and Urban Development, Office of Policy Development and Research to examine the feasibility of deconstruction throughout the United States. The report was based on qualitative case study research of ongoing deconstruction activities in four urban communities: El Paso, TX; Miami, FL; Milwaukee, WI; and Nashville, TN. The study described “the conditions under

which deconstruction is likely to work, and the barriers – economic, organizational, and public policy – that must be overcome for it to be a viable part of a community revitalization strategy” (NAHB Builders Research Center, 2001). The report is not only intended to be used by public housing officials, but also community leaders as a means to determine if deconstruction could be a viable method of revitalizing their communities.

The NAHB Research Center (2001) ultimately found that there are “two basic types of deconstruction”: structural deconstruction and non-structural deconstruction (p. 4). Non-structural deconstruction is the most widely practiced form of deconstruction. The 2001 report by the NAHB Research Center explains that non-structural deconstruction is a means of stripping materials out of a structure that can be reclaimed or repurposed. This typically ranges from materials such as doors, cabinets, flooring, windows, shelving, appliances, fixtures, trim and other products that can somewhat easily be removed through the use of hand tools within a few hours or days. Non-structural deconstruction is “commonly found as a waste reduction technique in the renovation, demolition, and building maintenance industry” (NAHB Research Center, 2001, p. vii).

Structural deconstruction is the deconstruction of an entire structure through a combination of hand tools and mechanized equipment over the matter of days or weeks. (NAHB Research Center, 2001). Structural deconstruction is very labor intensive. This type of deconstruction includes the removal of joists and beams and typically requires the use of bracing or support. Structural deconstruction includes the removal of the same type of materials as non-structural deconstruction, but also adds the removal of framing, roofing, brick/masonry, rafters, beams, and floor joists.

The primary difference in structural deconstruction and non-structural deconstruction is that structural deconstruction can only exist in a market that has a high demand for demolition or total removal of a structure (NAHB Research Center, 2001). The NAHB Research Center asserts that structural deconstruction is more successful in communities with blighted structures. Non-structural deconstruction can either be employed as a hybrid means of removing a structure in combination with demolition or can be employed during renovation projects. The NAHB Research Center (2001) points out the most of deconstruction activities they examined were non-structural and employed during renovation projects. This is likely attributed to the fact that non-structural deconstruction has less barriers as this type of deconstruction “is minimally affected by code issues, project time constraints, and local housing policies” (NAHB Research Center, 2001, p. vii).

The Delta Institute (2012) explains that it launched a deconstruction nonprofit called the Rebuilding Exchange in Chicago, IL. The primary purpose of the nonprofit is to divert material from landfills and promote the reuse or repurposing of reclaimed materials. According to the Delta Institute (2012), 80 percent of Rebuilding Exchange’s reclaimed materials comes from renovation projects, whereas the other 20 percent “comes from full deconstruction projects” (p. 19).

### **2.7.1 Choosing the Appropriate Type of Deconstruction Firm for Implementation**

There are a number of factors that go into choosing what the appropriate type of deconstruction firm should be implemented within the community. The NAHB Research Center (2001) suggests the market condition of the community should drive what type of deconstruction firm should be implemented whether structural or non-structural. Of the four cities examined, non-structural deconstruction was found in all four, while structural deconstruction was limited

and only found in three cities of Madison, El Paso, and Nashville. It was noted that structural deconstruction was diminished in Miami since most homes are built with concrete block construction. Milwaukee was noted as being the number one city for structural deconstruction due the maturity of the market and the close proximity of Madison, WI and Chicago, IL with great demand for high-end reclaimed materials from both non-structural and structural deconstruction projects.

The NAHB Research Center (2001) contends that project time constraints is one of the most influential factors in determining what type of deconstruction activity should be employed. The more flexibility in the schedule to remove the structure, the greater the opportunity for structural deconstruction. If a tight timeline exists then non-structural deconstruction should be employed, but only if high-end reclaimed materials are present. If only low-end material exists, then it is more feasible to demolish the structure then to invest time, money and resources. Table 3 below depicts the relationship between deconstruction types, project schedules, and materials recovered.

*Table 3: Relationship between Deconstruction Types, Project Schedules, and Materials*

<b>Deconstruction Type</b>	<b>Tight Project Schedule</b>	<b>Moderate Project Schedule</b>	<b>Soft Project Schedule</b>
<b>Non-structural</b>	High-End Materials	High-End Materials	High-End Materials
<b>Non-structural</b>		Low-End Materials	Low-End Materials
<b>Structural</b>		High-End Materials	High-End Materials
<b>Structural</b>			Low-End Materials

(NAHB Research Center, 2001, p. 22)



Choosing the appropriate deconstruction type many times comes down to funding. The Detroit Blight Removal Task Force (2014) recommends the use non-structural deconstruction for most of its projects. In fact, the task force calls out two types of non-structural deconstruction: hybrid deconstruction and partial deconstruction (which it recommends). Hybrid deconstruction is defined similar to what was previously defined for non-structural deconstruction but is followed by demolition of the remaining structure. Partial deconstruction is defined as a quick (one to three day) removal of high-end reclaimed goods. The task force states that full structural deconstruction costs approximately 50 percent more than typical demolition, whereas hybrid deconstruction costs 25 percent more and partial deconstruction is somewhere between 10 to 12 percent higher than demolition (Detroit Blight Removal Task Force, 2014, pp. 150-151). As previously stated, the Detroit Blight Removal Task Force (2014) choose partial demolition for its cost effectiveness.

Another means of determining what deconstruction type is appropriate is the reliance on public sector funding or initiatives (NAHB Research Center, 2001; Delta Institute, 2012). Typically more involvement from the public sector equates to more flexibility in the project schedule (Delta Institute, 2012). Furthermore, public agencies are usually more amicable towards providing additional funding for deconstruction projects for the multiple benefits to be had.

## **2.8 Nonprofit Deconstruction Business Models**

A review of literature demonstrates there are three primary business models employed by nonprofits in the deconstruction industry. It is important to note that while each deconstruction nonprofit organization falls under one of the three mentioned business models, they may have a subtle differences in how they operate. The three business models are Deconstruction Agent,

Used Building Material Retail Operations (UBMRO), and Combined Deconstruction Agent and UBMRO (Chini & Bruening, 2003; McLear & Nobe, 2011; NAHB Research Center, 2001). It is also important to note that an UBMRO or deconstruction agent can be a nonprofit or for-profit firm (NAHB Research Center, 2001). It is not uncommon for a for-profit deconstruction agent to work with a nonprofit UBMRO, but it can work the other way as well. (Chini & Bruening, 2003; McLear & Nobe, 2011; NAHB Research Center, 2001).

### **2.8.1 Deconstruction Agent**

Deconstruction agents provide a fee for service (Chini & Bruening, 2003; McLear & Nobe, 2011; NAHB Research Center, 2001). They are commonly contracted to perform deconstruction services where the materials are released to an UBMRO (NAHB Research Center, 2001). Another option for nonprofit deconstruction agents are selling high demand reclaimed materials on site such as brick (Chini & Bruening, 2003).

The case study by McLear and Nobe (2011) demonstrates how the National Center for Craftsmanship (NCC), a nonprofit deconstruction agent, focuses on education of deconstruction craftspeople in order to capitalize on tax deductions and enterprise zone tax credit. Like other deconstruction agents, the NCC does not retain any reclaimed materials. The case study by McLear and Nobe (2011) demonstrates how it is beneficial for corporate property owner to utilize the services of NCC over other for-profit or nonprofit deconstruction entities and even over a demolition company. Since the property owner is a taxable entity, they can achieve greater tax deductions and credits by using NCC's services. Since NCC focuses on educating deconstruction craftspeople, the corporate entity can not only receive a deduction for donating all the reclaimed materials to an UBMRO, but also deduct a portion of the contract price for the

deconstruction services. Furthermore, any firm that contracts NCC's service can also apply an enterprise zone tax credit since NCC's office is located within an enterprise zone.

