

# MANUFACTURED HOUSING:

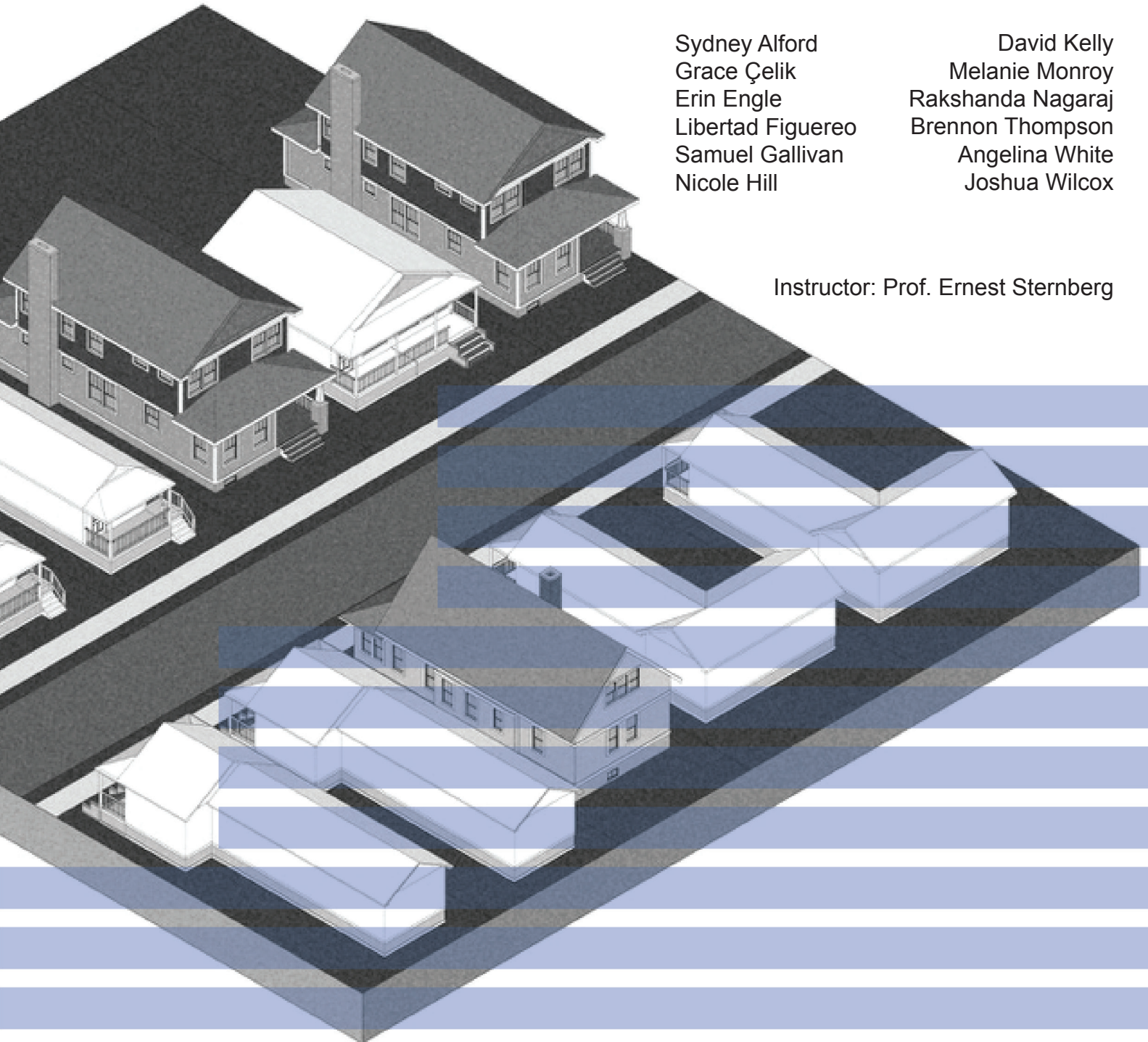
## An Affordable Housing Opportunity for Post Industrial Cities

Practicum – Spring 2020  
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# PREFACE

This report was prepared by graduate students in the Department of Urban and Regional Planning at the University at Buffalo, as the assignment in “practicum” (sometimes called “studio”) course required for the Master of Urban Planning degree. Professor Ernest Sternberg was our instructor. Our practicum’s main objective has been to provide experience in preparing a professional report that can potentially be acted upon by interested parties for public benefit. While we are aware that manufactured housing may only be appropriate for certain cities with an abundance of vacant land, we hope that this report can serve as a resource guide that can help those cities implement manufactured housing as one potential solution to severe problems of housing affordability.

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# ACKNOWLEDGMENTS

We would like to thank the agency heads, professionals, faculty members, and community members who have helped us in this effort. They have provided us with vital recommendations, information and resources to help guide our studio. Your expertise is greatly appreciated and we thank you for your contributions. We especially appreciate the close interest and guidance from:

