MALLORY MAIN STREET: A POST-INDUSTRIAL RUST BELT ECODISTRICT

A CREATIVE PROJECT
SUBMITTED TO THE GRADUATE SCHOOL
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FOR THE DEGREE
MASTER OF URBAN AND REGIONAL PLANNING

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**TABLE OF CONTENTS**

Acknowledgements.........................................................................................................................2

Table of Contents............................................................................................................................3

List of Figures......................................................................................................................................6

List of Tables.......................................................................................................................................8

Chapter 1: Introduction ..................................................................................................................9

1.1 Introduction.................................................................................................................................9

1.2 Research Aims ............................................................................................................................10

1.3 Research Questions.....................................................................................................................10

1.4 Significance of the Study............................................................................................................11

1.5 Research Methods ......................................................................................................................12

1.6 Outline of Chapters ....................................................................................................................14

Chapter 2: Literature Review .........................................................................................................15

2.1 Introduction.................................................................................................................................15

2.2 Literature Review Scope............................................................................................................15

2.3 Definitions.................................................................................................................................16

2.4 Redevelopment Motivations......................................................................................................20

2.5 Sustainability Techniques .........................................................................................................24

2.6 Financing Strategies ..................................................................................................................27

2.7 Summary....................................................................................................................................29

Chapter 3: Case Studies ..................................................................................................................32
6.3 Contributions to Knowledge......................................................................................106

6.4 Areas for Further Research....................................................................................106

Bibliography.....................................................................................................................108
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Research Methodology</td>
<td>13</td>
</tr>
<tr>
<td>2.1</td>
<td>Literature Review Scope</td>
<td>16</td>
</tr>
<tr>
<td>3.1</td>
<td>Cleveland EcoVillage Boundaries</td>
<td>34</td>
</tr>
<tr>
<td>3.2</td>
<td>Portland South Waterfront EcoDistrict Boundaries</td>
<td>40</td>
</tr>
<tr>
<td>3.3</td>
<td>Larimer Neighborhood Boundaries</td>
<td>46</td>
</tr>
<tr>
<td>4.1</td>
<td>Mallory Main Street District Context</td>
<td>56</td>
</tr>
<tr>
<td>4.2</td>
<td>Adjacent Neighborhoods</td>
<td>57</td>
</tr>
<tr>
<td>4.3</td>
<td>Mallory Main Street District Zoning Map</td>
<td>61</td>
</tr>
<tr>
<td>4.4</td>
<td>Mallory Main Street District Land Use Map</td>
<td>64</td>
</tr>
<tr>
<td>4.5</td>
<td>Mallory Main Street District Connectivity</td>
<td>66</td>
</tr>
<tr>
<td>4.6</td>
<td>Mallory Main Street District Transportation Networks</td>
<td>68</td>
</tr>
<tr>
<td>4.7</td>
<td>Brownfield Sites and Industrial Waste Sites</td>
<td>69</td>
</tr>
<tr>
<td>4.8</td>
<td>Vacant Parcels within Mallory Main Street District</td>
<td>70</td>
</tr>
<tr>
<td>4.9</td>
<td>Population Distribution Comparison</td>
<td>73</td>
</tr>
<tr>
<td>4.10</td>
<td>Housing Occupancy Comparison</td>
<td>74</td>
</tr>
<tr>
<td>4.11</td>
<td>Population Age 25+ Educational Attainment, 2014</td>
<td>75</td>
</tr>
<tr>
<td>4.12</td>
<td>Civilian Population Age 16+ In Labor Force by Industry</td>
<td>77</td>
</tr>
<tr>
<td>4.13</td>
<td>Civilian Population Age 16+ In Labor Force by Occupation</td>
<td>78</td>
</tr>
<tr>
<td>4.14</td>
<td>Income Comparison</td>
<td>79</td>
</tr>
<tr>
<td>5.1</td>
<td>Mallory Main Street District Triple Bottom Line</td>
<td>84</td>
</tr>
<tr>
<td>5.2</td>
<td>Mallory Main Street District Proposed Land Use</td>
<td>89</td>
</tr>
<tr>
<td>5.3</td>
<td>Proposed Vehicular Circulation</td>
<td>90</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 4.1: Neighborhood Comparison........................................................................................................58

Table 4.2: Change in Population: 2000-2014..................................................................................................71

Table 5.1: Mallory Main Street District Goals, NESCO Goals, SEND Goals..............................................87
CHAPTER 1: INTRODUCTION

1.1 Introduction

In the rust belt, there are many neighborhoods that are centered around the industrial sector. At one point in time, most of these neighborhoods had a central node—a factory, plant, warehouse, or transportation hubs—that employed many of the residents and served as an economic engine. In the past, these neighborhoods were booming. However, as the industries within the industrial sector have seen a rapid decline due to many external and internal factors, these neighborhoods and the residents have suffered. The creation of the post-industrial neighborhood is the result of the decline.

The Rust Belt is the name given to the region that spans from the northeastern United States to central United States where the industrial sector saw large amounts of growth. Cities in the Rust Belt were typically very well developed and had strong transportation networks. Notable cities include Chicago, Detroit, Gary, Cleveland, and Indianapolis. These cities thrived in the industrial era because they were connected by multiple modes of transportation such as paved roads, waterways, and rail networks; businesses were able to find cheap labor and resources were plentiful.
The decline of the industrial sector in the region is the effect of increased automobile mobility, industrial decline, transfer of manufacturing to the southeastern region of the United States, and exportation of industrial sectors.

While some cities have successfully increased their services sector to compensate for the decline in the industrial sector, others have not. These cities, and the neighborhoods within these cities, have seen an increase in poverty, blight, population decline, and social inequality.

1.2 Research Aims

The purpose of this creative project is to understand the motivations and importance of sustainable redevelopment in a post-industrial neighborhood, define how neighborhoods are financing sustainable infrastructure and redevelopment projects, and apply this knowledge to a post-industrial neighborhood located on East Washington Street in Indianapolis, Indiana.

**Aim:** Develop strategies for sustainable redevelopment at an urban industrial area.

1.3 Research Questions

Three questions guide will guide this creative project and will provide an outline for the literature review. The three questions are:

1) Why are communities creating EcoDistricts in former industrial areas?

2) How are EcoDistricts accomplishing their sustainability goals?

3) How are EcoDistricts financing infrastructure?
1.4 Significance of the Study

Located on the Historic National Road (also known as East Washington Street) about a mile from downtown Indianapolis, this creative project neighborhood is a quintessential post-industrial neighborhood in the Rust Belt. The Historic National Road serves as an important corridor linking downtown Indianapolis to the greater Indianapolis area.

The creative project neighborhood has rich history of opportunities, culture, and amusement. As the industrial sector grew nation wide, the local area was prime for development. The neighborhoods surrounding local factories grew to support worker housing and provide entertainment venues. The neighborhood was home to a baseball field in the early 1900s and the Wonderland amusement park before a defeating fire in 1911. In 1921, General Electric built a factory building and in 1929 P.R. Mallory bought the building to use for manufacturing batteries. In its prime, the P.R. Mallory site provided employment for over 1,500 employees. However, as the industrial sector began to decline P.R. Mallory began selling property and employment has decreased to 115 employees (Harton, 2012).

In recent years, Indianapolis and the community development corporations have been developing plans to redevelopment the Mallory building and surrounding neighborhood (Race, 2014). The resulting plans focus on job creation, improving the tax base, and ecological quality (East Washington Street Partnership, n.d.).

This creative project will help define how urban design strategies can transform post-industrial Rust Belt neighborhoods into sustainable, active, and dynamic mixed-use communities.
1.5 Research Methods

The research methodology for this creative project utilizes literature review and case studies. The literature review will provide an understanding and evaluation of the three main elements of this creative project: redevelopment motivations; sustainability techniques; and financing strategies. A diverse range of sources will be employed and will include scholarly peer reviewed journal articles, news articles, professional publications, books, and government documents. The literature review will discover the key findings of the research questions and will identify gaps of knowledge. Additionally, the literature review will provide the basis for the case studies and the criteria for which they will be selected.

The case studies will consist of secondary research gathered on the identified EcoDistricts. The purpose of the case studies is to identify the history of the industrial community, determine sustainability techniques, analyze financing strategies, and define other factors critical to the success of the selected EcoDistricts.

The literature review and case studies will identify the best practices in sustainable neighborhood redevelopment and will digest the findings and identify urban design practices, sustainability techniques, and financing strategies. Findings from the literature review and case studies will identify guiding principles to utilize in the redevelopment of this creative project site.
Figure 1.1

Research Methodology

Research Aim
Develop strategies for sustainable redevelopment at former urban industrial areas

Research Questions
Q1 | Q2 | Q3

Literature Review
Redevelopment motivations | Sustainability techniques | Financing strategies

Case Studies

Guiding Principles

Project Analysis + Principles

Project objectives

Outcomes
1.6 Outline of Chapters

This creative project contains five chapters:

1. **Introduction**: The introduction chapter defines the research aims and questions, presents the research methodology, describes the significance of the study, and provides a chapter outline of this creative project.

2. **Literature Review**: The literature review chapter will define the terms, “EcoDistrict,” and “Post-Industrial,” and will examine the existing research about motivations for redevelopment, sustainable redevelopment strategies, and financing techniques. The literature review will conclude by identifying the gaps of knowledge.

3. **Case Studies**: To identify the best practices in sustainable neighborhood redevelopment, this chapter will critique three case studies: Cleveland EcoVillage, Portland South Waterfront EcoDistrict, and Larimer neighborhood. The case studies will examine the redevelopment motivations, sustainability techniques, and financing strategies. The chapter will compare the three case studies and conclude with the best practices and techniques that can be applied to the site neighborhood.

4. **Creative Project Description**: The creative project description will introduce the site planning context, analysis of the site, and the goals and objectives of this creative project. This chapter will include the urban design framework and detailed design of the site. The site analysis will cover the history of the site, current demographics, economic analysis of the local economy, and the existing conditions.

5. **Conclusion**: The conclusion chapter will summarize the lessons learned from the project, and outline suggestions and the next steps for future study.
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review will define common terms used in this creative project such as “Post-Industrial” and “EcoDistrict.” This creative project does not strive to reinvent the wheel; rather it will build upon previous efforts on the defined elements. As such, the literature review will review existing knowledge about redevelopment, sustainability, and financing.

2.2 Literature Review Scope

The texts selected for the literature review have been selected based on their relation to the three main elements of the creative project: redevelopment motivations, sustainability techniques, and financing strategies; and their relationship to the three research questions:

1. Why are communities creating EcoDistricts in former industrial areas?
2. How are EcoDistricts accomplishing their sustainability goals?
3. How are EcoDistricts financing infrastructure?
The literature review will summarize the key findings as they relate to this creative project and identify gaps in knowledge at the conclusion.

Figure 2.1

*Literature Review Scope*

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### 2.3 Definitions

The terms “Post-Industrial” and “EcoDistrict” are key concepts in this creative project. Defining these terms will provide an understanding of what these concepts mean in this creative project.

#### 2.3.1 Post-Industrial

Daniel Bell first explored the concept of a post-industrial society in 1962 to describe the economic and social changes of the late twentieth century. He defined a post-industrial society in
the economy as the decline of manufacturing and production of goods as the main sources of economic activity and being replaced by the services industry (Abercrombie, Hill, & Turner, 2006).

Since the original definition, the post-industrial society, also referred as the services age or communications age, has been expanded upon by various scholars and represents more than the loss of manufacturing jobs from the economic base (Perloff, 1980). Sassen indicated that as post-industrial communities change from manufacturing goods to providing services, the low paying jobs in the service industry are concentrated around global of the information economy (as cited in Kupchik & Monahan, 2006, p. 620). The results are social relationships that show extreme inequality where culturally and economically disparate groups co-exist within close proximity to one another (Kupchik & Monahan, 2006). Other characteristics of post-industrial communities include high-female labor force participation, urbanization, and reduced importance of family and conventional religions (Fuchs, 1979).

Harvey S. Perloff (1980) indicated that the transformation from a post-industrial society producing manufacturing goods to providing services is more than a social change; rather, it is an interconnected set of changes that are redefining the social structure. This change in social structure will effect how people provide for themselves and their families, use technology, interact with one another, and where they chose to live and work. Perloff indicates there are four factors involved in the transformation of the post-industrial society: the changing urban economy, pressure on resources, the changing population structure, and fiscal pressures (Perloff, 1980).