### **2.8.2 Used Building Material Retail Operations**

Simply put, UBMROs are a retail store for reclaimed materials extracted from deconstruction projects (Chini & Bruening, 2003). The Delta Institute (2012) contends that most UBMROs can be found in major metropolitan areas and typically "reuse older vacant industrial facilities that are obsolete" (p. 21). The most common UBMRO is the Habitat for Humanity ReStore which are operated within 48 states (Delta Institute, 2012, p. 31). According to the NAHB Research Center (2001), UBMROs are typically supported through non-structural deconstruction. Most of the reclaimed materials found in an UBMRO come from home renovations (Delta Institute, 2012). In fact, the Rebuilding Exchange, a nonprofit UBMRO launched by Delta Institute (2012) receives 80 percent of its supply from renovations and the other 20 percent come from structural deconstruction (p. 19). The Delta Institute (2012) report states that most demand for its materials come from industry members doing small business or residential renovations.

The NAHB Research Center (2001) study found nonprofit UBMROs in Milwaukee and Nashville. Most of the nonprofit UBMROs in the study were supported by some level of grant funding. Nonprofit UBMROs are appealing for donators as they can receive tax deductions for their donated materials. The NAHB Research Center (2001) study did state that there are a number of large UBMROs, such as Habitat ReStores, that do not receive grant funding and exist on the revenues of the sales of reclaimed goods. Nonprofits UBMRO's have an advantage over for-profits in that since all of their materials are donated, they can offer better pricing. The

NAHB Research Center (2001) study stated that “UBMROs that specialized in structural materials tended to serve a high-end market versus the non-structural low-end market” (p. 8).

Whether an UBMRO is nonprofit or for-profit, its success relies on multiple market conditions such as what type of materials are available, the climate, and retail building material prices (NAHB Research Center, 2001). According to the According to the NAHB Research study (2001), El Paso possessed the most favorable conditions of all four markets examined as the city offered –

- a thriving non-structural deconstruction industry;
- a year-round desert climate that allowed for outside storage;
- a weak economy that supported the reuse of building materials in local renovation activities; and
- a close proximity to the Mexican border (pp. 8-9)

### **2.8.3 Combined Deconstruction Agent and UBMRO**

According to the NAHB Research study (2001), combined deconstruction agents and UBMRO’s were found in three of the four cities they examined. In this combined effort, the retail operations are expected to fund the labor and resources of the deconstruction services. That being stated, the entity must be very selective as to what deconstruction projects it takes on in order to obtain a return on investment. It is likely that nonprofits that provide this combined service also receive grant funding. Besides performing deconstruction services, the UBMRO typically receives donated materials from other sources.

### **2.9 Targeting Structures for Deconstruction**

Chini and Bruening (2003) contend that not all structures are meant for deconstruction, especially for structural deconstruction. According to Chini and Bruening (2003) a structure

should be assessed to determine if it has the appropriate components to be deconstructed. The researchers stress that it is important to note that environmental concerns regarding these structures play a significant role in determining whether they are economically feasible to deconstruct. The researchers list the following building characteristics as ideal for deconstruction projects:

- Wood framed buildings using heavy timbers and unique woods such as Douglas fir, American chestnut, and old growth southern yellow pine. These components are often found in buildings that were constructed before World War II.
- Buildings that are constructed using high value specialty items such as hardwood flooring, architectural moldings, and unique doors or electrical fixtures.
- Buildings constructed with high-quality brick and low quality mortar. These will be easy to break-up and clean.
- Buildings that are generally structurally sound and weather tight. These buildings will have less rotted and decayed materials (Chini & Bruening, 2003, p. 4).

### **2.10 Conclusions Drawn from Literature**

Literature demonstrates that deconstruction offers multiple benefits ranging from reducing waste streams, reducing spread of contaminants, decreasing impact to communities, providing job opportunities, and tax deductions. Most importantly for the purposes of this study, deconstruction serves as a viable means for resolving blight (Detroit Blight Removal Task Force (2014). While there is an increased demand for deconstruction, it is important that one examines the market conditions of the community prior to implementing a nonprofit deconstruction firm (Chini & Bruening, 2003).

The feasibility study should include a review of the supply and demand that the community offers (Chini & Bruening, 2003; NAHB Research Center, 2001). The study should, at a minimum, ask the following questions:

1. What does the market supply, high-end reclaimed materials or low-end?
2. Does the supply meet the demand for either high-end or low-end reclaimed products?
3. Is the supply of structures appropriate for deconstruction?
4. Is there either a high supply of demolition or renovation projects?
5. What are the time constraints for the majority of ongoing projects?
6. What barriers to deconstruction exist within the community?
7. Is there public support and funding in the community available?
8. What is the public perception in the community of using reclaimed materials?
9. Is there a need for low-skill job training programs within the community?

The above questions are appropriate in determining what type of deconstruction nonprofit is appropriate, either structural or non-structural. Furthermore, they will assist in the determination of what business model is appropriate: Deconstruction Agent, Used Building Material Retail Operations (UBMRO), or Combined Deconstruction Agent and UBMRO (Chini & Bruening, 2003; McLearn & Nobe, 2011; NAHB Research Center, 2001). It is certain that understanding the market conditions of the operational environment is vital to the success of a deconstruction nonprofit.

The next chapter will provide a description of the qualitative research methodology and case study design utilized in this study. The study's research setting along with population and sample will be presented. Chapter 3 will include a description of the data collection and analysis

procedures. The credibility, transferability, dependability, and confirmability of the study will be addressed, along with the researcher's role and ethics of the study.

## **Chapter 3. Methods**

This chapter details the design of the research and the methodology used to answer the central question and procedural subquestions asked in Chapter 1. This chapter will discuss the research setting, population/sample, data collection methods, how the data will be analyzed, the explanation as to the validity of the research, the role of the researcher, and the steps taken in the research process to ensure ethical procedures were followed. Overall, the methodology used will provide data to determine if it is feasible to implement a nonprofit organization in East St. Louis, Illinois with a mission of deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community.

This is a qualitative action research study and, as such, the three elements of action, research, and participation must be present (Greenwood & Levin, 2007). This research is about social change; a problem of blight in East St. Louis has been identified and this research may lead to a unique, environmentally and economically sound approach to resolve the problem. Creswell (2012) contends that action research should seek to improve the lives of the community being examined. While theory is considered, a primary objective of action research is to examine and understand how social behavior plays a role in developing an appropriate solution to a community-based problem (Stringer, 2007).

### **3.1 Research Setting**

As depicted in Figure 4 below, the city of East St. Louis is located directly east across the Mississippi River from the city of St. Louis (City of East St. Louis, 2016). The city is strategically located between four major interstates: I-70, I-64, I- 55, and I- 255. East St. Louis consists of 14 square miles with access to a major metro system coming and going out of the city of St. Louis and is nearby to multiple metropolitan airports (City of East St. Louis, 2016, p. n.p.).



Figure 4: Boundary Map of the City of East St. Louis, IL



(MapTechnica, 2016)

The demographics of the city of East St. Louis further illustrates the problem described in Chapter 1 of the study. According to the U.S. Census Bureau (2016), the population of East St. Louis, IL is 26,672 persons in 2014 (n.p.). Ninety-eight percent of the city's population is African-American and 79 percent of the population possess a high school graduate level or higher. The median household income for the city is \$19,856, compared to \$56,166 for the entire state of Illinois (n.p.). In the city of East St. Louis there is an estimated amount of 12,961 housing units, 20 percent of which, or 2,593 units, are vacant (n.p.). While 20 percent is less than the 30 percent of vacant homes that can be found in Detroit, Michigan, it is significantly higher than the 9.8 percent of vacant homes overall for the state of Illinois (n.p.). It is important

to note that of the 12,961 housing units, 9,912 of those units, or over 75 percent, were built prior to 1970 (n.p.). In fact, just over 40 percent of East St. Louis homes were built prior to 1950.

As stated in Chapter 1, the limited taxable population base with poverty level incomes combined with a significant number of abandoned homes is problematic for the city (Hou, 2010). While the city has faced industrial decline and population loss over the years, it is working to revitalize the community through HUD grant funds (City of East St. Louis, 2016). Those grant funds have led to the demolition of 133 blighted structures in the city. (City of East St. Louis, 2016, n.p.).