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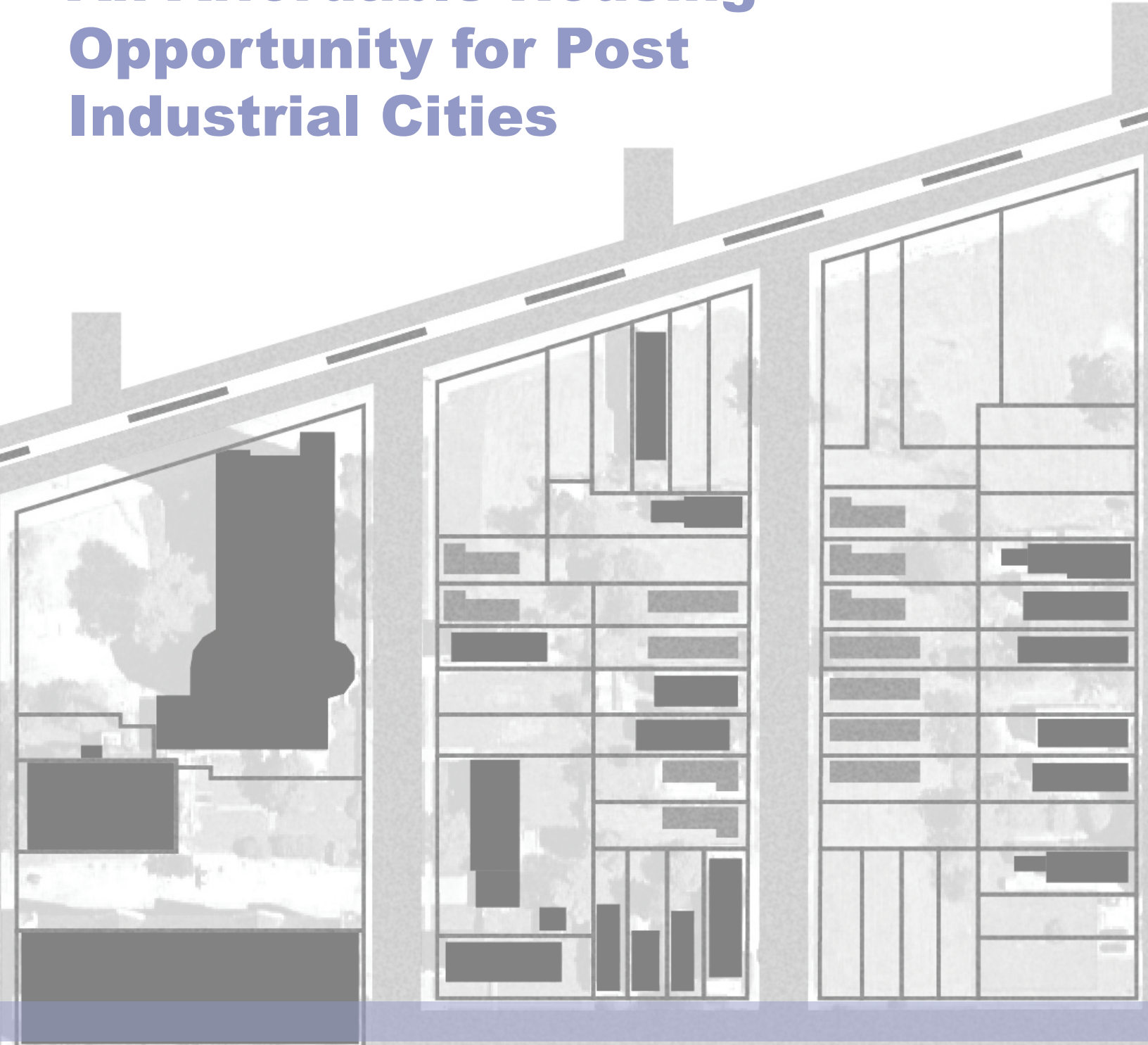
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# CHAPTER 1

## Manufactured Housing: An Affordable Housing Opportunity for Post Industrial Cities



## The Affordable Housing Problem in Post-Industrial Cities

The affordability of housing has become a critical problem in most of the United States, especially in large, fast-growing cities, where there are shortages of vacant land and housing. Post-industrial cities also face severe housing affordability problems due to population loss and deindustrialization, even though vacant land and abandoned houses are common. These “shrinking” or “legacy” cities face problems of low incomes, combined with surplus housing stock that has deteriorated to the point where it is no longer economical to rehabilitate it. The purpose of this chapter is to propose a unique opportunity for meeting the affordable housing needs of residents in post-industrial cities.

In these cities, with higher poverty rates and lower average incomes, many people simply cannot afford the cost of neither the newly constructed housing nor the rehabilitation of older buildings. Even those who receive housing subsidies must often live in substandard housing within these cities, typically in old building stock that is expensive to maintain.

Buffalo, New York, a city that will be continuously referenced in this report, exemplifies this problem: the city’s housing stock has deteriorated in many areas where residents with lower incomes cannot afford to rehabilitate it. These same individuals are unable to afford homes that are of higher quality, which are often expensive and few in number. As a result of this, many residents must settle for substandard housing options that can fit within their income level. This dichotomy results in a massive gap between the supply and demand, and the affordability and quality of homes.

## Limitations of Conventional Housing Policy

With this shortage in affordable, higher-quality units, state and federal government agencies have attempted to enact housing policies to fill this gap. Unfortunately, these programs vary in cost-effectiveness, and in any case, have so far been insufficient for meeting the housing needs. Buffalo has implemented several housing programs to create equal access to healthy homes and home ownership opportunities, but are still insufficient in addressing current housing needs due to the size of demand for affordable housing in the city. Traditional construction methods, typically referred to as “site-built” or “stick-built” homes, are an option for affordable housing in places where homes have low market value. However, these homes are too expensive to build due to the high cost of labor and construction materials. Therefore, though new construction is widely appreciated, the approach has so far not had the scale by which to serve the many income-burdened families at cost, limiting the impact they can have with constrained funding.

With an absence of adequate funding, Buffalo will continue to face hardships in the construction of affordable housing units. Buyers will find difficulties in purchasing higher-quality housing; developers, on the other hand, will be unable to economically build housing that the city’s lower-income households can afford. These two factors contribute to a current housing crisis. Fortunately, there is a form of housing that could potentially overcome this dilemma: manufactured housing.

## What is Manufactured Housing?

### DEFINITIONS

According to the U.S. Department of Urban Housing and Development (HUD), Manufactured Homes (MH) are defined as dwelling units of at least 320 square feet, placed on a permanent steel chassis to ensure the portability of the home. The definition of this form of housing has changed over time. Prior to June 15th, 1976,



Manufactured Homes were considered by HUD to be ‘Mobile Homes’ or ‘Trailer Homes’. After that date, HUD implemented Manufactured Home Certification and Safety Standards, ensuring that all units are built in climate-controlled factories suitable for home-building, as this improves both the quality and efficiency of home-building. HUD-compliant homes receive a certification label, commonly referred to as the HUD tag, to indicate their conformity to the standards. These new regulations helped improve construction, installation quality, safety standards, durability, and design in comparison to the pre-1976 ‘mobile homes’, and ushered in a new era for the manufactured homes industry.<sup>4</sup>

## CATEGORIES

It is important to distinguish varieties of manufactured homes that are often confused.

Table 1.1. below highlights a few of the major differences between manufactured housing.

### Comparison of Factory-Built Homes

Category	Manufactured with chassis	Manufactured Modular	Prefabricated
Assembly	Unit is factory built, either as one unit or in sections, <b>on</b> a permanent steel chassis	Unit is factory built, either in one unit or in sections, without a permanent chassis	Unit consists of “panels” and is built off-site  Panel components assembled on site
Delivery	By truck as a complete unit  Entire structure towed on its permanent chassis	By truck in pieces	By truck in pieces
Compliance Requirements	HUD codes	IRC Codes  Same local, state and regional building codes as homes built on-site	Same local, state and regional building codes as homes built on-site

**Table 1.1.** Explains comparison between different types of factory-built homes.

Source: Manufactured Housing Institute (2018).