The transformation from manufacturing and production of goods to providing services has resulted in societal changes, social inequity, and a change in the function of communities.
Additionally, there is a pressure on natural resources as a result of pollution from industrial development in dense urban centers.

2.3.2 EcoDistrict

There are many terms currently being used to describe sustainable development. Such terms include EcoDistrict, EcoVillage, Eco-Neighborhood, and Eco-City. These terms are interchangeable and the same elements are used to describe each. In this creative project, EcoDistrict is the preferred term.

The Portland Sustainability Institute (2012) defined an EcoDistrict as, “a neighborhood or district committed to accelerating neighborhood-scale sustainability” (p. 4). Similarly, the San Francisco planning department has defined EcoDistricts as, “community-driven development that has the potential to achieve the smart growth of sustainable ideas but also build local urban identity and enforce a sense of place among its residents” (Vinnitskaya, 2013).

The Eco-City definition is the result of the urban development stages and emerging eco-environmental problems as a result of industrialization. Eco-Cities are idealistic communities in which the environment is protected, and society and economy are able to develop and promote human development (Yang, 2013).

In their definition, they defined the drivers of EcoDistricts as economic development, policy implementation, integration, cost savings, district planning, and carbon reductions. Typical EcoDistrict stakeholders, as identified by the Portland Sustainability Institute, include cities, developers, utilities, neighbors and businesses (Portland Sustainability Institute, 2012).
The seven characteristics of Eco-Cities include: 1) health and harmony, 2) high efficiency and vigor, 3) low-carbon orientation, 4) sustaining prosperity, 5) high ecological civilization, 6) holism, and 7) regionality (Yang, 2013).

Two of the main influencing factors of EcoDistricts are the scale and community involvement. EcoDistricts are a comprehensive strategy that stimulate sustainable neighborhood development by incorporating building and infrastructure projects with community and individual action. The scale is important because EcoDistricts should be sized to be innovative and make an impact on the larger area (EcoDistricts, 2013).

There are four types of EcoDistricts: the blank slate, the industrial network, the strengthened neighborhood, and the patchwork quilt. The blank slate is an area that is primarily composed of undeveloped land owned by a single owner. The industrial network focuses on the connections between the city production and distribution areas. The strengthened neighborhood eco district focuses on existing residential communities and retail corridor and incorporating eco-friendly behavior rather than focusing on growth. The patchwork quilt is a combination of developed and undeveloped land owned by various owners (Vinnitskaya, 2013).

EcoDistricts are neighborhood-sized communities that strive to address environmental concerns through policy implementation and community involvement. A successful EcoDistrict reduces environmental impacts, create a sense of place for residents, and improve the urban identity.
2.4 Redevelopment Motivations

Redevelopment motivations are one of the three main elements of this creative project. This section of the literature review will assess the existing research of redevelopment motivations as they relate to the research aim.

2.4.1 Redevelopment in Former Industrial Areas

While the manufacturing sector in the United States is being reorganized and deindustrialized, the labor market is becoming more and more polarized and new developments in technology are threatening job loss in both the services industries and goods producing industries. There are several influencing factors in these changes, however Edward Blakely and Philip Shapira (1984) believe the main factor is a business strategy that focuses on short-term profits and work-place control. The end result is a deindustrialization of several manufacturing sectors and regions in the United States that negatively affect the industrial communities.

According to Jakle and Wilson, labeling a city as industrial associates it with negative meanings such as a declining economic base, pollution, and a city on a downward slide (as cited in Short, Benton, Luce, & Walton, 1993, p. 208). However, cities that are identified as post-industrial have a positive association and are perceived as the future, the high-tech, the clean, the socially progressive, and the economically upbeat (Short, Benton, Luce, & Walton, 1993).

There are extreme differences between industrial and post-industrial cities. The industrial cities “are associated with the past and the old, work, pollution and the world of production” (Short, Benton, Luce, & Walton, 1993, p. 208). While the post-industrial city is “associated with the new, the future, the unpolluted, consumption and exchange, the world of leisure as opposed to work” (Short, Benton, Luce, & Walton, 1993, p. 208). Because of the negative connotation of
an industrial city, civic leaders and business elites are considering how they can change the image of the city from the negative industrial imagery to the positive post-industrial imagery (Short, Benton, Luce, & Walton, 1993).

According to Ann Markusen (1996), industrial areas are able to sustain or transform existing activities in ways that maintain the quality of life, social wages, and relatively high wage levels by becoming less slippery and more sticky. The level of stickiness of an area correlates with the ability to attract and keep industries and is applicable to established and new industrial areas (Markusen, 1996). Bagnasco identified the ideal-typical industrial district as a geographically concentrated community, consisting of mostly small firms that specialize in particular tasks that are linked vertically and horizontally though competition and cooperation (as cited in Staber, 1998, p. 241). There are four types of industrial districts identified: Marshallian and Italianate Industrial Districts, Hub and Spoke Industrial Districts, Satellite Platforms, and State-Anchored Districts (Markusen, 1996).

In a Marshallian and Italianate Industrial District, the business structure is controlled by small and locally owned firms, crucial investment decisions are made locally, the labor market is internal to the district and extremely flexible, and workers are committed to the district. In a Hub and Spoke Industrial District, the business structure is one or several large firms that are vertically integrated and surrounded by suppliers, crucial investments decisions are made locally and spread globally, the labor market is internal to the district and less flexible, and workers are committed to the large firms first, then the district, then small firms. In Satellite Industrial Platforms, the business structure is ruled by large and externally owned and headquartered firms, crucial investment decisions are made external to the district, the labor market is external to the district and internal to vertically integrated firms, and workers are devoted to firms rather than
the district. In State-Anchored Districts, the business structure is ruled by several large government institutions, crucial investment decisions are made at varying levels in the government, the labor market varies, and the workers are dedicated to large institutions, then the district, then small firms (Markusen, 1996). In redeveloping industrial areas, the goal is to create an industrial dynamism of business to generate a mix of competition and cooperation to generate self-sustaining economic growth (Staber, 1998).

Many former industrial areas are located in residential neighborhoods and suffer from poor location. These old industrial buildings, poorly cared for railroad facilities, and blighted residential and commercial properties are damaging to the neighborhood and uninviting to new commercial and industrial activities (Wrigley, 1947). When former industrial areas are reintegrated into the urban context, they represent a valuable resource to society by improving livability, increasing quality of life, and divert growth toward the existing urban areas. Redeveloping this urban areas decreases sprawl, reinstates natural processes and functions, and is a viable tool for sustainable development (Loures, Burley, & Panagopoulos, 2011).

2.4.2 Sustainable Redevelopment

Sustainability is an integrative concept that has three pillars of sustainability: environmental, economic, and social sustainability (Hansmann, Meij, & Frischknecht, 2012). The World Commission on Environment and Development (1987) has defined sustainable development as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (p. 41). Additionally, development tends to simplify ecosystems and reduce their diversity of species. Conversely, sustainable development
should require the conservation of flora and fauna (World Commission on Environment and Development, 1987).

According to A. H. T. Fergus & J. I. A. Rowney sustainable development is not inclusive to the environment, but to cultures and individuals as well:

As a society, we are beginning to recognize and understand the detrimental effect of our actions on the environment. We are less aware however of the harmful effect of those actions on each other . . . we are in the midst of both environmental and social crises. In today’s world, development is exploiting the world’s natural resources at alarming rates. By many accounts, this exploitation is unsustainable (2005, p. 17).

In terms of sustainable neighborhood and/or community development, the goals of development should be ones that “sustain values reflecting progress in our relationships with one another as human beings, our place in the natural environment, and consequently developments in what it means to be human” (Fergus & Rowney, 2005, p. 18).

David Gibbs (1994) states that for sustainable development to be successful, there needs to be specific economic and ecological goals, policy integration, and planning on all scales. Gibbs defines three interpretations of sustainable development: dry green, shallow green, and deep green.

The dry green approach to sustainable development is a human centered method that places more emphasis on reliable scientific findings to inform new policies. The shallow green approach is a human centered tactic as well that strives to combine both economic and natural science to create a guideline to measure the natural functions and processes. The deep green approach to sustainable development is an earth-centered approach that focuses on creating self-reliant and self-sustaining communities (Gibbs, 1994).

Zhiefeng Yang (2013) states that industrialization has contributed to many environmental problems such as acid rain, pollution, climate change, water shortage, hazardous waste, loss of
biodiversity, ozone depletion, and desertification. These problems pose challenges to sustainable development. Yang suggests a paradigm shift in response to the environmental changes is a step towards sustainability:

\[ \text{... which can be defined based on two standards: (1) the ability to improve the quality of life while living within the capacity of ecosystem support; and 2) the ability to meet contemporary needs without compromising the ability of future generations to meet their needs. Both definitions invoke three equal facets: social equity, economic viability, and environmental functionality (Yang, 2013, p. xvii).} \]

2.5 Sustainability Techniques

Sustainability techniques are the second element of the three main elements previously outlined of this creative project. This section of the literature review will assess the existing research of sustainability techniques as they relate to the research aim.

2.5.1 Sustainable Urban Design Strategies

Redesigning the built environment with sustainable urbanism techniques provides an opportunity to create a higher quality of life and promote healthy and sustainable American lifestyles (Farr, 2008). Sustainable design is an inclusive approach to the environmental crises that connects nature and culture. Incorporating sustainable design techniques, city planners, urban designers, and architects are able to create strategies that identify the on-site natural resources as integral design aspects to combine human patterns and natural systems in a way that enhances the unique urban fabric of communities and integrates placemaking techniques. B. A. Kazimee (2002) has identified five primary variables for sustainable and affordable development: human ecology, energy conservation, land and resource conservation, water quality, and air quality.
Human ecology is the way people interrelate and utilize the environment and can be accomplished enhancing a sense of community, creating residential clusters of appropriate density, and providing pedestrian connections. Energy conservation can be accomplished by using passive techniques in building design, conserving energy, and using renewable energy sources. Localizing the economy and reducing land needed for waste facilities can achieve land and resource conservation. Water quality can be improved through the creation of impoundment areas to enhance wetlands and using water conservation appliances. Building with green materials and developing greenways can enhance the air quality (Kazimee, 2002).

In the book *Sustainable Urban Neighborhood: Building the 21st century home*, David Rudlin and Nicholas Falk (1999) have outlined four guiding principles, similar to the ones by Kazimee, that can be applied to sustainable developments of any size. The principles are: reduce inputs, use local resources, minimize waste, and make use of urban economies.

Rudlin and Falk describe reducing inputs as reducing the energy and resources consumed. The second principle, use local resources, strives to maximize the local resources available such as sunshine, rainfall, food grown in local gardens, and waste produced. The third principle, minimize waste, denotes all sustainable communities should be recycling produced waste. The final principle is to make use of urban economies (Rudlin & Falk, 1999). This principal is based on, “the role that urban areas play in trading systems. The first three principles are common to all sustainable development but the fourth is where cities come into their own. Environmental efficiency depends upon matching up supply with demand” (Rudlin & Falk, 1999, p. 172).

One of the key ways to sustainable urbanism is integrating infrastructure design with dense areas. In areas with high enough densities, mixed-use developments are able to support
district energy systems that result in reducing energy consumption by 50% and carbon generation by 30%. Additionally compact development protects the environment by reducing sprawl, increasing water quality, and decreasing impervious surface area (Farr, 2008). Increasing density creates more walkable communities and reduces the need for automotive transportation. In addition to the negative health impacts of noise and air pollution that has resulted from automotive use, there are 1.2 million people worldwide killed by cars every year (Thorne, Filmer-Sankey, & Alexander, 2009).

While most urban areas are dominated by impervious surfaces that create heavy runoff, green roofs are able to delay runoff until after peak rainfall. This prevents flooding and sewage overflow. Because roofs can make up 32% of the built environments horizontal surface, green roofs are ideal in urban environments where having wetlands, retention ponds, and storage reservoirs are impractical. Studies in urban areas including Portland, Oregon, and East Lansing, Michigan determined green roofs could reduce total building runoff by 60% to 79% (Oberndorfer, et al., 2007).

Green roofs are able to improve building energy conservation and lower the energy demands of a building. For a residential house in Toronto, having a green roof reduced the cooling load by 25% for the entire house and 60% for the floor directly below the green roof. Green roofs have the most energy efficient impact on buildings that have a high roof-to-wall ratio (Oberndorfer, et al., 2007).