### **3.2 Population/Sample**

Stringer (2007) contends that community-based research should examine all affected persons and entities and that the term “‘community’ is not a neighborhood or a suburb, but a community of interest” (p. 6). In this particular study, the impact of the research affects more than the citizens of East St. Louis, it also affects other deconstruction nonprofits, potential deconstruction nonprofits and their partners. In action research is important not only understand the perspectives of key stakeholders, but to build lasting working relationships. This study not only includes input from local and county public officials, but deconstruction nonprofit practitioners from across the nation. This study impacts other current and potential deconstruction nonprofits in that it provides validity to deconstruction as a method of blight removal, along with the other benefits garnered, and offers a protocol of evaluating the feasibility of implementing deconstruction nonprofits in untapped markets.

Beyond interviews with key stakeholders of the local area and nation-wide deconstruction practitioners, a single case study will be conducted of Refab, a St. Louis, Missouri deconstruction nonprofit with a mission of promoting “the collective and creative re-

use of our built environment” (ReFab, 2013). According to Yin (2014), a single-case study is appropriated when it meets most of the five following rationales: (1) critical, (2) unusual, (3) common, (4) revelatory, or (5) longitudinal. This case-study meets four of the five rationales. It is critical in that it aligns with theoretical framework of the study. This case study will provide a look into the organization’s business model and how it fits into the St. Louis market as well as provide regional understanding of the mission challenges being faced on a daily basis. This case study is common in that in that it shines a light on everyday occurrences and conditions faced by deconstruction nonprofits. The case study is revelatory in that it provides access to a deconstruction nonprofit and market that has not been previously examined. Lastly, the case study is longitudinal in that the organization is examined multiple times over the lifetime of the research project.

### **3.3 Data Collection**

This study includes two concurrent phases of data collection including semi-structured interviews of city public officials and nation-wide deconstruction nonprofit practitioners as well as a single-case study of Refab. Having multiple sources of data provides for a thorough study in that a broader array of perceptions, opinions, and evidence is gathered (Yin, 2014). This allows a researcher to triangulate data and increases the reliability of the information in the study.

#### **3.3.1 Case Study**

The single-case study of Refab allows the researcher to link operational factors of the operation to market conditions. Yin (2014) illustrates this as explanation building in where the researcher examines data gathered compared to the initial theoretical framework to understand why that condition came to be. The information may even cause the researcher to revise the theoretical proposition.

As recommended by Yin (2014), a triangulation of data, or collection of multiple data sources, is applied to the case-study. Data collection methods include direct observation, reviewing business documents, and conducting open-ended interviews with organizational leadership and employees. According to Yin (2014) “multiple sources of evidence essentially provide multiple measures of the same phenomenon” (p. 121).

### **3.3.2 Semi-Structured Interviews**

This study includes semi-structured interviews with city public officials as well as with deconstruction nonprofit professionals. Semi-structured interviews are optimal for a feasibility study as while the researcher already has a predetermined amount of open-ended questions, other questions may emerge from the exchange (DiCicco-Bloom & Crabtree, 2006). This form of interviewing allows for a personal encounter with an open and direct dialogue. Being somewhat structured in nature, the prepared questions allow the interviewer to remain on topic. In-depth interviews of differing individuals with diverse functions allow for qualitative data from unique perspectives. The questions are designed to solicit a personal response from each interviewee.

The interviews with public officials are a means of gathering data regarding public policies and practices that may or may not support deconstruction, the availability of public funding in the community, and challenges that may exist specific to the city of East St. Louis. Interviews with deconstruction nonprofit professionals are a means of gathering data regarding current deconstructing nonprofit business models, what makes them successful in their markets, and what challenges are faced by many deconstruction nonprofits nation-wide.

### **3.4 Data Analysis**

As previously stated, data gathered regarding the case study will be analyzed using an explanation building technique recommended by Yin (2014). The data gathered will be analyzed

to explain how the St. Louis market shaped the nonprofit model employed at Refab and then compare it to the East St. Louis market. Yin (2014) explains the process as:

- Making an initial theoretical statement or an initial explanatory proposition
- Comparing the findings of an initial case against such a statement or proposition
- Revising the statement or proposition
- Comparing other details of the case against the revision
- Comparing the revision to the findings from a second, third, or more cases (if applicable)
- Repeating this process as many times as needed (p. 149).

Each of the interviews are transcribed to allow the researcher a means of sifting through all the available data to find similarities and differences. The data is coded and categorized based on relationships (Schutt, 2012). This information is captured on a matrix to identify themes in which the researcher can draw conclusions.

### **3.5 Credibility/Transferability/Dependability/Confirmability**

Lincoln and Guba (1985) developed four factors in order to evaluate the trustworthiness of a qualitative research study. These four factors are Credibility, Transferability, Dependability, and Confirmability. Credibility of a study lends itself to the integrity or truthfulness of the study. Credibility can be ensured by multiple means. This study utilizes prolonged engagement with sources, to include detailed and comprehensive interviews along with a persistent case study with data captured over a period of time. Furthermore, the study utilizes multiple sources in order to triangulate the data.

Yin (2014) contends that for a study to be reliable, another researcher must be able to understand the evidence, the method being used, and be able to repeat the study. Lincoln and

Guba (1985) labels this as Transferability, or the ability for another researcher to apply the outcomes of the study to another study. While action research outcomes apply in particular to the community or population being studied, the method used or the outcomes may be applicable in future studies. One purpose of this study is for nonprofit professionals or public officials to be able to utilize the evidence of this study to determine if it is feasible to implement a deconstruction nonprofit in any particular community. In order for a study to be transferable, it must be dependable. This means that the findings are consistent and the research methods were followed.

Lastly, is Confirmability in which it must be ensured that the findings of the study are a result of information and experiences provided by informants, rather than the bias of the researcher (Lincoln & Guba, 1985). This can be assured through a transparent audit trail or external audit by another researcher. The role of researcher also is significant in ensuring the bias of the researcher is not injected in the findings.

### **3.6 Clarification of Researcher Role/Power**

According to Denzin and Lincoln (2003), the role of a qualitative study researcher is much different than the role of a quantitative researcher. The role of quantitative researcher is theoretically non-existent, whereas a qualitative researcher is considered as an instrument of collecting data. According to Stringer (2007), a quantitative researcher is a facilitator of the research process “who acts as a catalyst to assist stakeholders in defining their problems clearly and to support them as they work toward effective solutions to the issues that concern them” (p. 24). The researcher should stimulate conversation regarding the research problem.

For this study, the researcher is outsider, meaning the researcher plays no role in any participating entity or organization (Corbin-Dwyer & Buckle, 2009). This is important as it

reduces the likelihood of bias on the part of the researcher. A negative, however, to being an outsider is that it is more difficult to gain access to the desired participants.

### **3.7 Ethics**

One thing all must researchers must ensure is to take the appropriate steps to not harm participants. For this study, each participant was asked to read and sign a consent form in order to participate in the research. All participants were about the purpose and processes of the study. Each participant was informed that they there participation was voluntary and has the right to refuse to participate or withdraw at any time. They each were assured that their provided data would be confidential and safely stored. Lastly, each participant was notified that their personally identifiable data would not be revealed in the study without explicit and written consent.

The next chapter will reflect the themes emerged from the interviews held as well as data gathered from the case study of Refab. The themes identified in Chapter 4 will be used to draw appropriate conclusions of the study. Overall, the next chapter will provide a qualitative summary of the study results derived from the established data collection procedures.

## **Chapter 4. Results**

Chapter 4 presents the themes that emerged from the data gathered through both qualitative, semi-structured interviews and the case study of Refab. The study sought to examine if it feasible to implement a nonprofit organization in East St. Louis, Illinois with a mission of deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community. Interviews were conducted with professionals spanning from five different deconstruction nonprofits across the nation as well as public officials from the city of East St. Louis, IL. Data from the case study of Refab was captured over a six month time frame and included collection methods such as direct observation, reviewing business documents, and conducting open-ended interviews with organizational leadership and employees as recommended by Yin (2014).