Note: IRC- International Residential Code

## SIZES

**Single Wides** Maximum of 18 feet in width and maximum of 90 feet in length, and can be towed to their site as a single unit.

**Double Wides** Maximum of 20 feet wide and maximum of 90 feet in length, and can be towed to their site in two separate units, which are then joined together on site.

**Multi-Wides** Includes triple wides and homes with four, five or more units. Typically towed to site as multiple units and joined together on site.<sup>5</sup>

## DESIGN VARIATIONS

Many Americans have had limited exposure to manufactured homes, and so they may have limited or outdated ideas about the variety that is available. Manufactured homes have evolved to provide a unique opportunity for cities to add variation in design to the urban form. Energy-efficient components, including natural lighting elements and increased ventilation, have become a more common preference for homeowners. Recognizing these trends, MH builders have adjusted their design and construction process to appeal to a wider public. Suburban America has been a receptive audience thus far, where the industry has become a significant developer of many single-family homes, providing opportunities to showcase designs that resemble conventionally constructed homes. Manufacturers have also started to experiment with innovative architectural styles. Examples of these designs are shown to the right.

*From top to bottom*

**Figure 1.1.a.** 4 Source: West Partners:  
<https://4westpartners.com/developments>

**Figure 1.1.b.** Source: Crismatec.  
<http://www.crisimatec.com/1514087758/mnc/5284e0a120764091/>

**Figure 1.1.c.** Source: Manufactured Housing Institute:  
<https://www.facebook.com/ManufacturedHousingInstitute/posts/need-help-with-financing-all-styles-and-sizes-of-homes-find-an-mhi-member-lender/10156415162641227/>

**Figure 1.1.d.** Source: Santa Barbara Independent:  
<https://www.independent.com/2019/04/17/beachy-beauty-on-tour/>



## PRECONCEPTIONS ABOUT MANUFACTURED HOMES

Despite the advancements in construction and design since 1976, Manufactured Housing has not always been received positively. Formally known as “Trailer homes” or “Mobile homes”, these terms have created a negative stigma that the industry has been hard-pressed to overcome.<sup>6</sup> Blight and neglect have often been associated with these structures, as shown in Figure 1.2. Manufactured units have also been generally regarded to be more prone to damage inflicted upon them during instances of severe weather, such as hurricanes or tornadoes, due to structural components.<sup>7</sup> The households that traditionally occupied older manufactured units were typically lower-income, rural residents, which developed another stigma surrounding the ‘rural poor’. Further depictions of these residents included their supposed lack of formal education. These same stigmas have also appeared in the legal realm, where children living in these “trailer parks” have been considered to be homeless by the state.<sup>8</sup> Despite any misconceptions surrounding manufactured homes, the market demand for these units has been rapidly increasing over the last several years.



**Figure 1.2. Mobile Home in disrepair.** Photo by Jamie Valdez. January 4th, 2018. Law, Steve. “Saving Rundown Mobile Home Park Proves Challenging.” Source: Retrieved from <https://pamplinmedia.com/pt/9-news/383047-270841-saving-rundown-mobile-home-park-proves-challenging>.

## A NEW OPPORTUNITY FOR CITIES?

While this report will focus primarily on Buffalo, New York, Manufactured Housing may be a viable alternative to conventional housing in any post-industrial city facing an affordable housing crisis. Our intention is in part to investigate MH as a housing option for Buffalo, but also to analyze the effectiveness of this strategy for broader application to similar cities.

In 2019, over 94,000 new Manufactured Homes were produced<sup>9</sup>, compared to 93,000 new units in 2017<sup>10</sup>. Going further, MH currently comprises 6% of all housing stock – 17.5 million Americans – in the United States, and accounts for 15% of all rural housing and 3% of all urban housing.<sup>11</sup> This adoption of Manufactured Housing across the country is in large part due to its affordability. The 2017 American Community Survey states that “49% of Manufactured Housing is affordable for households at or below 50% of the area median income, compared to just 26% of all housing.”<sup>12</sup> This form of housing has proven to be affordable for a large percentage of individuals, underlining its importance in the effort to provide adequate housing options for families with low-income. To this end, the state of New York has recently acknowledged the value of Manufactured Housing, officially recognizing it as a “critical source of affordable housing for residents” in a 2019 Bill brought before the state legislature.<sup>13</sup> This recognition introduces the prospect of Manufactured Housing as a viable option to supplement current affordable housing measures.

With a multitude of vacant land, an asset that is often prevalent in the aforementioned shrinking cities, opportunities exist to create neighborhoods of safe, affordable housing stock, while decreasing the percentage of incomes households will pay for housing. The innovative design of MH units also presents an opportunity to mesh existing housing stock with newer housing that can create a new urban form.

## WHAT IS AHEAD

In Chapter 2, we will examine the extent of housing need in Buffalo and the programs available to meet this need. In Chapter 3, we investigate the vacancy rates in the city and the costs to rehabilitate or build new units. Chapter 4 will examine in-depth some of the potential constraints that Manufactured Housing may face in cities. Options for development, management, and tenure will be explored in Chapter 5, while Chapter 6 will focus on potential site locations for MH in the city of Buffalo. Chapter 7 will focus on the costs relating to these units and some of their more common characteristics. Chapter 8 will visualize MH with potential prototypes and variations. Finally, Chapter 9 will provide conclusions from our research and give further recommendations relating to the feasibility of Manufactured Housing as a means to address the affordable housing crisis.