In an article written by Stuart Harris, he states that the two main ways to reduce greenhouse gas emissions are to increase energy efficiency and utilize different sources of energy in energy supply. According to Harris, “the best way to achieve fuel switching is by getting the relative prices right so that they reflect their full social costs” (Harris, 1991, p. 405).
Wind energy, solar energy, and geothermal energy are viable sources of sustainable energy that don’t produce any harmful emissions radioactivity, or waste materials.

According to Jon Kellett (1990):

...wind power has many attributes which commend it to an environmentally sensitive public. First, wind energy, unlike fossil fuel resources, will never run out. It is flexible in that it can be utilized at a variety of scales. A single generator might serve the needs of a house or farm, a small cluster of machines could supply power to a village or factory and an extensive park of larger machines could supply power to the grid. (p. 141).

Solar energy entails using energy from the sun to generate power and can be converted to other source of power such as heat or electricity (Purdue University Discovery Park: Energy Center, 2009). According to the Union of Concerned Scientists, 100 square miles in Nevada is able to produce enough solar electricity to supply the United States (Bivens, 2002). Geothermal energy is harnessed from the natural heat of the Earth by drilling geothermal wells. Geothermal energy is a low-cost and dependable energy source. Using geothermal energy has been successful in many countries. In Iceland, about half of the national residential heating demands are met by using geothermal energy sources (Berg, 1974).

**2.6 Financing Strategies**

Financing strategies is the final element of this creative project. This section of the literature review will assess the existing research of financing strategies as they relate to the research aim.

**2.6.1 Financing Strategies for Neighborhood Redevelopment**

The most widely used tool for funding public economic development initiatives are funds from tax increment financing (TIF). TIF is a government program designed to support urban
redevelopment and has been implemented in almost any type of community including industrial neighborhoods, suburbs, small towns, farmlands, and central business districts. To use TIF funds, a tax increment district (TID) is established and the revenue growth created within the district is used to pay for physical infrastructure and other expenditures that will promote economic growth in the district. By creating new growth, the improvements produce the incremental revenues that pay the program that sparked the growth (Briffault, 2010). There are four interrelated features of TIF that are key: TIF is decentralized, TIF is an example of the fiscalization of local development policy, TIF plays off the fragmentation of the local governments, and TIF reflects the entrepreneurial spirit of economic development programs (Briffault, 2010).

Public-private partnerships are another strategy for financing large projects that public sectors are not able to finance alone. Though public-private partnerships have been used as a tool for redevelopment in the United States in the past 100 years, they gained popularity in use in the 1980s (Becker & Patterson, 2005).

A public-private partnership is defined by Satish Bagal (2008) as:

...a cooperative arrangement between private and public sector organizations for providing infrastructure services and products to the public where the parties agree to share duties, responsibilities, costs, profits and risks. This is attained through various agreements and covenants and involves a large number of participates such as project sponsors, investors, operators, insurers, suppliers, contractors and sub-contractors. (p. 24).

Typical qualifications to public-private partnerships include market-driven competition, shared risks, and transparency as necessary prerequisites for effective long-term contracts that accomplish their intended purposes and shelter the public sector from excessive risk (Bloomfield, 2006). In Pittsburg, a successful public-private partnership has resulted in $76 million of public investment, $100 million of private investment. The investments have had an impact of 2,300 housing units for low-income and elderly persons, 20,000 rehabilitated housing
units, and 8,000 units that have received energy-related improvements. Additionally, residential satisfaction increased from 42% in 1975 to 75% in 1984 (Ahlbrandt, 1986).

For EcoDistricts to be successfully financed, they will require a public-private partnership to allocate resources, benefits, and risks. Several types of public, philanthropic, and private capital will be required. Types capital include cost-sharing, partnerships, below-market-rate loans, debt/bonds, grants, impact/service fees, private equity, revolving loans, subsidies, tax assessments, tax incentives, TIF, third party ownership, and volunteer contributions (Portland Sustainability Institute, 2011). Depending on the size of the EcoDistrict, there will be different combinations of the various funding sources.

2.7 Summary

The following section will summarize the findings from the literature review as they pertain to the three research questions of this creative project, as outlined in previous chapters.

2.7.1 Why are Communities Creating EcoDistricts in Former Industrial Areas?

Redeveloping former industrial areas into EcoDistricts is a creative and sustainable way to reinvent and reintegrate these blighted and unappealing communities. By incorporating sustainable principles into redevelopment, the former industrial areas are able to reposition themselves as the community of the future and create a new identity; one that gives back to the community, reverses past damages, and is ripe with opportunities. Creating EcoDistricts in former industrial areas is a way to promote health, sustainability, achieve a higher quality of life, create jobs, and achieve social equity in communities that have struggled with polarization. Additionally, successfully implemented EcoDistricts benefit the greater region as well by
decreasing sprawl, improving the tax base, and increasing stickiness to attract new and retain the existing industries.

2.7.2 How are EcoDistricts Accomplishing Their Sustainability Goals?

EcoDistricts are accomplishing their sustainability goals by reducing the demand on natural resources, using renewable energy sources, and integrating the natural environment into the existing urban form.

To reduce the demand on natural resources, EcoDistricts can incorporate passive solar design techniques into new building developments, use green roofs to reduce heating and cooling, and harvest rainwater for use. To increase the supply of natural energy, EcoDistricts can use geothermal wells that are connected on a grid, solar energy, and wind energy. Incorporating density in an appropriate scale and localizing the economy creates a community that is more walkable, less sprawled, has improved air quality, and reduces the amount of impervious surfaces to increase water quality.

2.7.3 How Are EcoDistricts Financing Infrastructure?

There are multiple ways to find capital to finance eco districts. These include: cost-sharing/partnerships, below-market-rate-loans, debt/bonds, grants, impact/service fees, private equity, revolving loans, subsidies, tax assessments, tax incentives, TIF, third party ownership, and voluntary contributions (Portland Sustainability Institute, 2011).

Public-private partnerships have successfully been used to finance redevelopment projects. In the partnerships, the stakeholders share the risk, rewards, cost, and responsibility of the redevelopment project. These partnerships can be more successful in redevelopment projects
because some infrastructure will need to be installed prior to need. As a result, the risk as well as rewards would be increased and having a public-private partnership can distribute the risk among several stakeholders.
3.1 Introduction

In urban planning, case studies demonstrate how professionals have successfully implemented similar real world projects. The goal of this chapter is to determine how former industrial areas and brownfields have redeveloped into EcoDistricts; including the employed sustainability techniques, financing strategies, and the motivations.

3.2 Case Study Selection Criteria

The three case studies to be examined are the Cleveland EcoVillage, Portland South Waterfront EcoDistrict, and Larimer Neighborhood. These case studies were selected because of their similarity to the chosen site for this creative project based on three criteria:

1) Former industrial area/post-industrial area/brownfield
2) Reinvestment in older infrastructure
3) Creative financial solutions.

These case studies will consist of five parts: introduction of the site, redevelopment motivations, sustainability techniques, financing strategies, and a conclusion.
3.3 Cleveland EcoVillage, Cleveland, Ohio

The introduction of the site provides a brief overview of the neighborhood and surrounding community including a brief history, the neighborhood boundaries, and key players.

3.3.1 Introduction of the Site

In the mid 1800s, the Detroit-Shoreway neighborhood was a heavily developed industrial area. As a result of the industrial development, the Detroit-Shoreway neighborhood was created as a residential neighborhood for middle-income families with a mixture of single family and two family homes (Cleveland City Planning Commission, n.d.). The neighborhood became a node for various nationalities including Romanian, Irish, German, and Italian. However, after World War II, many families sprawled to the suburbs and the Detroit-Shoreway neighborhood became an area of disinvestment (Michaud, 2007).

The Cleveland EcoVillage, located in the Detroit-Shoreway neighborhood, was founded in 1998 through a partnership between the Detroit Shoreway Community Development Organization and EcoCity Cleveland (Portland Sustainability Institute, 2013). The neighborhood encompasses a quarter-mile radius around the west 65th Lorain Regional Transit Authority rapid stop on the west side of Cleveland. The Cleveland EcoVillage is bound by Franklin Boulevard, West 52nd Street, Interstate 90, and West 65th Street, seen in Figure 3.1 (Kent State University, 2011). In 2010, the EcoVillage was home to 1,656 residents, 691 households, and 188 jobs (Sustainable Cleveland, 2013).
Figure 3.1

*Cleveland EcoVillage Boundaries*

*Esri ArcGIS Online. Adapted by Author, 2014*
3.3.2 Redevelopment Motivations

The EcoVillage was created to improve urban living, create a more healthy and attractive urban environment, develop a strong neighborhood identity, retain the existing population and attract new residents. Councilman Michael Zone described the EcoVillage redevelopment motivations as:

*The EcoVillage was established to improve urban living in the Detroit Shoreway neighborhood through improved transit options, free top-of-the-line outdoor recreation area, community gardens, improved housing options that dramatically reduce energy costs and increase green space to create a more serene environment.* (Detroit Shoreway Community Development Organization, 2013, p. 1).

The sustainability projects within the EcoVillage have been integrated into the existing neighborhood fabric. One of the core pillars of the Cleveland EcoVillage is community interdependence. The projects endeavor to connect people and natural resources in a way that improves the quality of life for all residents. To encourage connectivity, personal development, and inform the residents on sustainable environmental practices, the Detroit Shoreway Community Development Organization partners with different organizations to provide residents with a wide range of workshops and programs. Topics vary from native plant workshops, to gardening seminars, rain barrel workshops, community cleanup days, and community planting days (Detroit Shoreway Community Development Organization, n.d.)

Additionally, there are many affordable and market rate housing options within the EcoVillage. One of the housing typologies, the EcoVillage townhomes with detached garages, are able to heat and cool for less than $700 a year and are tax abated (Detroit Shoreway Community Development Organization, n.d.).
3.3.3 Sustainability Techniques

The following section describes the sustainability techniques used within the Cleveland EcoVillage such as transit-oriented development, the recreation center, and local grown food.

The Cleveland EcoVillage is an example of a dense urban neighborhood transit-oriented development surrounding the West 65th Street Rapid Transit Authority station. The station, completed in 2005, is the first completed project and the focal point of the Cleveland EcoVillage. Many green practices have been incorporated into the station such as energy-efficient lighting, passive solar heating, recycled steel roof, benches made from recycled materials, a pedestrian bridge, and a mini park to connect the station to the greater EcoVillage. There are multiple modes of transportation networks within the EcoVillage that has let the residents become more independent from automobiles (Detroit Shoreway Community Development Organization, n.d.). According to the Detroit Shoreway Community Development Organization, “By offering multiple modes of transportation, reliance on carbon emitting automobiles is decreased thus leading to cleaner air, stronger ecosystems and healthier people” (Detroit Shoreway Community Development Organization, n.d.).

The Zone Recreation Center Sustainable Greenspace project is a redevelopment of 22 acres of greenspace that is the result of the community planning process. The project was created through collaboration between the City of Cleveland, Councilman Michael Zone, Detroit Shoreway Community Development Organization, ParkWorks, McKnight Associates, and Cleveland EcoVillage. The recreation center will improve water quality through on-site treatment for storm water, restore wildlife habitat and wetlands, and will serve as an education center for the community and schools to learn about overall wellness and personal responsibility (Cleveland City Council, 2011).
Locally grown food is a major interest within the EcoVillage. Within the EcoVillage are two community gardens, and several non-profit and business organizations, including Grace Brothers urban farm and garden store and EcoVillage Produce LLC Market Garden.

Grace Brothers provides support for neighborhood gardeners by selling gardening supplies and livestock (such as live chickens), demonstrates the importance of gardening in the EcoVillage, and serves as a location for community agriculture subscriptions. The EcoVillage Produce LLC Market Garden grows food for sale and has programs to promote healthy eating: the Produce Perks Electronic Benefits Transfer and Produce Prescription. The Produce Electronic Benefits Transfer programs allow customers to use public assistance funds to purchase produce. To increase buying power, the program matches the first $10. The Produce Prescription program enhances healthy local food accessibility by redeeming prescriptions for fruits and vegetables that residents have been given by health care professionals.

The two community gardens provide space for residents to grow their own food, even if they don’t have access to personal yards. Some residents have their own chicken coops and honeybee hives. The rise in local food production has led to an informal economy within the EcoVillage where residents trade and sell produce they’ve grown (Center for Neighborhood Technology, 2013).