### **4.1 Background of Refab**

Refab was founded in the Fall of 2012 as a matter of opportunity meeting market demand. The nonprofit's founder, who currently serves as the Executive Director of Refab, previously worked as an employee of another nationally-known nonprofit home improvement store and donation center in the St. Louis, Missouri area that focused on selling donated building materials and appliances to the public at reduced prices. During the founder's tenure with the nonprofit he was approached by multiple local contractors in the area about a number of reclaimed products, at that particular time, the nonprofit he worked for could not accept as donations as the store did not have the capacity to take on more materials. The founder saw this as an opportunity. For months, the founder had been collecting market research and understood the supply and demand of materials. It became understood that donated materials mainly flowed



out of west St. Louis County, while goods were being purchased by families in either the northern or southern regions of the city of St. Louis.

Refab launched with a \$20,000 loan from family and friends along with a \$25,000 grant from the St. Louis-Jefferson Solid Waste Management District. The nonprofit started in a decades-vacant industrial building that was donated by the city of St. Louis on a temporary basis. Refab called the temporary building in the south part of St. Louis home for the next three years. While the nonprofit did not have to pay rent for the first few years of operation, the structure did have a number of faults. As the building was vacant for a number of years, the nonprofit had to spend about \$1,000 in securing the building as well as deal with a leaking roof. Employees pointed out that it continued to rain in the retail store for an additional two days inside the building after every heavy rainstorm. The nonprofit almost lost the building when visited by local law enforcement, a building inspector, and a local Alderwoman from the city of St. Louis in March of 2013, but was able to maintain the property after a public hearing was held at City Hall.

Refab benefited greatly in 2013 when the nonprofit was awarded a contract with Washington University to strip 81 housing units in the Delmar Loop area of St. Louis. The contract with the university provided an opportunity for the nonprofit to be successful. The deconstruction of the interiors of the 81 housing units provided 81 sets of cabinets, toilets, bathtubs/shower units, doors, windows, and much more. The reclaimed materials from the project filled Refab's retail store which provided a much needed revenue stream for the upstart nonprofit.

The contract work done for Washington University could not been successful if it was not for Refab partnering with the St. Patrick Center, a St. Louis nonprofit that "provides

opportunities for self-sufficiency and dignity to people who are homeless or at risk of becoming homeless” (St. Patrick Center, 2016, n.p.). The St. Patrick Center provided Refab with six interns, all of which being homeless, or nearly homeless, military veterans to perform the deconstruction services within the 81 housing structures. Over the six-week contract the nonprofit diverted over 52 tons of materials from area landfills to be resold at Refab’s retail warehouse. To date, Refab maintains a partnering relationship with the St. Patrick Center. In fact, the nonprofit has created 16 employment opportunities for homeless, or nearly homeless, military veterans. The St. Patrick Center continues to provide Refab homeless, or nearly homeless, military veteran interns as the nonprofit work expands. Interns typically start on the deconstruction team and based on their particular skillset may be asked to work in the retail store.

#### **4.2 Refab’s Mission and Day to Day Operations**

As of October 2015, Refab has moved to a new location at 3130 Gravois Ave in south St. Louis. This location provides 30,000 square feet of retail space and was found by one of the nonprofit’s board of directors. The nonprofit’s mission is to “work in collaboration with nonprofit organizations, community groups, and government to promote the collective and creative re-use of our built environment” (Refab, 2013, n.p.). The nonprofit “deconstructs buildings otherwise slated for demolition, retrains community members for careers in green industry, and refabricates building materials for resale” (Refab, 2013, n.p.). Refab works with contractors, homeowners, business owners, and local governments to divert 1,000 tons of reclaimed materials annually.

### **4.2.2 Retail Sales**

The majority of retail sales is flooring and lumber, which account for over 40 percent of total sales. Unfortunately, the return on investment for flooring and lumber is among the lowest of the reclaimed products the nonprofit sells due to the labor required to remove the items. The removal of hardwood flooring is a delicate process as well as removing nails from lumber, both of which are exceedingly time consuming. In fact, as opposed to demolition, Refab encourages its employees to take the time necessary to cautiously remove materials from deconstruction sites. The highest demand product is old growth wood, or wood typically extracted from homes built in the 1950's or earlier (Boston Building Resources, 2015). Compared to today's wood, old growth wood is much stronger, much heavier, and typically has no knots. Old growth wood was extracted from virgin trees that grew over hundreds of years, whereas most wood found today comes from tree farms with the expressed intent of making lumber from trees from 10-20 years old. Refab acquires most of its old growth lumber from barn projects. Currently, the nonprofit has nine barns scheduled to deconstruct this year.

While flooring and lumber are the products with the highest demand, the product with the most return on investment for Refab is cabinet pieces. Cabinets are simple and quick to remove from project and have high retail value. The store, however, offers many more reclaimed products from windows, doors, toilets, sinks, tubs, household fixtures, appliances of all kind to collectables and other common household items found at deconstruction project sites.

### **4.2.2 Refab Customer Base**

Customers of Refab's retail store typically consist of four groups: low-income homeowners that wish to remodel or renovate, landlords, environmentally conscious consumers, or consumers that do not appreciate big box store products and desire materials with a different

look and feel. Word of the nonprofit has spread fast amongst landlords in the St. Louis area looking to replace doors, windows, appliances, or fixtures on a budget. In fact, members of Refab were recently asked to attend a conference for St. Louis landlords so that the nonprofit can explain what products it has to offer. A recent example is where a local landlord recently purchased eight sets of commercial washers and dryers to place in rental properties.

It is common for Refab customers to become repeat visitors. Many times customers are looking for their next project to repurpose a reclaimed product found at the retail warehouse. Observations of the nonprofit in action discovered that many customers were trying to find a unique approach to home renovations projects both inside and outside the house.

Social media and word of mouth advertising have served as the primary methods of attracting new customers to the store. During Refab's first year of operation, the nonprofit sold most reclaimed materials through Craigslist. Today, the nonprofit has a robust Facebook that the nonprofit posts updates on deconstruction projects and new reclaimed materials entering the store as well as answer questions from potential customers about products and prices. The nonprofit also maintains a website that shares the mission of the organization, the services it provides, and updates on news articles about Refab.

Deconstruction clients for Refab range from homeowners and commercial properties seeking a tax rebate to city governments seeking to remove historic or blighted properties. Since its inception, Refab has taken projects that have become more and more demanding. During the nonprofit's startup phase, most of the projects consisted of non-structural deconstruction, but as the organization matures, Refab takes on more difficult projects such as a total structural deconstruction of a 1980's all-brick farm house with a barn. Besides the nine barn projects, Refab also has another structural deconstruction project scheduled that was contracted through a

nearby city. Refab has, on average, been successful in salvaging about 85 percent of materials from total structural deconstruction projects.

#### **4.2.3 Challenges Faced by Refab**

Like many startup nonprofits, Refab has faced a number of challenges. Due to the inexperience of Refab's staff and interns, the majority of work performed by the nonprofit has been a learning process as it goes. Experience is gained as deconstruction projects are completed.

Another challenge for Refab is the pressure to continually hire. While the partnering relationship with the St. Patrick Center is a positive one, the nonprofit can only take on so many employees. While the demand for deconstruction services in the St. Louis area is booming, Refab has a goal of being self-sustaining through retail sales and deconstruction fees within the next two to three years. As of today, retail sales equate to 100 percent of payroll costs, but labor payroll only accounts for two-thirds the nonprofit's total expenses. Fortunately for Refab, grant funding was received over the past four years to assist in the sustainability of the nonprofit. This year it is anticipated that Refab will reach \$500,000 in revenue.

Working exclusively with homeless, or nearly homeless, veteran employees and interns presents challenges as well. While veterans are known to be reliable and trustworthy, homeless, or nearly homeless, veterans require assistance getting back on their feet. Many times, this includes credit counseling, opening bank accounts in their name, and buying cellphones and cellular plans so that they can be reached for oncoming projects. These are challenges that many other deconstruction nonprofits do not have to encounter.