From top to bottom

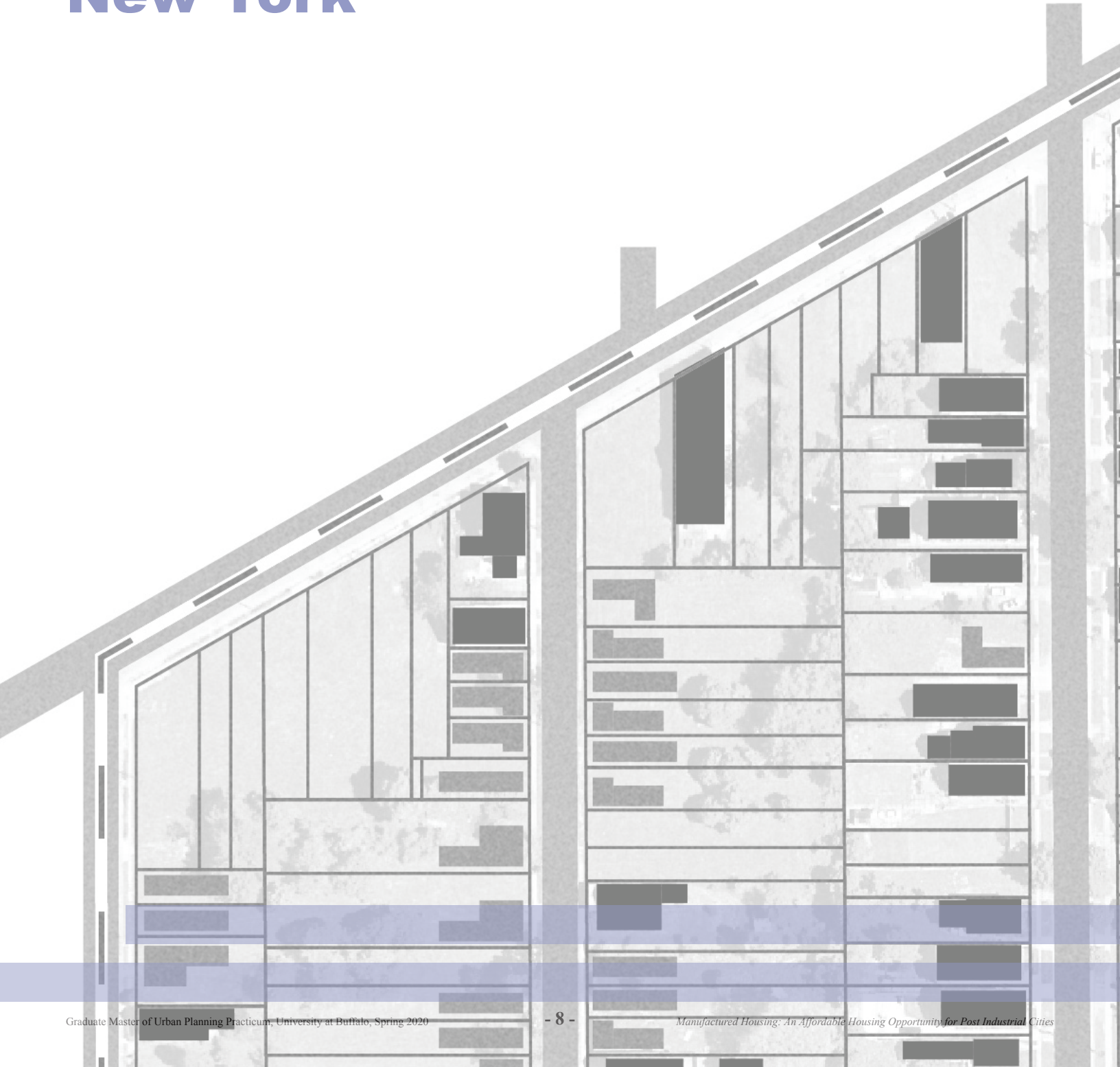
**Figure 1.3.** An example of the variety in design and aesthetics available in the MH industry beyond the preconceived notion of the conventional models. Image by Park Model Homes. Home. Accessed April 1, 2020. Retrieved from <https://park-model-homes.com/>

**Figure 1.4** Examples of modern and contemporary design of manufactured homes. Images by Sommerhaus PIU. Moderne Holzhaus Manufaktur. Accessed April 1, 2020. Retrieved from <https://sommerhaus-piu.de/>



# CHAPTER 2

## True Cost of Housing: Buffalo, New York



## Introduction

In Buffalo, over 45,000 households - 50.6 percent of all households - pay 30 percent or more of their monthly income in housing costs. Over 22,000 renters and homeowners pay 50 percent or more of their monthly income for housing.<sup>14</sup> These statistics represent households that are classified by HUD as cost-burdened (30 percent or more)<sup>15</sup> and severely cost-burdened (50 percent or more). After paying monthly housing bills, cost-burdened households may not have enough income to cover other necessities like groceries, transportation, and medicine. This is especially true in Buffalo, where the majority of renters are cost-burdened. We conclude this section with an analysis of the housing market and a sobering recognition that the current conditions are inadequate to affordably house Buffalo's working class.

## Housing: The Affordability Problem

Buffalo, like many cities, faces immense problems of low incomes and housing unaffordability. Although there was a relatively low unemployment rate in the greater Buffalo-Niagara region preceding the Covid-19 crisis of 2020, many of these jobs did not provide income levels that were sufficient in reducing the number of households in poverty due to a variety of factors (see Boxes 2.1. and 2.2.). In Buffalo, the median gross rent (\$757) as a percentage of household income was 32.5 percent.<sup>16</sup> As illustrated in Figure 2.1, over half of renters in Buffalo are cost-burdened or severely cost-burdened.<sup>17</sup> Renters, however, are not alone in spending a considerable portion of their monthly incomes on housing. Figure 2.2 illustrates that a relatively high number of homeowners are also cost-burdened, regardless of whether they have a mortgage on the home itself.

Princeton Sociologist Matthew Desmond has changed the narrative on housing and poverty in America. His research has shown that housing instability, specifically eviction and foreclosure, are not mere symptoms, but root causes of American poverty.<sup>18</sup> A policy report released in March of 2020 details the staggering consequences of such a high rent burden; Buffalo has a 14.6 percent eviction rate, nearly double that of comparable cities including Cincinnati (8.8%), Cleveland (8.2%), and Milwaukee (8.6%).<sup>19</sup> According to the report, "Evicted tenants tend to move into worse housing and worse neighborhoods... they are 25 percent more likely to experience a long-term housing problem such as substandard housing... higher poverty and crime rates, and their new housing is more likely to have environmental health

### Box 2.1: General Population

*According to the 2018 estimates from the American Community Survey, the city of Buffalo is home to over 257,000 residents. From 2010 to 2018, the city's total population has been relatively stable with only a marginal three-percent loss. There are approximately 110,000 households in Buffalo, half of which are considered single-family households. Over half the population is under the age of 34, with a median age of 33. The city of Buffalo is much more racially and ethnically diverse than the surrounding county: 47 percent white, 36 percent black or African American, 11 percent Latinx and 5 percent Asian. With regard to educational attainment, 16 percent of the population has less than a high school education, 27 percent are high school graduates, and 25 percent have a bachelor's degree or higher. As education translates to income, the median income in Buffalo is \$35,893, which is \$20,476 less than Erie County's median income.*

Source: ACS 2018 5-year estimates.