3.3.4 Financing Strategies

The EcoVillage is a public-private partnership between non-profit organizations, the Regional Transit Authority, neighborhood residents, and the City of Cleveland (Beach, 2004). Key partners include the Detroit Shoreway Community Development Organization and EcoCity Cleveland.
The EcoVillage has attracted financing from private foundations, government grants and business donations (Gillespie, n.d.). Different projects required different funding sources. When developing the EcoVillage Townhomes, the City of Cleveland provided $50,000 in Ward 17 Neighborhood Development Funds, $200,000 in Housing Trust Funds, seven Land Bank parcels, and a 15-year tax abatement and technical assistance. In addition, the U.S. Environmental Protection Agency provided a Sustainable Development Challenge Grant and several banks and foundations provided additional grants and loans for the project (Turner, 2002). The recreation center was a $3.5 million project that was funded through partnerships between the City of Cleveland, Councilman Michael Zone, Detroit Shoreway Community Development Organization, ParkWorks, McKnight Associates, and Cleveland EcoVillage (Cleveland City Council, 2011).

3.3.5 Summary

The Cleveland EcoVillage shows how to reposition older industrial neighborhoods into sustainable communities. The EcoVillage has successfully integrated density into the urban fabric, renovated historic homes into sustainable homes, and reduced greenhouse gas emissions.

Because the Cleveland EcoVillage was started from a grass root movement, community involvement has been an important aspect from the beginning. Residents have identified their fellow residents and the diversity of the neighborhood as one of the top assets of the EcoVillage. As a result of the sustainability techniques employed, gas emissions per person in the EcoVillage are lower than the Cleveland average. A study found the average gas emission per person in the EcoVillage was 11 metric tons of carbon dioxide equivalent compared to the Cleveland average of 32 metric tons of carbon dioxide equivalent (Sustainable Cleveland, 2013).
3.4 Portland South Waterfront EcoDistrict, Portland, Oregon

The introduction of the site provides a brief overview of the neighborhood including a brief history, the neighborhood boundaries, and key players.

3.4.1 Introduction of the Site

The Portland South Waterfront EcoDistrict is located in a former industrial area along the Willamette River in Portland, Oregon. In the 1880s, the Portland Lumber Company was established in the district and supplied electricity and heat to the Portland downtown area. Other industries that developed in the waterfront area include salvaging facilities, chemical manufactures, aluminum smelting operations, and metal fabrication plants. In the 1950s and 1960s, two freeways were developed that led to the industrial decline within the South Waterfront area. The development of Harbor Drive and the I-5 freeway became physical barriers that limited access to the railroad, waterfront, and the greater Portland community (De Sousa & D'Souza, 2012).

In 1999, the area was established in the North Macadam Urban Renewal Area and was targeted for development as a mixed-use central city neighborhood. There has been recent apartment and condominium development that has increased the residential land use within the district; however much of the area is still undeveloped. The South Waterfront EcoDistrict has a population of 891 and a total area of 153.5 acres (Portland Sustainability Institute, 2011). Seen in figure 3.2, the EcoDistrict is bound by the Willamette River, Marquam Bridge, I-5 freeway, and Hamilton Street (De Sousa & D'Souza, 2012).
Figure 3.2

*Portland South Waterfront EcoDistrict Boundaries*

*Esri ArcGIS Online. Adapted by Author, 2014*
3.4.2 Redevelopment Motivations

According to De Sousa and D’Souza (2012), the prime motivation for redevelopment within the Portland South Waterfront district was to reposition the area to become an area encouraged investment and development:

*The industrial decline, physical isolation, and brownfield status of the South Waterfront District negatively impacted Portland’s economic and social development. The loss of jobs in manufacturing contributed to significant unemployment, among the highest in the U.S.7 The physical isolation and brownfield status of the South Waterfront District discouraged private investment or redevelopment, and led to the erosion of the property tax base.* (p. 2).

Since the late 1970s, revitalization of the district has been of large importance to the City of Portland. Harbor Drive was removed, land was acquired by the Portland Development Commission, and several long term renewal plans were created (De Sousa & D'Souza, 2012). In 1999, the North Macadam Urban Renewal Plan was adopted (Portland Sustainability Institute, 2011). While the vision has evolved since the beginning of the revitalization process to meet the changing economic and social needs of Portland, the primary objective remained consistent: to recreate connectivity between the South Waterfront District and neighboring communities. Revitalizing the Willamette River waterfront into an amenity for the public that provided recreational and civic activities became the cornerstone of the primary objective (De Sousa & D'Souza, 2012).

Public policy objectives were implemented through a master plan and included affordable housing, job growth, increased transportation networks, new greenways, enhancement of Portland’s research universities, and sustainability and smart growth practices. The final master plan in 2002 set the goal to create 10,000 jobs and 3,000 housing units (2,212 market rate and 788 affordable housing units) by the year 2019 (De Sousa & D'Souza, 2012). In 2012, the first
affordable housing development was established as the first phase of the affordable housing projects (Museum of the City, n.d.).

3.4.3 Sustainability Techniques

Because of the pollution from the heavy industrial and manufacturing land uses, the Portland South Waterfront had a large need for sustainable and eco-friendly development (Museum of the City, n.d.). As sustainability techniques have been integrated into almost every aspect of this EcoDistrict, urban designers, urban planners, and architects have considered the impact development will have on future generations and have taken specific actions to, “reduce the energy consumption of the area and its buildings and to reduce the ecological, environmental, and social footprint of the area” (Museum of the City, n.d.).

Creating multi-modal transportation networks was identified as a priority early in the redevelopment in order to reconnect the Portland South Waterfront EcoDistrict to the greater community. To reduce automobile dependency, access to public transportation and creating bicycle and pedestrian pathways became a priority. Infrastructure improvements on the Portland Streetcar were made within the EcoDistrict to connect the residents, visitors, and employees to the City of Portland and connecting neighborhoods (De Sousa & D'Souza, 2012). Greenways were developed to enhance pedestrian and bicycle corridors and incorporated filtration systems for rainwater, such as bio swales and rain gardens, to help simulate the natural hydraulic cycle, reduce storm water runoff, and improve the natural ecology (Museum of the City, n.d.). In addition of the bio swales and rain gardens, ecoroofs, also known as greenroofs, have been incorporated into building design to treat storm water (South Waterfront Community Relations, 2014)
Sustainable building materials, solar panels, and trombe walls were incorporated into building design to reduce energy demand and create renewable energy within the Portland South Waterfront EcoDistrict. Sustainable materials such as wool carpeting, sustainably-harvested woods, and rapidly renewable materials while constructing and renovating buildings improve the environment and benefit the local economy. The Oregon Health and Science University Center for Health and Healing features solar paneling that generates 60,000 Wh per year while the trombe wall preheats hot water for the building. Together, these design features save 36 tons of CO2 emissions from entering the atmosphere on an annual basis (South Waterfront Community Relations, 2014).

3.4.4 Financing Strategies

The Portland South Waterfront District EcoDistrict redevelopment has been financed through a public-private partnership between the following stakeholders: Portland Development Commission; Oregon Health and Science University; River Campus Investors, LLC; North Macadam Investors, LLC; and Block 39, LLC (De Sousa & D'Souza, 2012). A public-private partnership was utilized to leverage public and private resources in to create investment in an area that would not be feasible otherwise. Furthermore, because of the industrial history of the EcoDistrict, public intervention was required to reduce economic and environmental development costs and to stimulate private investment that supports the larger policy objectives.

A report prepared for the Portland Development Commission compared anticipated returns on investment in the Portland South Waterfront EcoDistrict and compared a public-private partnership to conventional financing methods:

A market-only approach would have resulted in $352 million of investment compared to the $1.9 billion of public and private investment currently projected by build-out in 2020.
Under this second scenario, $1.7 billion is from private investors, with the balance coming from public sources. Performance indicators for housing, jobs, transportation, retail, and parks and open space also demonstrate higher quantitative measures through the public-private approach, allowing the redevelopment project to move from a conventional to a more sustainable one. (De Sousa & D'Souza, 2012, p. 10).

The Portland Development Commission has managed all of the public projects, such as infrastructure improvements and utility construction and using TIF funds have raised approximately $131 million for these improvements. Private investments are focused on development of retail, market housing, offices, and research facilities (De Sousa & D'Souza, 2012).

3.4.5 Summary

The Portland South Waterfront became a priority for sustainable redevelopment when the industrial decline and pollution led to an economic decline in Portland. Because the site had a history of ecologically destructive land uses, there was a large need for development that was sustainable and eco-friendly. The EcoDistrict has successfully implemented sustainable techniques including greenways, creation of multi-modal transportation networks, passive design, solar panels, and bio swales to reduce greenhouse gas emissions, automobile dependency, and stormwater runoff.

The redevelopment was possible through public-private partnerships with educational institutions, private developers, and the Portland Development Commission. Using TIF, the City of Portland was able to generate over $130 million for public improvements. By 2019, the Portland South Waterfront EcoDistrict will hope to create 10,000 jobs and incorporate 3,000 mixed-income housing units.
3.5 Larimer Neighborhood, Pittsburg, Pennsylvania

The following section provides a brief overview of the neighborhood including the industrial influences, relevant demographics, and key players involved in the redevelopment.

3.5.1 Introduction of the Site

The Larimer neighborhood is located within City of Pittsburg in Allegheny County. Italian immigrants first settled the neighborhood in the 1890s. The County was once the steelmaking capital of the world; however in present day, only 4% of the labor force is employed in primary and fabricated metals industries.

Disinvestment started in the 1980s as gang violence and drug culture increased in the neighborhood. In 1998, the neighborhood initiated planning efforts and has collaborated with the East Liberty Concerned Citizens Corporation of Pittsburg/Larimer-Blueprint Community and the Pittsburg Department of City Planning to revitalize the neighborhood.

The Larimer neighborhood has a population of approximately 2,602 and has a total area of approximately 283 acres. The neighborhood is bound by Highland Park and Lincoln-Lemington-Belmar, East Liberty, Homewood West, Point Breeze North, and East Liberty Boulevard, seen in Figure 3.3 (Blueprint Communities, n.d.)
Figure 3.3

Larimer Neighborhood Boundaries

*Esri ArcGIS. Adapted by Author, 2014*
3.5.2 Redevelopment Motivations

The Larimer community redevelopment vision of “a safe, clean, strong, diverse, vibrant, healthy and attractive community—with a renewed sense of pride—that is a model for inner-city revitalization” (Wescott, 2009, p. 1) focuses on human needs and empowering the neighborhood residents. Larimer neighborhood is pursuing sustainable redevelopment that creates sustaining jobs, secure healthy food supplies, increase the range of housing options, and develop sources of energy that are not dependent on fossil fuels (Kingsley Association, 2012).

Through a Vision planning process, five strategies were defined to guide the redevelopment in the Larimer neighborhood. The strategies include creating a more concentrated residential core, establishing an identity as a state-of-the-art green community, enhance connectivity, retain existing residents, and create destinations that change the reputation of the neighborhood (Strada Architecture, 2010).

3.5.3 Sustainability Techniques

As stated by Fred Brown, the Associate Director for Program Development at The Kingsley Association “our overarching goal is to take a green community like Larimer and take it off the grid” (O'Driscoll, 2012). To accomplish the overarching goal, the Larimer neighborhood has set sustainable goals specific to the following categories: equity (opportunities, jobs, and housing); site (nutrition and habitat); water (use and ecology); and energy (creation and use). Each goal has outlined specific strategies that are keys to success (Gasca, 2011).

The equity objectives strives to provide equitable access to housing and jobs for diversity of lifestyles through community engagement, business development, and providing monetary and professional resources for improvement of existing properties. The site objectives endeavor
to close the loops of food and waste with a productive landscape with strategies including a farmers market to connect the neighborhood with food growers and to distribute neighborhood produce, rehabilitate regional sewage treatment system, and enable residents to grow their own produce. The water goal of improving water flows and become net zero water will be accomplished by reestablishment of valley flows, integrating experience of water into opens pace and streetscape systems, and lessen demand with building system improvements (rain barrels and irrigation). The energy objects to create equitable energy creation, use, and net zero energy include raising awareness of regional air quality issues, creating a do-it-yourself distributed power generator, and use renewable energy sources such as solar energy and geothermal energy for block scale and multi-unit developments (Gasca, 2011).

The Larimer neighborhood has established resident driven community action teams that are responsible for different initiatives. To improve connectivity, Larimer has partnered with the University of Pittsburg, Mascaro Center for Sustainable Innovation to help analyze a solar-based lighting solution for a poorly lit and dangerous underpass at the entry of the Larimer neighborhood (Gasca, 2011).