Funding is the primary challenge of Refab. As previously stated, the nonprofit's goal is to be self-sustaining in the next two to three years. Over the past four years, Refab has received

\$235,000 in grant funding. A total of \$25,000 was received the first year. Another \$40,000 was received the second year. The following year, Refab received \$80,000 in grant funding and this year the nonprofit received \$90,000. The difficulty in receiving grant funding is that the nonprofit has to demonstrate the need for the funding as well as keep it interesting for the funding agency. As such, the nonprofit must be specific as to what the money is being spent on. For example, over the past four years Refab has purchased a work truck, hired an Operations Manager, bought forklift racks, and are planning to purchase machinery to mill lumber with the funds received. Refab understands that in order to be self-sustainable, the organization must make revenues from retail sales as well as deconstruction fees. Today, the nonprofit does not always charge for deconstruction services. For example, some of the old wood barn deconstruction projects and hardwood flooring removal projects are done at no cost to the owners. Unrestricted revenue streams are essential for the nonprofit.

#### **4.3 Deconstruction Nonprofit Models Vary Dependent on Market Conditions**

While 100 percent of the deconstruction nonprofits with interview participants of this study offered both deconstruction and retail store services, 80 percent of all respondents acknowledged that not all nonprofits in this sector offer both services. Deconstruction services and retail services are distinct business models. Many nonprofits offer both services, but some nonprofits may offer one or the other. It is important to note that one cannot exist without the other; it is a symbiotic relationship. In cases where nonprofits only offer deconstruction services, it is common for the reclaimed materials from projects to be donate to either nonprofit or for-profit retail stores. In cases where nonprofit operates an UBMRO that doesn't offer deconstruction services, the organization commonly receives donations from either nonprofit or for-profit deconstruction organizations or for-profit demolition, construction, and remodeling

firms. It is also common for retail stores to receive donations from homeowners doing renovation projects. In fact, for some nonprofits, the volume of drop off donated material for sale is greater than that of deconstructed materials; however, it is noted that materials reclaimed from deconstruction projects typically of higher quality and therefore demand a higher retail price.

It is important to note the difference in the two business models as it relates to sustainability. Retail services typically consist of substantial fixed costs and very little variable costs. The monthly expenses are common comparable from month to month. The challenge maintaining sales revenue throughout the year to pay for expenses. Since renovation, construction, demolition, and deconstruction projects are typically seasonal, it is important to budget accordingly. Another challenge with the retail store business model is the startup cost. According to interview respondents, to breakeven point on opening an UBMRO ranges from \$250,000 to \$350,000.

On the other hand, deconstruction services do not require as much as an investment. Typically deconstruction requires a work truck, hand and power tools, and a labor force. Deconstruction; however, is much more variable regarding expenses. As each deconstruction project is unique, firms must charge fees in accordance with the work to be accomplished to ensure a return on investment. It is noted by respondents that the deconstruction business model is dependent on markets with high unemployment and either an abundance of abandoned structures or a significant amount of remodeling projects.

While 100 percent of the interview respondents acknowledge the nonprofits they work for provide deconstruction services, only 60 percent offer structural deconstruction. The other 40 percent offer nonstructural deconstruction services only. Those nonprofits focus on cabinets,

windows, doors, plumbing fixtures, electrical fixtures, appliances, shutters, pool equipment, pool fences, garage doors, etc. As such, the nonstructural deconstruction business models must be selective regarding the projects that they take on to ensure adequate returns on investments; the reclaimed materials from deconstruction projects must create positive revenue for the organization and not sit for a long time. The ideal transaction for reclaimed products are quick to market with the least amount of handling.

#### **4.3.1 Partnering is Essential for Success**

One hundred percent of all respondents acknowledged that partnering with other firms was essential to the success of the nonprofit. Partners ranged from other nonprofits, for-profits, and local governments. All respondents acknowledged that partnering with for-profits is beneficial for both parties. For-profit partners in the sector of business that deals with renovations, construction, deconstruction, or demolition projects are important to nonprofits with retail stores as they commonly conduct many more projects than a nonprofit deconstruction firm, therefore, they are a vital source of many reclaimed products. The partnering arrangement is beneficial for the for-profit firms as they can receive tax incentives. In some cases the nonprofit may be the deconstruction firm that donates to a for-profit UBMRO, in which case the for-profit gets a tax incentive and the deconstruction firm may receive a percentage of sales.

#### **4.3.2 The More Mature the Nonprofit, the More Services it Offers**

Table 4 below depicts the years of experience of the nonprofit organizations in which had respondents participate in this study.



*Table 4: Nonprofit Participants: Years of Experience*

Years of Experience	Frequency
<1 - 5	0
6 – 10	0
11-15	2
16-20	2
>20	1

It was noted during interviews with participants that the more mature the nonprofit was that they worked for, the more services it provided. With the exception of one nonprofit, the nonprofits with 16 or more years offered both structural and nonstructural deconstruction. The nonprofit with over 20 years of experience also offers training to nonprofit and for-profit deconstruction firms as well as consulting services across the country. The mix of revenue streams is important for sustainability as the nonprofit continues to expand. In fact, the three nonprofits with 16 or more years of experience have multiple retail locations in operation.

Mature deconstruction nonprofits also understand that distribution and repurposing of reclaimed products are essential for sustainability. For example, a demand for hollow core doors throughout the nation is scarce; however, vendors in Poland are willing to buy the products by the container load. In cases such as this, it is important to understand where demand exists and how to get the reclaimed products there. Repurposing of reclaimed materials is altering them for another purpose. For example, new growth lumber that is reclaimed, and low in demand, can be used to make products such as bird homes, benches, or tables. Mature deconstruction nonprofits not only sell repurposed products, but also provide classes for its customers on how to repurpose reclaimed materials.

#### **4.3.3 Retail Operations Dependent on Market Conditions**

Interview respondents suggest that retail operations are dependent on market conditions. While a great deal of reclaimed products can be supplied from inner city locations, demand

typically exist in the suburban areas just outside the city. This was confirmed in the case study of Refab as well. Most demand came from the southern and northern parts of the city of St. Louis. Customers would come from about a 70 mile radius from the nonprofit to shop at the retail store. It was common for potential customers that lived far out to call about reclaimed products prior to coming to the store for a purchase.

#### **4.4 Demand for Reclaimed Materials Exist**

Interviews with deconstruction nonprofit professionals confirm that demand for reclaimed materials exist. The interviews confirmed that four groups reclaimed material consumers exist nationwide similar to those in the St. Louis area: low-income homeowners that wish to remodel or renovate, landlords, environmentally conscious consumers, and consumers that do not appreciate big box store products. Donors are typically on the other spectrum of the market as they are commonly mid to high-income households looking to renovate and receive tax incentives for their donations. It is important to note that many donations come from corporate entities also seeking tax donation incentives.

#### **4.5 Sustainability as a Goal for Deconstruction Nonprofits**

One hundred percent of the nonprofits with interview participants are self-sustainable. Each interview participant attributed the self-sustainability through multiple revenue streams. The primary revenue stream for all the participating deconstruction nonprofits is reclaimed materials sales. The next highest revenue stream reported is fees for deconstruction services. Other revenue streams include fees for consulting, training or certifications; contracts with other firms or public agencies; or portions of sales proceeds from donated materials sold at for-profit or other nonprofit UBMROs.

#### **4.6 Working with Local Government can be Challenging**

All interview respondents acknowledged that working with local governments can be challenging. The challenge exist in two parts. First, as previously stated, demolition is a cheaper and still effective method of removing vacant, abandoned, or condemned structures. That being stated, city governments have limited budgets in which they are accountable to their taxpayer constituents. It takes a considerable amount of educating on the deconstruction nonprofit's part to not only city public officials, but sometimes also citizens to the community to demonstrate the benefits of deconstruction above and beyond the dollar and cents aspect. Communities have to be educated regarding all the benefits of deconstruction, such as training and employment of low-skilled laborers, preserving the history of the city, minimizing the disturbance in the community, reducing the waste stream, reclaiming materials to be resold at the fraction of the cost of new materials, and reducing the psychological effect on citizens of the community that witness bulldozers tearing down the very city they are proud to call home.