### Box 2.2: Poverty

*The majority of Buffalo's residents, 52.2 percent, are classified as poor or struggling. A quarter of families live below the federal poverty level, and half of all children in Buffalo live in poverty. Female, single-headed households with children under 18 are particularly vulnerable. Non-whites are disproportionately impacted by poverty, and face the additional challenge of systemic racism as they navigate social support services and the private labor market. According to 2017 estimates from American Community Survey, over one-third of the population received Food Stamps/SNAP benefits while one-in-ten city residents received Supplemental Security Income (SSI). The same estimates demonstrate that 30.6% of the population in the city of Buffalo does not receive income from salary or wages, relying on some form of public source of income. Individuals and families working to make ends meet consistently cite housing as one of their greatest expenses, an essential monthly payment that is disproportionately higher for low-income households.*

Source: ACS 2017 5-year estimates.

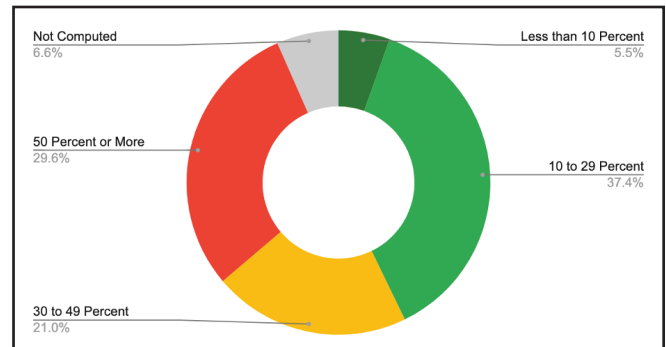
environmental health problems such as lead paint.<sup>20</sup> Buffalo's lack of housing affordability adds to the problem of pervasive involuntary mobility, which destabilizes families, neighborhoods, and communities.

## Housing Stock: The Quality Problem

According to the American Community Survey 2017 5-yr estimates, there are 132,066 housing units in the city of Buffalo.<sup>21</sup> Of these existing units, 110,636 are occupied (83.8% occupancy rate) and 21,430 (16.2%) are vacant.<sup>22</sup> One may wonder how a city could face such high rent burdens when a large amount of housing is indeed available. Occupancy is broken down into owner-occupied (41%) and renter-occupied (59%), with a clear majority of rental units.<sup>23</sup> Overall, rental units have a 4.9 percent vacancy rate while for-sale housing has a marginal 0.9 percent vacancy rate.<sup>24</sup> High rent-burden and eviction rates can contribute to the equally high vacancy rates in the city. In any case, the U.S. Census Bureau will classify a housing unit as vacant if it is empty at the time of the interview. Vacant units can include those occupied by persons who have permanent residences elsewhere, as well as new housing units that are not yet lived in.<sup>25</sup> While such categories of vacancy do exist, the majority of Buffalo's vacancy results from the housing stock being rundown and inadequate. To better understand the housing affordability crisis, it is important to consider the city's current inventory. According to the 2017 American Housing Survey (AHS) data, the vast majority of Buffalo's housing stock was built before 1939, as shown in Figure 2.3.

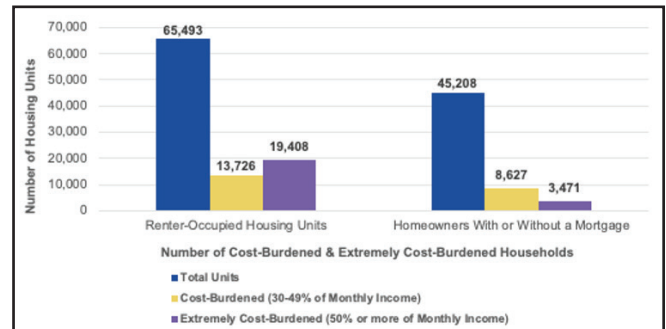
Given the significant age of the Buffalo housing stock, one of the oldest in the country, there are considerable challenges with housing quality, maintenance, and repair. Older homes are often substantially larger than those that have been built more recently, and typically include outdated equipment that is expensive to upkeep. These additional costs make it particularly difficult for the city to house those with lower-incomes, further perpetuating issues relating to housing affordability. A Healthy Homes Needs Assessment report was conducted in 2015, indicating the condition of rented and owner-occupied Buffalo housing stock compared to four other post-industrial cities that

## Gross rent as a percentage of household income.



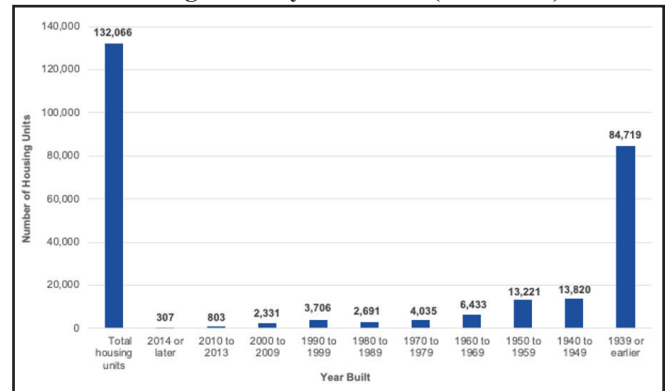
**Figure 2.1.** Gross rent as a percentage of household income. Source: ACS 2018 5-year estimates.

## Cost-burdened comparison between renters and homeowners



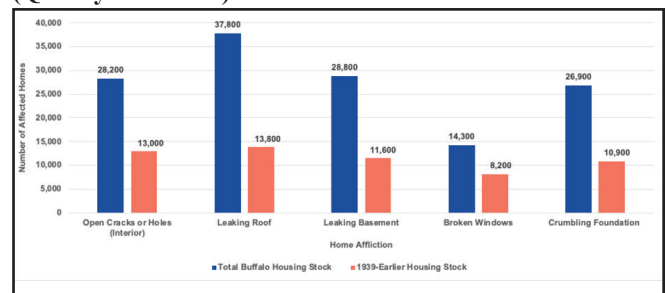
**Figure 2.2.** Cost-burdened comparison between renters and homeowners. Source: ACS 2018 5-year estimates.