A former BP gas station in the neighborhood has been successfully transformed into the Environment and Energy Community Outreach Center. The center uses solar roof panels to generate energy and includes a storm water management garden that has incorporated green infrastructure such as permeable pavement and bio swales, and has used local fauna in the landscaping of the property. Since 2009, there has been more than $1.4 million invested in the Environment and Energy Community Outreach Center. In addition to serving as a public demonstration for green and sustainable practices, the center serves as a source of employment
opportunities for full-time and internship positions and provides energy and utility budgeting expertise for small businesses and residents (Pittsburgh Courier Associated Press, 2013).

3.5.4 Financing Strategies

Projects that have been implemented within the Larimer neighborhood have been financed through public-private partnerships, private developers, and non-profit organizations. The redevelopment of the Larimer neighborhood has been coined as, “a priority for the City of Pittsburg, the Urban Redevelopment Authority, local and state politicians, the philanthropic community and other public, private, and nonprofit groups” (Housing Authority of the City of Pittsburgh, 2014, p. 2).

The City of Pittsburgh was awarded a $30 million grant from the U.S. Department of Housing and Urban Development to be used for a 350 unit mixed-income and mixed-use development in the Larimer neighborhood that Mayor Bill Peduto stated to be, “the greenest housing development to be built in the United States” (Nelson Jones, Pittsburgh lands $30 million grant to rebuild Larimer, 2014). In addition, the Housing Authority of the City of Pittsburg and McCormack Baron Salazar have collaborated to finance a $22 million, 18 building 85-unit residential project (Schooley, 2014).

East Liberty Community Development Corporation has been a key partner in the redevelopment process of the neighborhood. In 2009, the non-profit received a $40,000 community design grant matched by the city Urban Redevelopment Authority to fund a market study to guide future growth along Larimer Avenue (Nelson Jones, $40,000 Grant To Study Future of Larimer Avenue, 2009).
3.5.5 Summary

Though in the initial phases of development, the Larimer neighborhood redevelopment is the result of a 20-year grass roots movement. Because the redevelopment has started from the ground up, community involvement is a key component of the success of the neighborhood. Projects such as the Environment and Energy Community Outreach Center and green housing developments have been the result of public-private partnerships. Key stakeholders in the neighborhood redevelopment include non-profit organizations and community development corporations.

3.6 Findings

The following section gleans the research gathered from the three case studies in relation to the research questions of this creative project:

1) Why are communities creating EcoDistricts in former industrial areas?
2) How are EcoDistricts accomplishing their sustainability goals?
3) How are EcoDistricts financing infrastructure?

3.6.1 Why are Communities Creating EcoDistricts in Former Industrial Areas?

In the three case study communities (Cleveland EcoVillage, Portland South Waterfront EcoDistrict, and Larimer Neighborhood), EcoDistricts or eco-friendly redevelopment was pursued to improve the quality of life, the local economy, and the environment. In the selected case studies, the neighborhoods had seen decreases in residential population, jobs, and housing opportunities. In order to reposition the neighborhoods from industrial areas of disinvestment to revitalized eco-friendly areas of investment, the neighborhoods utilized strategies that improve
the quality of life for existing residents, attract new residents, strengthened the neighborhood identities, and improved urban living.

Incorporating sustainability techniques into the redevelopment strategies have resulted in a stronger sense of community, job creation, financial benefits, and reductions in greenhouse gas emissions. To create a stronger sense of community, the Cleveland EcoVillage has residential cleanup days and has provided residential workshops. The Larimer neighborhood has created a sense of community by repurposing a former BP gas station into the Environment and Energy Community Outreach Center that provides employment opportunities and energy budgeting resources for residents.

3.6.2 How are EcoDistricts Accomplishing their Sustainability Goals?

To accomplish sustainability goals, EcoDistricts have incorporated multi-modal transportation to create walkable communities, utilized renewable energy sources, and have incorporated water filtration techniques. The Cleveland EcoVillage was developed around the West 65th Street Rapid Transit Authority Station. As such, it became a walkable community and automobile dependency has declined in the neighborhood and average greenhouse gas emissions per person within the EcoVillage is substantially lower than the average per person within the City of Cleveland. The Portland South Waterfront EcoDistrict has made improvements to the streetcar infrastructure to improve access to public transportation and connectivity to the City of Portland and surrounding neighborhoods.

The Portland South Waterfront EcoDistrict has been able to save 36 tons of CO2 emissions annually from a trombe wall and solar paneling on one of the EcoDistricts trademark buildings, the Oregon Health and Science University Center for Health and Healing. While there
haven’t been any studies done on the reduction of greenhouse gas emissions or CO2 emissions from the Energy Community Outreach Center in the Larimer neighborhood, the center serves as a public demonstration and provides an example of how residents can incorporate green energy into their homes.

3.6.3 How are EcoDistricts Financing Infrastructure?

All three of the examined case studies utilized public-private partnerships to accomplish their redevelopment goals. Leveraging resources from private developers, non-profit organizations, and grant funds proved to create a larger impact than conventional financing techniques. Because there are more stakeholders involved, there is a larger interest; more people would benefit from the success of the EcoDistrict and more people would suffer from an unsuccessful plan.

Because of the complexity of EcoDistrict redevelopment, different projects appeal to different stakeholders. For example, the West 65th Street Rapid Transit Authority station in the Cleveland EcoVillage was a partnership between the Regional Transit Authority and other stakeholders while a green housing development in the Larimer neighborhood is a collaboration between a private developer and the Housing Authority of the City of Pittsburgh. The Portland South Waterfront EcoDistrict has successfully implemented TIF financing to raise approximately $131 million to fund public projects and infrastructure improvements that benefits the entire EcoDistrict, including the private retail, office, and market-rate housing development.
3.7 Guiding Principles

The guiding principles for this creative project are a result of the literature review and best practices from the case studies. The guiding principles will pilot the sustainable redevelopment of the East Washington neighborhood into a sustainable and vibrant EcoDistrict.

3.7.1 Create a Walkable Community

As demonstrated by the Cleveland EcoVillage, reducing automobile dependency and creating a compact and walkable community that provides for the daily needs of residents can result in a large decrease of greenhouse gas emissions. Strategies that are key to creating walkable communities include integrating multi-modal transportation networks, increasing density, and incorporating a mixture of land uses.

3.7.2 Achieve a Balance Between Energy Supply and Demand

One of the main distinguishing features of EcoDistrict communities is the ability to create as much energy as consumed. This can be accomplished by reducing the demand on resources by incorporating renewable energy sources (geothermal, wind energy, solar power, rainwater harvesting), integrating environmental features into the urban fabric (such as bio swales, greenways, and wetlands), using passive building design to conserve energy and naturally heat buildings (e.g. trombe walls to heat buildings and greenroofs for insulation), and powering the neighborhood on a district scale.
3.7.3 Improve the Quality of Life

The overarching goal of any redevelopment should be to improve the quality of life within the district and the greater community and to reposition the neighborhood as an area of investment. This goal can be achieved by involving the residential and neighborhood community in the redevelopment, creating a community center that functions as a demonstration of sustainable practices, creating employment opportunities for residents through development, and repurposing vacant land to be used as community gardens and greenspaces.

3.7.4 Utilize Sustainable Means of Financing

For the success of any project, sustainable means of financing are necessary. As demonstrated in Cleveland EcoVillage, Portland South Waterfront EcoDistrict, and Larimer Neighborhood, public-private partnerships were vital to accomplish their goals. Identifying key stakeholders from the beginning will result in a higher level of commitment, interest, and will produce results earlier than financing from one stakeholder. TIF funds have a history of urban renewal and should be applied to the redevelopment as well.
CHAPTER 4: ANALYSIS OF THE STUDY SITE

4.1 Neighborhood Overview

The following section will provide a comprehensive overview of the project site including context within the greater region and a brief history of the neighborhood. The neighborhood overview will provide the foundation for a more in-depth analysis and will define the scope of the project.

4.1.1 Context

The study area, known as the Mallory Main Street District, is a 1.14 square mile area located approximately 1.5 miles east of downtown Indianapolis. The site is bound by East New York Street to the North, North Sherman Drive to the East, East English Avenue and Southeast Avenue to the South, and North State Avenue to the West, seen in Figure 4.1.

The Historic National Road traverses East to West through the study area as East Washington Street. There are several railroads within the site including the CSX transportation rail, Baltimore and Ohio rail, and Northern Southern rail.
Figure 4.1

*Mallory Main Street District Context*

Legend

- □ Mallory Main Street District
- ----- E. Washington St

*Esri ArcGIS. Adapted by Author, 2014*
4.1.2 Neighborhoods

The creative project is located in the Near Eastside neighborhood and Near Southeast neighborhood, seen in figure 4.2. Adjacent neighborhoods include Downtown, Irvington, Southeast, and Fountain Square.

Figure 4.2

Adjacent Neighborhoods

http://maps.indy.gov/myneighborhood/ and Esri ArcGIS. Adapted by Author, 2014
The boundaries of the creative project were chosen because the Nearest East Side
neighborhood and Near Southeast neighborhood are urban industrial neighborhoods of
disinvestment; quantified by the high percentage of vacant housing units and high unemployment
rate in table 4.1. While other neighborhoods, such as Fountain Square and Near Southside, also
show signs of disinvestment, the creative project site has high visibility due to the Historic
National Road and the proximity to downtown. Additionally, there are multiple industrial sites
within the Mallory Main Street District, as discussed in section 4.2.2.

Table 4.1

<table>
<thead>
<tr>
<th>Neighborhood Comparison</th>
<th>Near Eastside</th>
<th>Near Southeast</th>
<th>Near Southside</th>
<th>Downtown</th>
<th>Fountain Square</th>
<th>Southeast</th>
<th>Irvington</th>
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<tr>
<td>Total Population</td>
<td>29,675</td>
<td>26,084</td>
<td>7,405</td>
<td>15,556</td>
<td>4,794</td>
<td>2,961</td>
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<td>Median Household Income</td>
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<td>$26,641</td>
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<tr>
<td>Total Housing Units</td>
<td>16,642</td>
<td>12,281</td>
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<td>8,742</td>
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<tr>
<td>Percent of Owner</td>
<td>29%</td>
<td>41%</td>
<td>31%</td>
<td>19%</td>
<td>31%</td>
<td>70%</td>
<td>55%</td>
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<td>Percent of Vacant</td>
<td>31%</td>
<td>19%</td>
<td>27%</td>
<td>11%</td>
<td>27%</td>
<td>9%</td>
<td>15%</td>
</tr>
<tr>
<td>Housing Units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Renter</td>
<td>39%</td>
<td>40%</td>
<td>42%</td>
<td>70%</td>
<td>42%</td>
<td>21%</td>
<td>30%</td>
</tr>
<tr>
<td>Occupied Housing Units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$78,776</td>
<td>$73,836</td>
<td>$71,166</td>
<td>$202,101</td>
<td>$72,215</td>
<td>$97,085</td>
<td>$109,35</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>13.1%</td>
<td>11.5%</td>
<td>7.3%</td>
<td>6.9%</td>
<td>11.8%</td>
<td>5.9%</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

*U.S. Census Bureau via Esri Community Analyst, 2014*
4.1.3 History

Development began in the area of the Mallory Main Street District in 1838 when the Historic National Road connected with Washington Street. Throughout the 1800s, various organizations inhabited the area including United States Arsenal, Indiana State Asylum for the Dumb and Deaf, Anheuser Busch Beer Agency, and the Indiana Women’s Prison. After the civil war, schools and churches located near the area and a small business district began to develop. The residential population began to develop and was formed by wealthy families who could afford to purchase large plats of land (Great Indy Neighborhoods, n.d.).

In 1902, the Indianapolis Indians had their first baseball stadium located near the present day intersection of South Gray Avenue and East Washington Street. Years later, a coney island style amusement park was developed on the former baseball stadium (Harton, 2012). Wonderland was created by entrepreneurs Minnie Wilson, Edward Rentsch, and Richard Kann to, “organize, promote, and carry on pleasure resorts for the growing population of eastside residents seeking recreation” (Sunkel, 2014). Wonderland offered many different attractions such as the Chute-the Chutes water ride, electric tower visitors could climb, and the Blind Tiger—an establishment selling alcohol without a license. In 1911, a fire started from a discarded cigarette destroyed Wonderland (Sunkel, 2014).