The other challenge for deconstruction nonprofits is the proverbial "red tape" that goes along with working with city governments. Twenty percent of the deconstruction nonprofit professionals interviewed choose not to work with local public governments for this very reason. All of the interviewees reported that not enough public ordinances, laws, or policies exist to support deconstruction activities.

Interviews with public officials in East St. Louis, Illinois confirmed what was being brought to light by deconstruction nonprofit professions. The city of East St. Louis does not currently have any public ordinances, laws, or policies to support deconstruction activities. Currently the city is addressing concerns of laws, or policies to support deconstruction activities

two methods: rehabilitation or demolition; rehabilitation is the preferred method; however, demolition has proven effective.

While demolition has been effective for the city, all interview respondents acknowledged that they would be open to reviewing a proposal from a deconstruction nonprofit that demonstrates each of the benefits above and beyond the cost of the service. This would have to include a cost benefit analysis that examines public perception, safety, community involvement, employment and training opportunities, and engagement with other community programs. It was noted during the interviews with public officials that the newly-elected mayor and city council have a vision of increasing community involvement and engagement.

#### **4.7 The City of East St. Louis is Concerned about Blight**

Interviews with public officials from the city of East St. Louis reflected that the city is concerned about blight within the municipality for a number of reasons, to include the safety of its citizens, the difficulty in attracting businesses, the difficulty in retaining citizens, and a diminishing tax base. Of the stated issues, the diminishing tax base was the highest rated concern among public officials. As blighted structures deteriorate, their assessed tax value drops. Often these structures get to the point that property owners will not pay for the assessments as they stand and the property gets forfeited to the county to be auctioned off for the reimbursement of county taxes. When purchased, the buyers of these properties commonly are given a vacant or abandoned tax code associated with the property. As such, buildings that may have previously brought in thousands of dollars in taxes, now may bring in a fraction of the amount. Often, these buildings are not rehabilitated, but are left to decay. This cycle repeats and deters new businesses from coming into to the city.

#### **4.8 Challenges Exist with Deconstructing Blighted Structures**

In interviews with both deconstruction nonprofit professionals and public officials in the city of East St. Louis, a common theme that emerged is challenges exist with deconstructing blighted structures. The challenges with deconstructing blight structures extend beyond the fact that demolition is cheaper and an effective method of removing blight. The primary issue is that once a building gets to the point that it is considered blight, there likely is not many resalable materials left to reclaim. In East St. Louis, interviewees suggested that in most of the vacant structures in the city were already stripped of items such as copper, other metals, cabinets, fixtures, or any other items of value. Furthermore, many of the structures are exposed to the elements and lumber may be rotten or shingles are in poor condition. Also, environmental concerns exist in these older structures, such as lead paint or asbestos that must be contained and dealt with accordingly.

The next chapter will provide a summary and discussion of conclusions drawn from the findings of this study. The chapter will discuss implications and recommendations for practice and future research. Furthermore, the chapter will discuss discussions regarding the limitations of the study.

## **Chapter 5. Conclusions**

Chapter 5 discusses possible applications as a result of the findings of this study, to include a recommended course of action. Implications for practice and future research are considered. Furthermore, limitations of the study are explained, such as time and access to participants.

### **5.1 Applications of Results**

As previously stated the purpose of a feasibility study is an analysis of an idea to determine if it is appropriate to implement (Hofstrand and Holz-Clause, 2009). The feasibility study is conducted prior to initiating a formal business plan (Thompson, 2005). It is important to thoroughly analyze data gathered from the study to ensure supporting evidence exists for its recommendations (Thompson, 2005).

An analysis of the data gathered in Chapter 4 of this study demonstrates that it would be feasible for a deconstruction nonprofit to exist in East St. Louis, Illinois; however, the mission of the organization would have to be expanded to focus more on employment opportunities and civic engagements. While the organization could still aid in deconstructing condemned, abandoned, and foreclosed structures in order to assist in the development of the community as well as divert materials from landfills, the primary focus would have to be the economic and social benefit provided to the citizens of the city of East St. Louis. While challenges exist with working with the city, they can likely be overcome with steady communication and education regarding the benefits of deconstruction.

The case study of Refab demonstrates that a demand exists for reclaimed products in the area. This includes a demand for both low-cost, low-quality reclaimed materials and high-end repurposed materials. The city of East St. Louis provides a significant supply of condemned,

abandoned, and foreclosed structures slated for demolition. Not only does a both a supply and demand exist for reclaimed products, but a need exists within the city of East St. Louis to remove blight and provide for low-skilled labor employment training and opportunities. While there are no current public policies in place in the community that support deconstruction practices or waste reduction, revitalization is a goal of the city.

The primary barrier for successful implementation in East St. Louis, IL is funding. While a significant amount of structures exist in East St. Louis that can be deconstructed, the onus is on the city to fund the project. As previously stated, the city has a limited budget and has to answer to taxpayers regarding responsible expenditure of said funds. Furthermore, any deconstruction projects with the city would have to be arranged outside of its current demolition bidding process as procedures dictate award to the lowest bidder. The process may be similar to what was suggested by the Detroit Blight Removal Task Force (2014). Deconstruction would likely be a viable option for a limited number of structures in the community.

There are three viable nonprofit models with potential to be implemented: providing deconstruction services only, replicating the Refab business model, and deconstruction services with an UBMRO in an industrial complex outside the city of East St. Louis in order to be convenient for both supply and demand. The three nonprofit models are explained in detail below.

#### **5.1.1 Deconstruction Services Only Model**

As stated above, funding is the primary barrier to a sustainable deconstruction nonprofit. As reflected in Chapter 4, a nonprofit that provides deconstruction services only requires moderate funding to start up and operate. A deconstruction nonprofit would aid in two concerns of the community: resolving blight and providing training and employment opportunities to

citizens of the community. Materials reclaimed by this deconstruction nonprofit could be donated to one of the four UBMROs located within a twenty-five mile radius of the city of East St. Louis, as reflected in Figure 5 below. The four nearby UBMROs include Refab and three Habitat for Humanity ReStores. Donations can also be to local East St. Louis firms or public agencies as needed.

The challenge with this nonprofit model is sustainability. While operating costs are minimal, sustainability is dependent on charging appropriate fees for deconstruction projects. Nonprofits with UBMROs as well as deconstruction services can offset inadequately estimated deconstruction fees through sales revenues. Costs of deconstruction services are quite variable and can be affected by a number of factors, such as weather conditions, insufficient staffing, and unforeseen project site conditions.

*Figure 6: Map of UBMROs Near East St. Louis, IL*



(MapCustomizer, 2016)



### **5.1.2 Replicate the Refab Nonprofit Model**

Replicating the Refab nonprofit model would consist of providing both deconstruction services and an UBMRO with the city limits of East St. Louis. Refab was successful in its initial implementation as a result of the city of St. Louis providing the nonprofit with a vacant building owned by the city at no cost for the first three years of operation. Not having to pay rent for the UBMRO cut down on monthly expenses for the nonprofit. If the city of East St. Louis would be willing to do provide the same opportunity to a new startup UBMRO operation, it would make implementation of the nonprofit more feasible.