## Buffalo Housing Stock by Year Built (as of 2017)



**Figure 2.3.** Age of housing stock in Buffalo. Source: ACS 2017 5-year estimates.

## 1939-Earlier Housing Stock vs. Total Housing Stock (Quality Concerns)



**Figure 2.4.** Quality comparison of Buffalo housing stock. Source: AHS 2011 Estimate.



are of similar size and demographics.<sup>26</sup> Table 2.1 highlights the most commonly reported interior and exterior housing hazards in these cities. While it is evident that substandard housing quality is prevalent in many post industrial cities, this appears to be especially true in Buffalo.

Recognizing five of the most prevalent housing quality issues reported in occupied units by the AHS, Figure 2.4 shows the disparity between homes built in Buffalo before 1939 compared to its housing stock as a whole.

### City Comparisons of National Center for Healthy Housing’s State of Healthy Housing Indicators for Renter-Occupied Housing (AHS 2013 Data)

MSA	Holes in Floors	Open Cracks or Holes in Walls	Broken Plaster/Peeling Paint	Signs of Rats	Signs of Mice	Water Leaks from Inside	Water Leaks from Outside	Heating Equipment Breakdown	Room Heater without Flue	Exposed Wiring in Unit	Rooms without Working Electrical Outlets	Roofing Problems	Siding Problems	Window Problems	Foundation Problems
Buffalo 2011	2.00%	8.70%	5.10%	1.30%	6.00%	10.30%	12.90%	4.20%	1.10%	2.50%	2.10%	9.90%	9.00%	14.00%	13.20%
Cleveland 2011	2.00%	7.90%	2.50%	0.80%	9.50%	10.60%	13.10%	4.40%	0.40%	2.50%	1.20%	2.70%	4.20%	8.20%	13.70%
Detroit 2009	1.40%	9.50%	4.20%	0.60%	5.30%	16.60%	13.70%	8.00%	0.00%	1.00%	2.20%	16.60%	9.00%	7.70%	9.80%
Pittsburgh 2011	1.10%	8.70%	5.90%	1.60%	7.80%	10.90%	17.20%	4.20%	0.50%	1.90%	1.30%	8.50%	4.50%	5.00%	6.30%
Rochester 1998	1.90%	8.90%	4.20%	1.90%	7.80%	13.60%	13.10%	4.70%	0.10%	0.40%	3.00%	12.00%	9.30%	10.80%	3.40%
Rochester MSA 2013*	1.38%	6.99%	2.85%	1.14%	11.46%	9.02%	10.41%	4.03%	0.24%	2.44%	1.71%	3.09%**	2.20%**	3.09%**	2.20%
Rochester City 2013*	1.77%	10.04%	4.13%	2.36%	17.72%	10.04%	12.40%	7.11%	--	3.74%	2.76%	3.35%**	1.77%**	3.35%**	2.76%
National Average 2013*	1.45%	6.25%	2.57%	1.14%	8.33%	9.44%	7.45%	3.16%	1.00**	2.02%	2.00%	1.69%**	1.33%**	2.08%**	2.02%

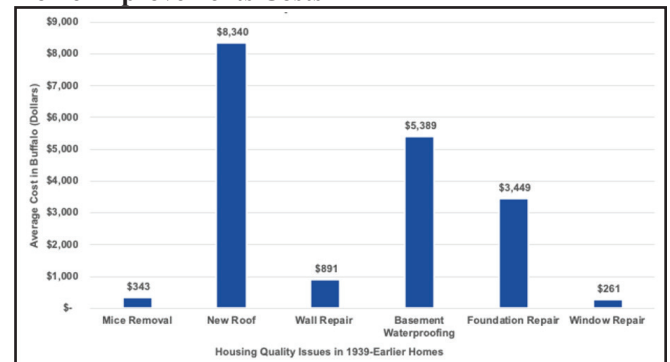
**Table 2.1.** Comparison of healthy homes indicators.

Source: A Healthy Homes Needs Assessment for Rochester, NY, 2015. Note: Red text indicates significantly higher than the national average compared to the closest available year. Green text indicates significantly lower than the national average compared to the closest available year.

As stated above, housing quality is of serious concern to both owners and renters. According to the Evicted in Buffalo policy report, 59 percent of tenants interviewed said there were maintenance problems at their residence.<sup>27</sup> Additionally, the city’s call-in resolution center “receives over 1,000 complaints about interior conditions in residential properties each year, with the highest rates of complaints coming from the East Side...”<sup>28</sup> The cost of a single repair may be too expensive for low-income owners, while the total rehabilitation cost of the home may be insurmountable. Figure 2.5 illustrates the average cost of repair for Buffalo homes built in 1939 or earlier by the aforementioned reported quality issues.

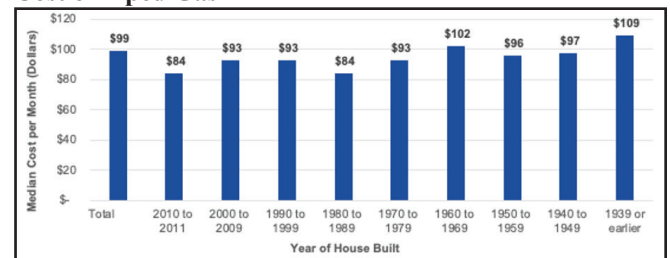
These costs correspond directly with the most prevalent housing quality issues for 1939-earlier homes reported by the AHS in Figure 2.4. It is important to note that these repair costs are independent of each other, and a home in poor quality may need these improvements at a minimum. This is a simplistic snapshot of the severe cost burden to restore and maintain an aging Buffalo

### Home Improvements Costs



**Figure 2.5.** Cost of home improvements. “Estimate Home Renovation & Repair Costs.” HomeAdvisor. Accessed April 18, 2020. [https://www.homeadvisor.com/cost/.](https://www.homeadvisor.com/cost/)”