In 1929, the P.R. Mallory and Co. headquarters building was opened on the site of the former Wonderland amusement park. By 1966, the factory employed over 1,500 employees (Race, 2014). The population began to decline after World War II as families migrated to the suburbs to escape the hustle and bustle of city life, leading to a transient population with lower incomes inhabiting the neighborhood (Oreskovich Loudin, 2009).
In 1970, P.R. Mallory began to sell parts of the factory leading to a decline in employment in the neighborhood, disinvestment, and blight. Currently, parts of the old factory are used by CMW Inc., to produce welding products and high-density metals. CMW employs approximately 110 people (Harton, 2012).

4.2 Existing Conditions of the Built Environment

The following section examines the existing conditions of the built environment in terms of zoning, land use, connectivity, and transportation networks.

4.2.1 Zoning

There are nine zoning classifications within the Mallory Main Street District: medium industrial urban (I3U), heavy industrial urban (I4U), dwelling district five (D5), and dwelling district eight (D8), office-buffer commercial district (C1), high intensity office-apartment commercial district (C2) neighborhood commercial district (C3), community-regional commercial district (C4), and high intensity commercial district (C7). All of the zones have varying permitted uses, special exception uses, and development standards related to building height and setbacks.
Approximately 40% of the site is zoned I3U or I4U for industrial land uses. Within the I3U zone, the permitted uses include manufacturing, power plants, propane gas storage, self-storage facilities, offices, industrial schools, day care centers, agricultural uses, research laboratories, and warehousing. According to the City of Indianapolis *Chapter 733 Industrial Districts Zoning Ordinance* operational techniques will be utilized to insure performance control of odor, noise, vibration, heat, and glare in order to achieve operational characteristics that are
consistent with medium industry (City of Indianapolis, 2008). The I4U zone allows all permitted uses within the I3U zone in addition to harmful mineral products (e.g. asbestos), lumber yards, heavy manufacturing, foundries, slaughtering/meat packing, and concrete mixing (City of Indianapolis, 2008; City of Indianapolis, 2008).

Approximately 46% of the Mallory Main Street District is zoned for residential use, D5 and D8. According to the City of Indianapolis Dwelling Districts Zoning Ordinance, this district is to be utilized in areas of medium intensity single-family development; however two-family dwellings are permitted on any lots within the D5 district. Additional permitted uses include home occupation and group homes. The typical density within the D5 district is 4.5 dwelling units per acre. The Chapter 731 Dwelling Districts Zoning Ordinance states:

*The application of this district will be found within urban, built-up areas of the community, and where all urban public and community facilities, and services are available... Development plans should incorporate and promote environmental and aesthetic considerations, working within the constraints and advantages presented by existing site conditions, including vegetation, topography, drainage and wildlife.* (City of Indianapolis, 2008, p. 22)

The D8 district was designed to be used in older, developed urban areas and allows all types of residential development, excluding mobile dwellings. This district is to be used in areas “that are experiencing renewal either by public action or by natural process” (City of Indianapolis, 2008, p. 35). The typical density within the D8 district ranges from five to twenty-six dwelling units per acre. Like the D5 district, development should incorporate and promote aesthetic and environmental considerations (City of Indianapolis, 2008).

Approximately 11% of the Mallory Main Street District is zoned for commercial uses. The C1 district is to be sued as a buffer between more intense commercial or industrial zones and protected districts, or along thoroughfares as a transition from retail to residential. Within the C1
district, any type of office use is permitted, as well as day care centers, health services, schools, and community centers (City of Indianapolis, 2008).

The C2 high intensity office-apartment commercial district is intended to create mixed-use districts. In addition to all permitted uses within the C1 district, the C2 district includes several additional uses such as drug stores, art galleries, etc. The residential uses within this district are required to follow D8 regulations (City of Indianapolis, 2008).

The C3 neighborhood commercial district includes a complete range of personal, professional and business services and retail sales necessary for the demand of a fully developed residential neighborhood. This zone does not permit business that generate unusual and heavy traffic beyond the neighborhood demands (City of Indianapolis, 2008).

The C4 community-regional commercial district is intended for use in districts where large business development and regional shopping centers occur. In addition to uses permitted in C1 and C3 zoning districts, other permitted uses include adult entertainment business, hotels, and theatres (City of Indianapolis, 2008).

The C7 high intensity commercial district is for areas where the character of retail commercial uses is incompatible in other districts because of intensity, traffic generated, and permitted uses. Examples of permitted uses include automobile and boat dealers, mini-warehouses, and repair services (City of Indianapolis, 2008).

4.2.2 Land Use

Within the project site, there are five main land uses: industrial, low-density residential, commercial, green space, and community services. The low-density residential is located
adjacent industrial, commercial and community services. The low-density residential is about 54% of the total land use.

Figure 4.4

*Mallory Main Street District Land Use Map*

The industrial land use is located along the railroad, Southeastern Boulevard, and East Washington Street. Located within this land use are large warehousing buildings, storage facilities, repair shops, and manufacturing. The industrial land use is approximately 32% of the total land use within the Mallory Main Street District.
The commercial land use is found along East Washington Street. This land use is approximately 8% of the total land use within the project site and includes fast food restaurants, retail, and commercial stores. The majority of these buildings have deep set backs, large parking lots, and are automobile oriented resulting in a decrease of walkability within the project site.

There are three large green spaces within the project site: Pleasant Run Parkway located in the South East corner of the project site, Clayton and Lasalle Park, and Williard Park. In total, these greenspaces account for 4% of the land use within the project site.

The special use land use is approximately 2% of the total land use. Included in this classification is the Englewood Community Development Corporation, East Washington Branch of the Indianapolis Public Library, and Indianapolis Fire Department Station 11.

4.2.3 Connectivity

The Mallory Main Street District is connected to the greater region by East Washington Street and Southeastern Avenue. These roadways are classified as “other principal arterials” by the Indiana Department of Transportation (INDOT) (Indiana Geological Survey, 2012). According to the United States Department of Transportation Federal Highway Administration, the other principal arterials function to serve major metropolitan areas, provide mobility, and directly serve adjoining land uses (U.S. Department of Transportation Federal Highway Administration, 2013).

Rural Street, New York Street, Sherman Drive, and English Avenue are classified as “minor arterial roadways” (Indiana Geological Survey, 2012). In an urban setting, these roadways deliver intra-community linkage and may transport local bus routes. These roadways
provide more land access than the “other principal arterials” without disturbing the neighborhood identity (U.S. Department of Transportation Federal Highway Administration, 2013).

State Avenue is the only roadway classified as a “major collector” (Indiana Geological Survey, 2012). These roadways collect traffic from local roads, and direct them to the arterial network. The local roads are interwoven within these larger roadway classifications and provide direct access to land uses and higher arterial roadways. The local roads are not meant to carry through traffic; rather they are limited to local traffic and have low average daily trips (U.S. Department of Transportation Federal Highway Administration, 2013).

Figure 4.5

*Mallory Main Street District Connectivity*
There are several railroads within the project site including the CSX transportation rail and Norfolk Southern rail. Together, the CSX transportation rail and Norfolk Southern rail connects the project site to over 40,000 miles of track and over 70 (CSX Corporation, 2012); (Norfolk Southern, n.d.).

4.2.4 Transportation Networks

Within the Mallory Main Street District, there is one roadway with a bike lane, four bikeable roadways, and a greenway as classified by the Indy COG. East New York Street is the only roadway with a bike lane within the project site. The four bikeable roadways include State Avenue, Southeastern Avenue, English Avenue, and Sherman Drive. The Pleasant Run Parkway located in the South East corner of the project site includes a bikeable greenway (Indy COG, 2013).

The IndyGo bus network services the project site and has three routes within the project site: Route 8 along East Washington Street, Route 26 along Rural Street, and Route 3 along East New York Street (IndyGo, 2014). Additionally, the orange line and blue line are two proposed bus rapid transit lines through the Mallory Main Street District that would connect the district to the greater Indianapolis region (Indy Connect, 2014).
4.2.5 Brownfields Sites and Industrial Waste Sites

Within the Mallory Main Street District boundaries, there are 38 brownfield sites and six industrial waste sites, seen in figure 4.7 below (Indiana Department of Environmental Management, 2013); (Indiana Department of Environmental Management, 2013). Because of the industrial land uses within the creative project boundaries, there is a concentration of brownfield sites centrally located within the boundaries that may prove difficult for redevelopment. According to the Indiana Department of Environmental management:
A brownfield site is a parcel of real estate that is abandoned or inactive, or may not be operated at its appropriate use, and on which expansion, redevelopment, or reuse is complicated because of the presence or potential presence of a hazardous substance, a contaminant, petroleum, or a petroleum product that poses a risk to human health and the environment. (Indiana Department of Environmental Management, 2013).

In addition to the brownfield sites, there are six industrial waste sites located within the Mallory Main Street District, south of East Washington Street. Industrial waste sites are facilities that generate and/or manage non-hazardous waste, hazardous waste, and solid waste (Indiana Department of Environmental Management, 2013). Identifying compatible land uses in close proximity to the waste facilities will be a challenge in the redevelopment of this neighborhood.

Figure 4.7

*Brownfield Sites and Industrial Waste Sites*

*Legend*
- Industrial Waste
- Brownfield Sites
- Mallory Main Street District

*Indiana Department of Environmental Management; Esri ArcGIS; Adapted by Author, 2014*
4.2.6 Vacant Parcels

The vacant parcels in figure 4.8 represent parcels within the creative project boundaries without buildings. Vacant parcels are scattered throughout the residential land use area, and concentrated near the railroads, industrial areas, and along East Washington Street.

Figure 4.8

Vacant Parcels within Mallory Main Street District

---

Legend

[ ] Vacant Parcels  [ ] Mallory Main Street District

Esri ArcGIS; Adapted by Author, 2014
4.3 Demographics

The demographic analysis will provide an overview of the residential population living within the Mallory Main Street District. This section will provide an understanding of the current population, housing structure, employment, and educational attainment. The demographics will be compared to Marion County, Indiana and the State of Indiana to understand how the project site compares to the larger regions.

4.3.1 Population

In 2014, the Mallory Main Street District had a total population of 4,709; Marion County had a total population of 915,331, and Indiana had a population of 6,581,892. The median age within the project site, 33.4 in 2014, is slightly lower than Marion County (34.6) and Indiana (37.6).

Between 2000-2014, Marion County and Indiana have grown at an annual rate of .44% and .57%, while the project site has declined at an annual rate of 1.97%, in table 4.2 below.

Table 4.2

<table>
<thead>
<tr>
<th>Change in Population: 2000-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Total Population: 2000</td>
</tr>
<tr>
<td>Total Population: 2014</td>
</tr>
<tr>
<td>2000-2014 Population: Compound Annual Growth Rate</td>
</tr>
</tbody>
</table>

*U.S. Census Bureau via Esri Community Analyst*
The population distribution comparison (also known as a population pyramid) between the project site, Marion County, and Indiana in figure 4.9 demonstrates patterns of immigration and emigration within the communities and provides a visualization of the population by five-year age brackets. The population pyramid indicates all three communities are well developed. Indiana has lower birth rates and death rates than Marion County and the project site. Marion County has a younger population than Indiana, most likely due to the job market in Indianapolis attracting the millennial generation and the large university student population within Indianapolis. The Mallory Main Street District has a decline in population between the ages of 10-19, 35-39, and 45-49. This represents families emigrating from the project site. Conversely, the large percentage between the ages of 0-4, 5-9, 25-29, and 30-34 signifies high birth rates and people between the ages of 25-30 relocating to the area.
Figure 4.9

*Population Distribution Comparison*

*U.S. Census Bureau via Esri Community Analyst. Data adapted by Author, 2014*
4.3.2 Housing

In 2014, there were a total of 2,555 housing units with the Mallory Main Street District. Compared to Marion County and Indiana, the project site had a lower percentage of owner occupied housing units, and a higher percentage of renter occupied housing units and vacant housing units, seen in figure 4.3.

Figure 4.10

Housing Occupancy Comparison

<table>
<thead>
<tr>
<th></th>
<th>Mallory Main Street District</th>
<th>Marion County</th>
<th>Indiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Occupied</td>
<td>658</td>
<td>206,533</td>
<td>1,763,816</td>
</tr>
<tr>
<td>Renter Occupied</td>
<td>1,037</td>
<td>163,762</td>
<td>782,754</td>
</tr>
<tr>
<td>Vacant</td>
<td>860</td>
<td>55,035</td>
<td>308,302</td>
</tr>
</tbody>
</table>

U.S. Census Bureau via Esri Community Analyst. Data adapted by Author, 2014

The median home value within the Mallory Main Street District is $73,204; 42% less than the median home value in Marion County ($126,011) and 45% less than the Indiana median home value ($132,891) (U.S. Census Bureau via Esri Community Analyst, 2014).
4.3.3 Educational Attainment

The residential population within the Mallory Main Street District has lower levels of education attainment when compared to Marion County and Indiana. As seen in figure 4.11 below, the percentage of the residential population age 25+ with some high school education, no diploma is over 20% higher within the project site than Marion County or Indiana. Over 5% of the population age 25+ within the project site has a bachelor’s degree, compared to over 19% in Marion County and over 15% in Indiana (Esri Community Analyst, 2014).