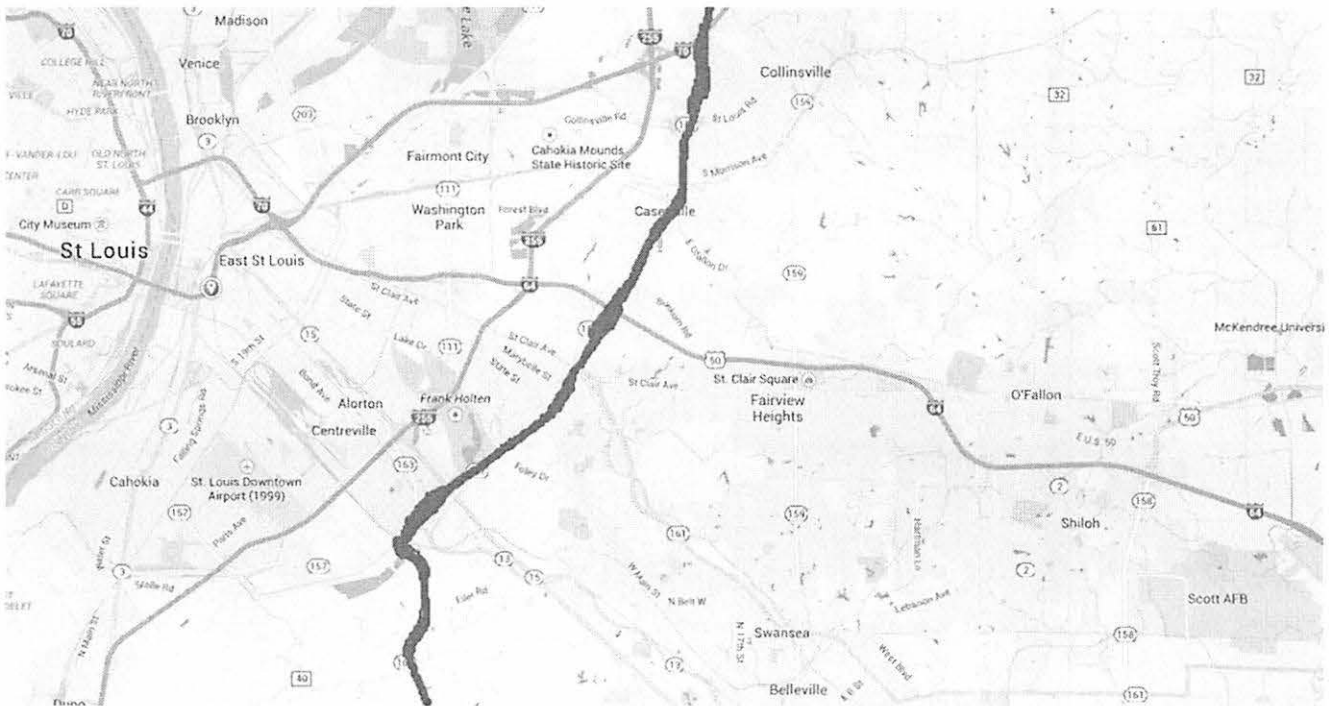
A UBMRO in the East St. Louis would demonstrate the commitment of the nonprofit to the city and its residents. Also, revenues of the sales of would help to offset deconstruction service fees. This nonprofit model has challenges to be faced as well. Even if the nonprofit would not have to pay rent for the facility, there are many other expenses relating to retail operations of reclaimed goods that quickly add up, such as labor to run the retail operations, utilities, and security. Another consideration for this model is the proximity to supply and demand. While there is a large supply of blighted structures in East St. Louis for deconstruction projects, these projects would likely produce low-cost, low-quality reused materials. As reflected in Chapter 4, many high-cost, high-quality reused materials are donated or garnered from renovation projects. Due the economic challenges faced in the city East St. Louis, it is likely that the supply of these materials would most probably be donated from homeowners and businesses outside the city. Also, as previously stated in Chapter 4, many of the structures in East St. Louis that are slated for demolition have already been stripped of any materials that can be resold with a valuable return on investment. While deconstruction services can be offered throughout the metropolitan East St. Louis area to in attempts to reclaim products with higher

rates of return, residents and businesses of other communities may be hesitant to travel to East St. Louis to donate reclaimed products from renovations. This could be overcome; however, through providing pickup services, which is an additional expense for the nonprofit.

### 5.1.3 Deconstruction Services with UBMRO in Convenient Industrial Location

With a goal of being conveniently located to supply and demand and still support the city of East St. Louis, a nonprofit could be established in an industrial location further east, but still retain its labor force from the city. With this model deconstruction projects could span the metropolitan area to ensure both low-cost, low-quality and high-cost, high quality reclaimed materials are available for resale. Research data suggests that the UBMRO should be placed in area of most demand. Furthermore, according to Worth (2014) nonprofits should consider how convenient the location is for clients. Figure 6 below provides map of the metropolitan East St. Louis area of where deconstruction services can be provided.

*Figure 6: Map of Metropolitan East St. Louis Area*



(Google Maps, 2016)

The red line depicted in the map represents Illinois Highway 157. This is important as communities east of the red line have much higher median incomes. Communities west of Highway 157, include East St. Louis, Brooklyn, Fairmont City, Washington Park, Cahokia, and Alorton have a median household income of less than \$20,000 (U.S. Census Bureau, 2016). Communities east of the red line include Fairview Heights, Swansea, O'Fallon, and Shiloh with a median household income around \$72,000 (U.S. Census Bureau, 2016). This suggests that households east of Highway 157 are more likely to complete renovation projects and donate materials. It is likely that landlords west of Highway 157 are looking for reclaimed products at discounted prices to replace broken or worn materials in rental properties. Being centrally located and close to a major intersection would be beneficial for all parties.

There are multiple challenges to be faced with this nonprofit model as well. The primary challenge is acquiring enough funding to sustain operations during startup. As reflected in Chapter 4, establishment of an UBMRO takes considerable capital. Another challenge is a site outside of the city of East St. Louis would not reduce the focus of supporting the development of East St. Louis.

#### **5.1.4 Recommended Course of Action**

Replicating the Refab nonprofit model with the support of the city of East St. Louis is the most appropriate way forward. Establishing a UBMRO in East St. Louis aids in instilling confidence in city leaders and residents that the nonprofit is there to aid in the development of the city. In order to be successful the nonprofit would need to work closely with the city of East St. Louis. A solid business and marketing plan would need to be drafted to demonstrate to city leaders how the nonprofit would program within the city to provide training and employment opportunities to those in need. Also, business plan would need to reflect how responsible board

members are acquired that demonstrate a significant passion for rebuilding the community of East St. Louis.

It is important to note that a primary reason that Refab was successful in implementation was due contract work completed for Washington University. The deconstruction of 81 units provided the nonprofit a substantial amount of reclaimed materials to fill its store and begin receiving sales revenues to offset expenses. While replicating this opportunity in the East St. Louis area is not likely, identified an ample amount of deconstruction projects prior to opening retail operations is essential.

## **5.2 Implications of Study for Research and Practice**

This study demonstrates that the feasibility of implementing a deconstruction nonprofit with a community is dependent upon existing market conditions such as supply and demand for reclaimed products. Along with a demand for reclaimed products, a need must exist for training or employment opportunities for unskilled and low-skilled laborers. This condition is typically set by a high unemployment rate. Partnering opportunities are essential for the successful operations of a deconstruction nonprofit. In some cases, public sector involvement is necessary to ensure the sustainability of a deconstruction nonprofit. This includes not only working closely with local governments, but also establishment of public ordinances, laws, or policies that support deconstruction activities.

Above all, this study publicizes the benefits of deconstruction to be had by local governments. The study provides a means to measure feasibility not only to be used by potential deconstruction nonprofits or for-profits, but also to be used by local or state government leaders in order to make policy decisions. The study could be used on a larger scale by waste and recycling industries.

As a result of the study, further research could be necessary to address areas beyond the scope of the research. One example is a study to examine the benefit of tax credits for both for-profit and nonprofits relating to deconstruction services or the sale of reclaimed materials. This may answer whether tax credits provide an incentive for partnering. Another potential study could be examining how effectual public ordinances, laws, or policies are on deconstruction practices.

### **5.3 Limitations**

The primary limitations for this study were time and access to participants. With more time, the researcher could have conducted a more in-depth case study of Refab. While the case study spanned over a six-month period, the researcher was an outsider and therefore, was not a witness of all activities covered during that period.

Access to participants proved to be a significant limitation of the study. Without prior industry experience or relationships, the researcher found it difficult to get interview respondents. This equated to a small sample size which may have skewed the importance of a theme or not allow for a theme to emerge from interviews.

Another limitation of the study was a lack of scholarly research regarding deconstruction. Most of the studies found on the subject was conducted by either private industry or the public sector. In most public sector publications, a private industry partner conducted the research. As a result, there was limited previous research methodology for the researcher to explore and possibly build upon.