### Cost of Piped Gas



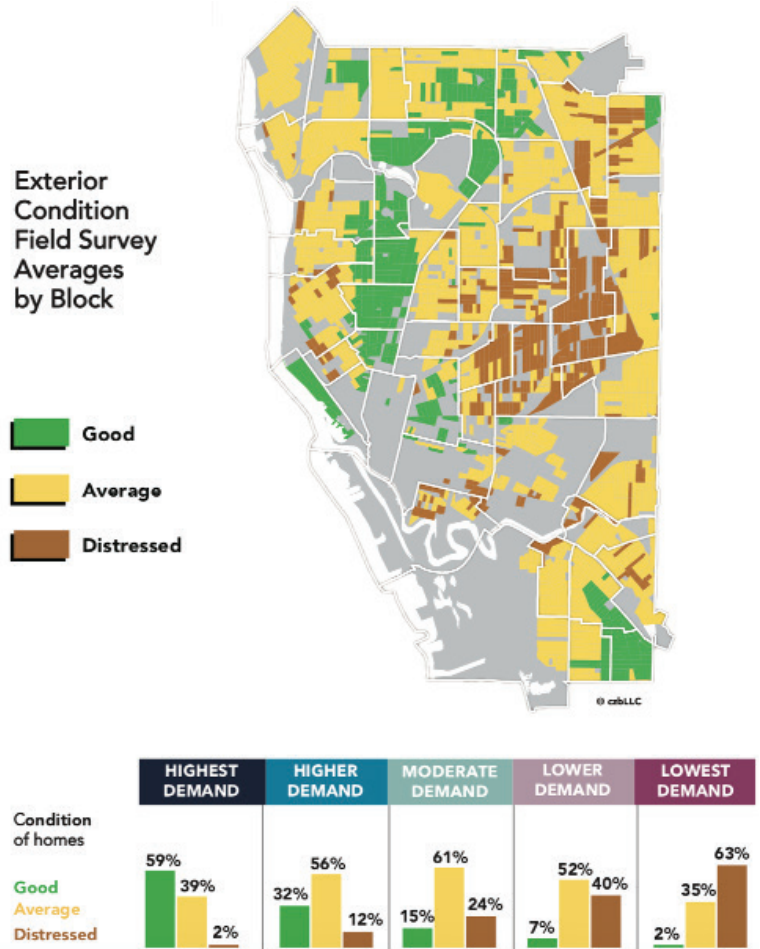
**Figure 2.6.** Cost of piped gas in Buffalo, NY.

Source: AHS 2011 Estimate.

home. These same factors impact both the vitality of the housing market and the accessibility of quality market rate homes. In addition to the repairs that bring a house up to code, there are the monthly costs of utilities a homeowner and renter must pay. Figure 2.6 shows the median monthly cost of piped gas, a feature more prevalent in older homes, for the year in which the home was built.

While the cost of piped gas has decreased over time, the majority of homeowners in Buffalo pay \$25 more a month than the average home built between 1980 and 1989. Over the course of a year, individuals living in homes built before 1939 will pay approximately \$1,308 on piped gas alone. According to 2011 AHS data, these same homeowners would pay an additional \$85 on electricity a month, or \$1,020 per year. Energy efficiency is directly linked to the cost of home ownership, and it is important to minimize these costs as much as possible through proactive and environmentally-friendly measures. We believe this table may ultimately underestimate the actual cost of utilities, however, as the per-foot cost is likely higher than that of the average. This distinction is important when considering the size and age of the housing unit, as again, these older units are typically larger in size and somewhat inefficient in design. This often leads to higher energy consumption and costs than their newer-built counterparts.

**Buffalo Housing Opportunity Strategy Map**



**Figure 2.7.** Exterior condition field survey averages by block. Source: Buffalo Housing Opportunity Strategy, 2017.

One of the major challenges in the city’s housing market is evident by its extremes; affluent neighborhoods have strong demand and high home values, while low-income neighborhoods are struggling, and there is little in-between for the middle-income market. A quote from the Buffalo Housing Opportunity Strategy (BHOS) highlights this stark dichotomy in the housing market: *“On the one hand, there is the bullishness about price appreciation, new development, and an influx of motivated buyers and renters, all of which are occurring at levels not seen in years. On the other hand, there are thousands of deteriorating or empty houses and apartments and tens of thousands of households that struggle to improve their homes or pay the rent.”*

Figure 2.7 from the BHOS maps the exterior housing conditions to neighborhood market demand. Even in the moderate demand neighborhoods, only 15 percent of the homes were in good condition.<sup>30</sup> The cost of securing quality housing in Buffalo’s existing housing stock exceeds the majority of residents’ maximum affordable rent range or home buying purchasing power.

## Resources for Housing Assistance

It is evident that a significant need for affordable housing exists in the city of Buffalo, as a considerable portion of residents’ incomes are spent on housing costs. To this end, there are a number of existing programs implemented through community agencies aimed at alleviating the cost burden of renters and homeowners.

## Section 8 Housing Choice Vouchers:

A federal government program designed to assist low-income families, including the disabled and elderly, to afford decent housing in the private market. Throughout Buffalo and Erie County, there are three agencies who administer the distribution of federal funds in the form of tenant-based Section 8 housing vouchers: The Buffalo Municipal Housing Authority (BMHA), Belmont Housing Resources, and the Rental Assistance Corporation of Buffalo (RAC).<sup>31</sup> The Buffalo Housing Opportunity Strategy (BHOS) stated that in 2017, 8,443 housing choice vouchers were in use.<sup>32</sup>

## Public Housing:

In the city of Buffalo, the managing authority that oversees the public housing available to low income families is the BMHA. In these properties, residents pay rent valued at 30% or less of their income, with most utilities included. Apartments are income restricted and reserved for families with children, single individuals, elderly, disabled, and handicapped populations. More than 3,900 federally subsidized housing units are managed by BMHA.<sup>33</sup>

## Emergency Solutions Grant (ESG):

ESG funding targets homeless and other special needs populations by providing special emergency housing needs through support of street outreach, emergency shelter capacity, transitional housing, and rapid rehousing services.<sup>34</sup>