Figure 4.11

*Population Age 25+ Educational Attainment, 2014*

*Esri Community Analyst, 2014*
4.3.4 Employment

In 2014, the unemployment rate within the Mallory Main Street District was 16.9% compared to 7% in Marion County and 6.3% in Indiana (Esri Community Analyst, 2014). While a low unemployment rate is an indicator of a strong economy with ample job opportunities, a high unemployment rate indicates a weak economy and less available job opportunities.

In 2014, the civilian population 16+ in the labor force was 1,773 within the Mallory Main Street District, 48,6358 within Marion County, and 3,293,210 in the State of Indiana. As seen in figure 4.12, the five largest employing industries within the project site include accommodation/food services (248 employees, 14%), construction (202 employees, 11%), retail trade (178 employees, 10%), manufacturing (159 employees, 9%), and health care/social assistance (150 employees, 8%).
Figure 4.12

Civilian Population Age 16+ In Labor Force by Industry

Data from Esri Community Analyst, 2014
Figure 4.13 represents the population age 16+ in labor force by occupation. In 2014, the top five occupations for residents in the labor force within the Mallory Main Street District age 16+ include office/administrative support (196 employees, 11%), food production/serving related (171 employees, 9.6%), production (160 employees, 9%), transportation/material moving (156 employees, 8.8%), and construction/extraction (149 employees, 8.4%).

Figure 4.13

**Civilian Population Age 16+ In Labor Force by Occupation**

*Data from Esri Community Analyst, 2014*

4.3.5 Income Spending Habits
The average household income within the Mallory Main Street District is about 45% less than that of Marion County and over 50% less than the average household income in Indiana. The trend is constant when comparing the median household income and per capita income, Figure 4.14 below (Esri Community Analyst, 2014).

Figure 4.14

Income Comparison

<table>
<thead>
<tr>
<th></th>
<th>Average Household Income</th>
<th>Median Household Income</th>
<th>Per Capita Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana</td>
<td>$62,841</td>
<td>$47,617</td>
<td>$24,493</td>
</tr>
<tr>
<td>Marion County</td>
<td>$56,460</td>
<td>$40,136</td>
<td>$22,939</td>
</tr>
<tr>
<td>Project Site</td>
<td>$30,801</td>
<td>$25,103</td>
<td>$11,140</td>
</tr>
</tbody>
</table>

Data from Esri Community Analyst, 2014

4.4 Key Findings

As the population increases within Marion County and Indiana, the residential population within the Mallory Main Street District is decreasing. The decrease in the residential population can be attributed to current residents moving to other neighborhoods and the inability to attract new residents. As a result, the neighborhood becomes a blighted area of disinvestment and an
undesirable community that fails to provide residents with the necessary quality of life amenities to create a healthy and vibrant neighborhood.

Contributing to the low residential quality of life in the neighborhood is the mixture of incompatible land uses. Currently, approximately 32% of the land is used for industrial land uses. These medium and heavy industrial land uses are located in direct proximity to residential land uses. While manufacturing use to be a leading economic driver by providing jobs for the local residents in the Mallory Main Street District in the past, the manufacturing industry currently employees less than 10% of the civilian population age 16+ in the labor force (Esri Community Analyst, 2014).

Within the Mallory Main Street District are high percentages of renter-occupied housing and vacant housing units. The high level of renter occupied housing units suggests a transient population and the high vacancy rate is an indicator of disinvestment. Additionally, the low levels of educational attainment can be a result of inadequate school systems, or joining the labor force at a young age. Typically, there is a positive correlation between educational attainment and income, and low levels of education attainment can be an indicator of poverty within a community. However, because of the low levels of education attainment, residents have limited economic mobility. Similar to other post-industrial communities, service industries within the Mallory Main Street District have become the main source of residential employment (Abercrombie, Hill, & Turner, 2006).

When compared to Marion County and Indiana, the Mallory Main Street District has a higher percentage of the civilian population age 16+ in the labor force working in industries and occupations that require less technical skills and education. Additionally, the occupations
develop skills that may be trade specific and aren’t transferrable to other industries or jobs further decreasing residential economic mobility.
CHAPTER 5: PROJECT PROPOSAL

5.1 Introduction

This chapter will describe this creative project including goals, objectives, strategies, and metrics. This chapter will define project phasing and will demonstrate phase 1 of the redevelopment.

5.2 Project Description

The aim of this project is to develop framework strategies for sustainable redevelopment in an urban industrial neighborhood, the Mallory Main Street District. While the Mallory Main Street District has a large industrial presence, the residential population has declined in recent years and analysis data suggests low quality of life within the Mallory Main Street District.

The research gleaned from the literature review suggest redeveloping industrial communities, such as the Mallory Main Street District, into sustainable and vibrant communities increases residential quality of life, decreases sprawl, and creates job opportunities.

The case studies indicate creating walkable communities, increasing connectivity, and utilizing renewable energy sources are all factors of successful sustainable redevelopment. A critical factor of redeveloping such communities is creating a framework to successfully
reintegrate the communities into the urban context and reposition the communities as attractive and vibrant places to live and work.

### 5.2.1 Goal and Objectives

The goal of this project is to redevelop the Mallory Main Street District into a sustainable post-industrial EcoDistrict. Incorporating the three pillars of sustainability—environmental, economic, and social sustainability—defined by Hansmann, Meij, & Frischknecht (2012), three distinct development objectives arose, seen in figure 5.1:

1. **Increase economic mobility for residents:** As identified in the demographic analysis, the residential population has low levels of educational attainment, service and production occupations, and low incomes. Increasing economic mobility will increase educational attainment, giving residents skills they need to work in more technical occupations, and increase their income.

2. **Develop a green economy:** A green economy is one that creates local jobs that complement and compete against one another, and is able to support the local community. Jobs created in a green economy are centralized around sustainability; such as business incubators, farm-to-table restaurants, geothermal engineers, and architects specializing in passive building design.

3. **Create an environmentally just community:** In an environmentally just community, development does not threaten the ecosystems. Additionally, an environmentally just community incorporates compatible land uses, accessible and ample green space, and is connected to the larger community.
Goal
- Redevelop the project site into a sustainable post-industrial ecodistrict

Objectives
- Increase economic mobility for residents
- Develop a green economy
- Create an environmentally just community

Strategies
Economy
- Increase employment opportunities
- Increase housing ownership
- Create vibrant commercial corridors to support residential demands
- Create affordable housing opportunities
- Increase property taxes

Equity
- Provide access to quality educational opportunities
- Strengthen neighborhood bonds
- Reduce crime
- Create a strong sense of place
- Increase youth programs

Environment
- Create pedestrian oriented streetscapes
- Incorporate multi-modal transportation networks
- Improve public open space and infrastructure
- Decrease demand on traditional energy sources
As previously discussed in section 4.1.2, the Mallory Main Street District is located in two neighborhoods: Near Eastside and Near Southeast. Both neighborhoods have created individual quality of life plans with redevelopment goals and strategies. The *Near Eastside Quality of Life Plan* (n.d.) identifies seven action areas:

1. **Affordable housing and redevelopment**: Substantially increase housing occupancy and ownership through economic incentives and education.
2. **Business and economic development**: Healthy, commercial corridors featuring continuous, fully merchandised storefronts, and pedestrian-friendly sidewalks with complimentary streetscape.
3. **Education**: Provide access to quality educational and cultural opportunities and visible leadership and community empowerment that demonstrates value of lifelong learning and personal growth.
4. **Family strengthening**: To identify the strengths of families and neighbors where they are; and engage them in positive ways to get them through barriers to reaching their hopes and dreams.
5. **Leadership and neighborhood connections**: Weaving together skills and talents of Near Eastside neighbors with local assets and needs through the development and implementation of open channels of communications, training, and learning opportunities.
6. **Livability**: Create a clean, green community where people feel connected, person-to-person, street-to-street, present-to-past.
7. **Public safety**: Engage residents, neighborhood groups, businesses, and IMPD to develop partnerships with open communication to promote safety.
Similarly to the *Near Eastside Quality of Life Plan*, the *Southeast Neighborhood Quality of Life Plan* (n.d.) has seven priority issues and objectives:

1. **Community building:** Build pride in place and a sense of community in neighborhoods, encouraging cross-collaboration and unification in the Southeast.

2. ** Beautification and infrastructure:** Create an attractive community through public space improvements and infrastructural development.

3. **Housing:** Ensure houses and other properties are affordable, visually appealing, structurally sound and safe.

4. **Safety and crime:** Provide a safe and inviting environment for neighborhood residents and visitors.

5. **Youth programming:** Increase youth participation in current programs and implement new ones where needs exist.

6. **Commercial viability:** Residents needs are met through the commercial viability of the Southeast.

7. **Workforce development:** Help neighborhood residents prepare for, find and keep jobs through the cooperative efforts of SECS, Fletcher Place Community Center, SEND, and Making Connections.

The priority issues addressed in both neighborhood quality of life plans align with the goals of the Mallory Main Street District redevelopment, seen in table 5.1. However, the Mallory Main Street District is a site-specific redevelopment plan that addresses concerns as they pertain to land use, circulation, connectivity, and sustainable infrastructure.
**Table 5.1**

*Mallory Main Street District Goals, NESCO Goals, SEND Goals*

<table>
<thead>
<tr>
<th><strong>Redevelop the Mallory Main Street District into a Sustainable Post-Industrial EcoDistrict</strong></th>
<th><strong>Economic Mobility</strong></th>
<th><strong>Green Economy</strong></th>
<th><strong>Environmentally Just Community</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable Housing &amp; Redevelopment</td>
<td>Increase housing occupancy/ownership through economic incentives and education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business &amp; Economic Development</td>
<td></td>
<td></td>
<td>Active, pedestrian-friendly commercial corridors</td>
</tr>
<tr>
<td>Education</td>
<td>Provide access to quality educational, cultural opportunities, visible leadership, and community empowerment</td>
<td></td>
<td>Identify the strengths of families and neighbors and engage them in positive ways to reach their dreams</td>
</tr>
<tr>
<td><strong>NESO Goals</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Family Strengthening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership &amp; Neighborhood Connections</td>
<td>Integrate the skills and talents of NESCO neighbors with local assets and needs through open communication, training, and learning opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livability</td>
<td></td>
<td></td>
<td>Create a clean, green community where people feel connected</td>
</tr>
<tr>
<td>Public Safety</td>
<td></td>
<td></td>
<td>Engage residents and IMPD to develop partnerships with open communication to increase safety</td>
</tr>
<tr>
<td>Community Building</td>
<td></td>
<td></td>
<td>Build pride in place and a sense of community in neighborhoods by encouraging cross-collaboration and unification</td>
</tr>
<tr>
<td>Beautification &amp; Infrastructure</td>
<td></td>
<td></td>
<td>Create an attractive community through public space improvements and infrastructural development</td>
</tr>
<tr>
<td>Housing</td>
<td>Ensure houses and other properties are affordable, visually appealing, structurally sound and safe</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SEND Goals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety &amp; Crime</td>
<td></td>
<td></td>
<td>Provide a safe and inviting environment for neighborhood residents and visitors</td>
</tr>
<tr>
<td>Youth Programming</td>
<td></td>
<td></td>
<td>Increase youth participation in programs and implement new ones where needed</td>
</tr>
<tr>
<td>Commercial Viability</td>
<td>Help neighborhood residents prepare for, find and keep jobs through the cooperative efforts of several organizations</td>
<td>Residents needs are met through the commercial viability of the Southeast</td>
<td></td>
</tr>
<tr>
<td>Workforce Development</td>
<td></td>
<td></td>
<td>Greenhouse gas emissions, number of &quot;green jobs&quot;, &quot;green&quot; infrastructure</td>
</tr>
<tr>
<td>Metrics</td>
<td>Home ownership rates, unemployment rates, educational attainment, property taxes</td>
<td></td>
<td>Walkability, connectivity</td>
</tr>
</tbody>
</table>

*Near Eastside Quality of Life Plan, n.d.; Southeast Neighborhood Quality of Life Plan, n.d.*
5.3 Project Framework

The project framework includes development proposals for land use, circulation, connectivity, sustainable infrastructure, and development phasing for the Mallory Main Street District.