## Chapter 6. References

American Institute of Architects. (2008, June). *Construction Waste Management Strategies*.

Retrieved from American Institute of Architects Best Practices:

<http://www.aia.org/aiaucmp/groups/secure/documents/pdf/aiap072739.pdf>

Bain, J. (1959). *Industrial Organization*. New York, NY: Wiley.

Baker, K. (2016). The Home Improvement Outlook for 2016 and Beyond. *The Eastern Massachusetts Chapter of the National Association of the Remodeling Industry Conference* (pp. 1-27). Newton Centre, MA: Joint Center for Housing Studies of Harvard University.

Boston Building Resources. (2015, October 12). *Old-Growth Wood: What It Is and Why It's Worth Keeping*. Retrieved from Boston Building Resources:

<http://www.bostonbuildingresources.com/advice/old-growth-wood>

Chini, A., & Bruening, S. (2003). Deconstruction and materials reuse in the united states. *The Future of Sustainable Construction*, 1-22.

City of East St. Louis. (2016). *City History*. Retrieved from City of East St. Louis: City of Champions: <http://www.cesl.us/category.php?id=Mjg>

City of East St. Louis. (2016). *Demolition*. Retrieved from Economic Development:

[http://www.cesl.us/sub\\_category.php?id=NjI](http://www.cesl.us/sub_category.php?id=NjI)

Construction and Demolition Recycling Association. (2015). *Welcome to the CDRA*. Retrieved from Construction and Demolition Recycling Association: <http://www.cdrecycling.org/>

Corbin-Dwyer, S., & Buckle, J. (2009). The space between: On being and Insider-Outsider in Qualitative Research. *International Journal of Qualitative Methods*, 54-63.

- Creswell, J. W. (2012). *Educational Research Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Boston, MA: Pearson.
- Dan, P. (2013). *Business Plan of the Rebuild Hub: Innovating for a Triple Bottom Line*. Unpublished master's thesis, Simon Fraser University, British Columbia, Canada.
- Delta Institute. (2012). *Deconstruction and Reuse*. Chicago, IL: Delta Institute.
- Delta Institute. (2015). *Current Projects*. Retrieved from Delta Institute: <http://delta-institute.org/initiatives/?project=309>
- Denzin, N., & Lincoln, Y. (2003). *The Landscape of Qualitative Research: Theories and Issues* (2nd Edition). London: SAGE Publications.
- Detroit Blight Removal Task Force. (2014). *Detroit Blight Removal Task Force Plan*. Retrieved from Time to End Blight: <http://report.timetoendblight.org/>
- DiCicco-Bloom, B., & Crabtree, B. (2006). The qualitative research interview. *Medical Evaluation*, 40 (4), 314-321.
- Fieber, L. (2009). *Green Demolition and Sustainable Deconstruction*. Kansas City, MO: Burns & McDonnell Engineering.
- Greenwood, D., & Levin, M. (2007). *Introduction to Action Research: Social Research for Social Change* (2nd Edition). Thousand Oaks, CA: SAGE Publications, Inc.
- Google Maps. (2015). *Metro East St. Louis*. Retrieved from Google Maps: <https://www.google.com/maps/@38.6085409,-90.0800147,12z>
- Gordon, C. (2003). Blighting the way: Urban renewal, economic development, and the elusive definition of blight. *Fordham Urban Law Journal*, 3 (2), 305-337.
- Guy, B. (2003). *Green Demolition Certification*. Gainesville, FL: University of Florida Powell Center for Construction and Environment.

- Hofstrand, D., & Holz-Clause, M. (2009, October). *What is a Feasibility Study?* Retrieved from Iowa State University Ag Decision Maker:  
<https://www.extension.iastate.edu/agdm/wholefarm/html/c5-65.html>
- Hou, J. (2010). *Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities*. New York, NY: Routledge.
- Illinois General Assembly. (2013). *Blighted Areas Redevelopment Act of 1947*. Retrieved from Urban Problems:  
<http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1443&ChapterID=30>
- Kaufman, N., Rios, K., & Geroy, G. (2010). *A Model for Sustainability: Bringing Deconstruction into Practical Learning*. Retrieved from National Center for Craftsmanship: [http://www.nccraftsmanship.org/wp-content/uploads/2014/01/ASC-Proceedings\\_Deconstruct-2010.pdf](http://www.nccraftsmanship.org/wp-content/uploads/2014/01/ASC-Proceedings_Deconstruct-2010.pdf)
- Kozol, J. (2005). *Environmental Justice Case Study: East St. Louis, Illinois*. Retrieved from University of Michigan: <http://www.umich.edu/~snre492/Jones/stlouis.htm#Solutions>
- Leonard, J., & Mallach, A. (2010). *Restoring Properties, Rebuilding Communities: Transforming Vacant Properties in Today's America*. Flint, MI: Center for Community Progress.
- Leroux, K., & Seldman, N. (1999). *Deconstruction: Salvaging Yesterday's Buildings for Tomorrow's Sustainable Communities*. Washington, D.C.: Institute for Local Self-Reliance.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic Inquiry*. Newbury Park, CA: SAGE Publications.
- MapCustomizer. (2016). *Map of St. Louis*. Retrieved from MapCustomizer:  
<https://www.mapcustomizer.com/map/Donation%20Locations>



- MapTechnica. (2016). *Boundary Map and Geodata for the City of East St. Louis in Illinois*, U.S.A. Retrieved from MapTechnica: <https://www.maptechnica.com/us-city-boundary-map/city/East%20St.%20Louis/state/IL/cityid/1722255>
- McLear, K., & Nobe, M. (2011). Return on Investment for Non-Profit Deconstruction. *47th Annual Associated Schools of Construction International Conference Proceedings* (pp. 1-9). Lincoln, Omaha: Associated Schools of Construction.
- National Association of Home Builders Research Center. (2001). *Report on the Feasibility of Deconstruction: An Investigation of Deconstruction Activity in Four Cities*. Washington, DC: U.S. Department of Housing and Urban Development Office of Policy Development and Research.
- Refab. (2013). *Home*. Retrieved from Refab: <http://www.refabstl.org/home.html>
- Schutt, R. (2012). *Investigating the Social World: The Process and Practice of Research* (7th Edition). Thousand Oaks, CA: SAGE Publications.
- St. Patrick Center. (2016). *About Us*. Retrieved from St. Patrick Center: <http://www.stpatrickcenter.org/>
- Stringer, E. (2007). *Action Research (3rd Edition)*. Thousand Oaks, CA: SAGE Publications, Inc.
- Telander, L. (2014, March 31). *Breaking Down Deconstruction: What Detroit Gained From Dismantling Instead Of Destroying*. Retrieved from Center for Community Progress: <http://www.communityprogress.net/blog/deconstruction-interview>
- Thompson, A. (2005). *Entrepreneurship and Business Innovation: The Art of Successful Business Start-ups and Business Planning*. Guildford, W.A.: Vineyard Publishing.

- U.S. Census Bureau. (2016). *Quick Facts East St. Louis City, Illinois*. Retrieved from U.S. Census Bureau: <http://www.census.gov/search-results.html?stateGeo=none&q=East.+St.+Louis&cssp=SERP&searchtype=web>
- U.S. Environment Protection Agency. (2009). *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*. Washington, DC: Office of Resource Conservation and Recovery.
- U.S. Environmental Protection Agency . (2009). *OSWER Innovation Project Success Story: Deconstruction*. Washington, DC: Office of Solid Waste and Emergency Response.
- U.S. Environmental Protection Agency. (2013). *Region Six: St. Louis Metropolitan East*. Washington, D.C.: Environmental Protection Agency.
- U.S. Environmental Protection Agency. (2016, February 20). *Green Building*. Retrieved from Green Building: <https://archive.epa.gov/greenbuilding/web/html/>
- Worth, M. (2014). *Nonprofit Management: Principles and Practice (3rd Edition)*. Thousand Oaks, CA: SAGE Publications.
- Yin, R. (2014). *Case Study Research: Design and Methods (5th Edition)*. Thousand Oaks, CA: SAGE Publications.