5.3.1 Proposed Land Use

In the proposed Mallory Main Street District land use, the foremost goal is to create a vibrant corridor into the downtown core that is full of local employment opportunities, housing options in various densities, and incorporates accessible green space/open space. The proposed land use, figure 5.2, integrates residential mixed-use and offices along East Washington Street, green space/open space in the form of pocket parks throughout the district, and medium density residential adjacent to along minor arterial roadways and major collector streets. When necessary, natural open space is utilized as a buffer between industrial uses and low density residential land uses.
Figure 5.2

*Mallory Main Street District Proposed Land Use*

*Esri ArcGIS. Adapted by Author, 2014*
5.3.2 Proposed Vehicular Circulation

To increase the walkability of the Mallory Main Street District, a mixture of one-way and two-way streets will be incorporated into the local road network. The mixture will reduce vehicular traffic to create a more pedestrian oriented district. The proposed vehicular circulation is in figure 5.3.

Figure 5.3

*Proposed Vehicular Circulation*

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*Esri ArcGIS. Adapted by Author, 2014.*
5.3.3 Connectivity

Incorporate multi-modal transportation networks is one guiding principle gleaned from the literature review and case studies. As seen in figure 5.4, strategically locating IndyGO bus and bus rapid transit stops/stations every half mile, a five-minute walkable district is created. As a result, walkability is increased while automobile dependency is decreased, resulting in reduced greenhouse gas emissions. The addition of activated bike/pedestrian paths will increase safety for cyclists and pedestrians.

Figure 5.4

*Proposed Connectivity*

*Esri ArcGIS, Adapted by Author, 2014*
5.3.5 Development Phasing

Development for the Mallory Main Street District will occur in six phases, in figure 5.5. The first phase is a catalyst development. Phase 1 will include the redevelopment of the historic P.R. Mallory building into a vibrant campus, and the development of a neighborhood school, residential mixed-use office and retail buildings, expansion of the East Washington Library branch, medium density multifamily residential, and infill low density residential.

Phase 2 developments will expand on the mixed-use office along East Washington Street. Additionally, phase 2 include retail development, medium density multifamily residential, low-density residential, and redeveloping the current industrial site into a walkable urban office park. Phase 3 developments will be concentrated around the railroad tracks and will include retail, mixed-use, medium density multifamily residential, and low-density residential development. Phase 4 developments will focus efforts on infill development and office development just south of the railroads. Developing neighborhood retail to support the growing residential population will be critical in this phase. Developments in phase 5 and 6 will be infill developments.
5.4 Project Demonstration: Phase 1 Development

5.4.1 Overview

As previously stated in section 5.3.5, phase 1 development is a catalytic development for the Mallory Main Street District. Phase 1 development transforms East Washington Street into a passive roadway into a vibrant corridor linking the Mallory Main Street District to the downtown core. Phase 1 development, figure 5.6, integrates five land uses into the district, various housing densities, and flex-tech industry.
Figure 5.6

**Mallory Main Street District Phase 1 Development**

Legend

- **Medium Density Multi-family**
  1. East Rural Apartments
  25. Mallory Plaza Apartments

- **Special Use**
  2. Englewood Community Development Center
  4. East Washington Library Branch Expansion
  6. BRT Station/Stop
  11. East Washington School

- **Office/Commercial Retail**
  14. Battery Retail Plaza
  15. Mallory Shoppes
  16. Mallory Plaza
  19. Nuclear Offices
  20. Battery Offices
  28. Lasalle Offices
  30. East Tuexedo Stores

- **Green Space/Open Space**
  31. Rural Park
  32. East Washington Playground
  33. Mallory Community Garden
  34. Tuxedo Park

- **Retail Mixed Use**
  3. Live and Shop Library Center
  4. N. Oxford Mixed Use Center
  7. E. Washington West Side Retail Complex
  8. E. Washington North Side Retail Complex
  9. E. Washington South Side Retail Complex
  12. Oxford Shops
  13. Shoppes at Oakland
  22. West Gray Plaza
  23. East Gray Plaza
  24. Shoppes South of Washington

- **Office Mixed Use**
  21. Oakland Live and Work Community
  26. South Dearborn Offices
  27. North Dearborn Offices
  29. South Washington Offices

- **Industry**
  10. Rural Flex-Tech
  17. Mallory Industrial Center
  18. Old Battery Tech Park
  29. South Washington Offices

- Proposed Buildings
- Existing Buildings
5.4.2 Land Use

Integrating compatible land uses within phase 1 development will create a self-sufficient district where residents can live, work, shop, and learn. Because of the size of phase 1 development, the mixture of land uses, seen in figure 5.7, will reduce the need for personal automobiles; therefore reducing greenhouse gas emissions. Additionally, creating office and retail space will connect the current residential population with local and accessible jobs, improving residential economic mobility.
Figure 5.7

*Mallory Main Street District Development Phase 1: Proposed Land Use*
5.4.3 Vehicular Circulation

To create a walkable community, phase 1 development will reduce vehicular traffic on local roads by interweaving one-way roads into the local roadway network, figure 5.8. Two way roads will be located adjacent to key areas, such as Old Battery Tech Park, Mallory Plaza, Battery Offices, and Battery Retail Plaza.
Figure 5.8

*Mallory Main Street District Development Phase 1: Vehicular Circulation*
5.4.3 Connectivity

The IndyGO Buses and proposed Bus Rapid Transit Lines will traverse East-West through phase 1 along East Washington State. Strategically locating stations approximately every half mile will create a five minute district, where people are able to walk anywhere in the district from either station in five minutes, seen in figure 5.9. In addition, developing activated walking and cycling paths will create a more pedestrian oriented district and will increase safety and business activity.
Figure 5.9

*Mallory Main Street District Development Phase 1: Connectivity*
CHAPTER 6: PROJECT SUMMARY

6.1 Overview

The final chapter will conclude the creative project. It will include a summary of redevelopment benefits of phase 1, contributions to knowledge, and identify areas for further research.

6.2 Redevelopment Benefits

The following section will summarize the development impacts of the Mallory Main Street District on a district scale and a phase 1 development scale.

6.2.1 Land Use

As previously stated in section 4.2.2, approximately 32% of the land is for industrial land uses. The proposed land use district framework would result in a reduction of industrial land uses, increase in green space/open space, and increases in residential mixed-use and medium density residential. A comparison between the existing and proposed land uses is seen in figure 6.1 below.
6.2.2 Greenhouse Gas Emissions

Developing phase 1 of the Mallory Main Street District in a business as usual scenario without incorporating sustainable infrastructure and strategies results in 1,873,365 total greenhouse gas emissions. Based on a 72-year building life span, there would be 13,293 annual greenhouse gas emissions.

Incorporating sustainable infrastructure, such as geothermal and solar power electricity, would reduce total greenhouse gas emission by over 50% and annual greenhouse gas emissions
by 51%. A comparison between greenhouse gas emissions resulting from business as usual development and sustainable development is in figure 6.2.

Figure 6.2

*Phase 1 Development: Business as Usual cf. Green Infrastructure*

<table>
<thead>
<tr>
<th></th>
<th>Embodied</th>
<th>Energy</th>
<th>Transit</th>
<th>Pavement</th>
<th>Total</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business as Usual</strong></td>
<td>32,624</td>
<td>949,039</td>
<td>874,039</td>
<td>17,663</td>
<td>1,873,365</td>
<td>25,969</td>
</tr>
<tr>
<td><strong>Green Infrastructure</strong></td>
<td>16,312</td>
<td>294,021</td>
<td>612,269</td>
<td>17,663</td>
<td>940,265</td>
<td>13,293</td>
</tr>
</tbody>
</table>

6.2.3 Jobs

Based on development of approximately 491,270 square feet of non-residential buildings, phase 1 development will result in a total of 1,243 jobs. Out of the total jobs, 512 will be jobs in the retail industry, 338 will be jobs in the office industry, 324 will be jobs in the industrial industry, and 70 will be jobs in the education industry. These approximations are based on assumptions of 300 square feet per employee for retail jobs, 250 square feet per employee for
office jobs, 500 square feet per employee for industrial jobs, and 1,250 square feet per employee for educational jobs.

6.2.4 Residential Increase

Currently, there are 144 housing units within the boundaries of phase 1 development. Phase 1 would increase housing units by 608%. Phase 1 development includes a total of 875 housing units. Included are 622 mixed-use housing units, 163 medium density multifamily housing units, and 90 low-density housing units. The increased housing units would support approximately 1,467 new residents within phase 1.

6.3 Contributions to Knowledge

The main contribution of this creative project is a site-specific neighborhood development that strives to increase economic mobility, develop a green economy, and create an economically just community. This project would reintegrate an urban industrial neighborhood into the community by incorporating multi-modal transportation networks, increasing walkability, creating job opportunities, and developing various housing typologies in a range of densities.

EcoDistrict redevelopment projects have the ability to revitalize the urban industrial areas and adjacent neighborhoods within Indianapolis. Transforming a blighted neighborhood of disinvestment into a successful and vibrant EcoDistrict needs to be implemented on a district wide scale that strives to create a high-performance energy district and connects people to the natural environment. These two concepts, creating a high-performance energy district and a district that connects people to the natural environment, are broad and theoretical in nature.
A high-performance energy district is similar to the concept of a net-zero district, a district that is essentially off the grid and generates as much energy as being consumed. However, the difference between high-performance and net-zero lies in the indirect social and economic benefits on the district. As stated by Staber (1998) and discussed in the literature review, the redevelopment goal in industrial areas is to create a network of business that generate a mix of cooperation and competition to generate self-sustaining economic growth. The previously discussed concept of a green economy is an example this concept and the deep green sustainable development approach created by Gibbs (1994) as the sustainability efforts are created from within district leading to new jobs, an increased sense of community identity, producing and consuming local goods and resources, and reducing utility costs as a result of utilizing renewable energy sources. The result is a local economy that is able to supply for the needs of the community.

Creating a district that reconnects people to the natural environment was discussed by Kazimee (2002) and Farr (2008) in the literature review as strategies to create a higher quality of life, incorporate sustainable design, and integrate placemaking strategies into the urban network. Additionally, reconnecting the population to the natural environment promotes health and achieves social equity in communities that have struggled with polarization. As described in the case studies, the Cleveland EcoVillage is an example of a community that has successfully reconnected the population to nature in efforts to achieve a higher quality of life for all.

Other tactics to revitalize urban industrial areas that may be more practical in nature include developing a community center as an implementation of green and sustainable practices and utilizing sustainable and reliable means of financing for infrastructure and to raise property values to spur future development.
As discussed in the case studies, community centers have been integral to the success of the Cleveland EcoVillage and Larimer Neighborhood. While not a community center, the Portland South Waterfront EcoDistrict has a public demonstration of sustainability in the form of The Oregon Health and Science University Center for Health and Healing. Implementing a public demonstration such as a community center is a strategy to educate the population about sustainability strategies that can be implemented at home, ways to reduce heating and energy costs using sustainable strategies, and can provide jobs for the local population.

As discussed in the literature review Portland South Waterfront case studies, TIF is a reliable tool utilized to raise property values, finance public development, and spur future development. TIF has been successfully implemented in Indianapolis to raise net assessed values in other areas. Between 2006 and 2011, Indianapolis TIF districts saw a net assessed value annual growth rate of 5.7% compared to 0% for the rest of Marion County not located within a TIF district (Indianapolis-Marion County Council, 2012). In Chicago, property values within TIF districts have increased on an average annual rate of 17.2% compared to an average annual growth rate of 3.7% for property values outside of TIF districts (Grimm, n.d.).

6.4 Areas for Further Research

The redevelopment of the Mallory Main Street District explores strategies for sustainable redevelopment in urban industrial areas. Future research should review implementation and performance of district-scale sustainable infrastructure. As stated by Farr (2008) by utilizing district scale energy systems, energy consumption can be reduced by 50%. However, because this is a new concept and hasn’t been implemented in many communities on a large scale, it is
considered to be a riskier project, requiring strategic public-private partnerships to spread the risk over various stakeholders.

Furthermore, future research should examine the long-term benefits of creating EcoDistricts in urban industrial areas of disinvestment. Redevelopment in former urban industrial areas has had positive results; however future research should be done to quantify the positive benefits in terms of the impacts on society, increase in sense of community and community engagement, environmental sustainability, and the effects on the local economy.
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