## Housing Opportunities for Persons with AIDS (HOPWA):

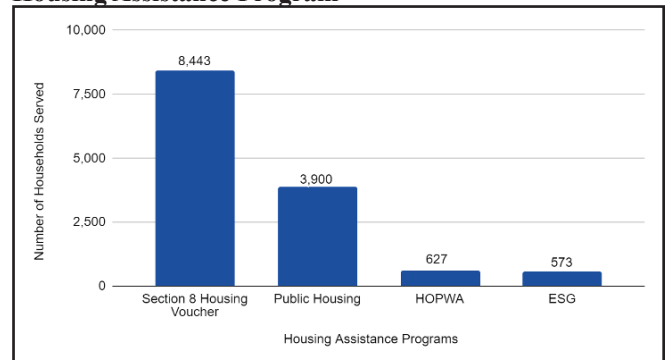
This program provides housing assistance and supportive services to those living with HIV/AIDS. The funding allocated to local non-profit organizations assists with placement of permanent and short term housing, along with additional supportive services. However, the funding is not available, nor can be used for construction or renovation of housing facilities.<sup>35</sup>

## Conclusion

It is evident that local, state, and federal governments are actively working to assist its cost burdened homeowners and renters, but are the above programs enough on their own? While it is difficult to capture the exact number of residents receiving housing assistance in Buffalo, it can be concluded that the supply does not meet the demand. As mentioned previously, 8,443 housing choice vouchers were used in 2017, but the amount of families on the waiting list for housing assistance in Buffalo far exceeds this number, with over 20,000 families on the Belmont Housing waiting list alone.<sup>36</sup>

This has prompted the organization to close their list to new applicants, as the projected wait time has reached seven to 10 years.<sup>37</sup> Similarly, the BMHA and RAC have 3,255 and 1,768 families on their respective waiting lists for public housing vouchers, and both have a projected wait time of anywhere from one to three years.<sup>38</sup> From this, it is apparent that a substantial number of cost-burdened households are still in need of housing assistance in Buffalo. Figure 2.8 illustrates the number of households served by these existing housing assistance programs in 2017.

**Housing Assistance Program**



**Figure 2.8.** *Housing assistance programs in Buffalo, NY.* Sources: Adapted from HUD 2013-2019 Consolidated Action Plan, Buffalo Housing Opportunity Strategy (2017), and 2016 Annual Action Plan City of Buffalo.

It is important to note that the 3,900 units of public housing are a representation of the current units available in Buffalo, and may not vary from year to year. The number of households serviced by ESG and HOPWA were reviewed from the 2017 Consolidated Annual Performance and Evaluation Review (CAPER) for the City of Buffalo.<sup>39</sup> These households represented in CAPER received tenant-based rental assistance and/or rapid rehousing services, but does not account for all of the services that ESG and HOPWA provide.

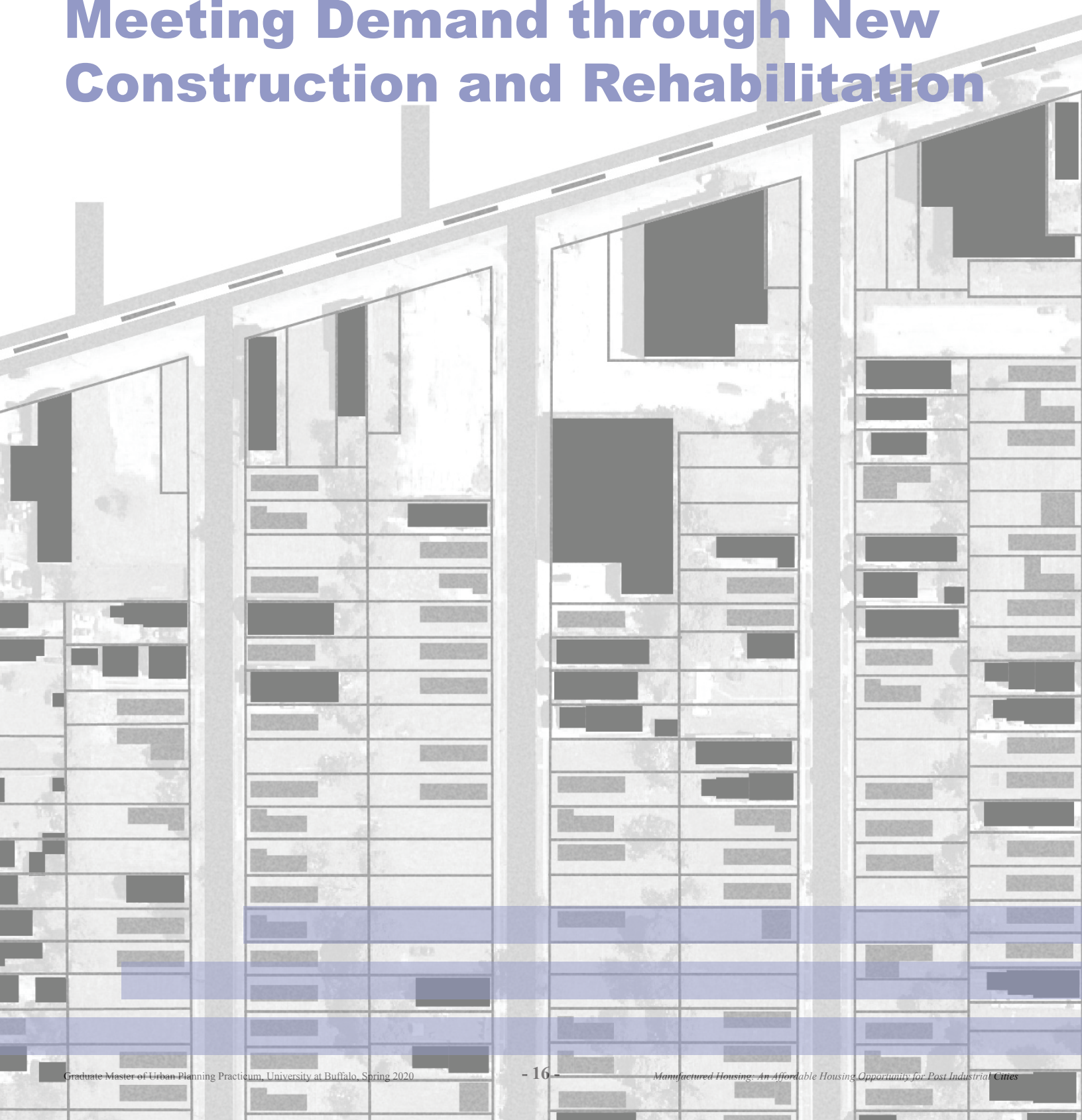
As shown in this chapter, the number of cost-burdened households is substantial compared to the number of households receiving assistance. The question then becomes, would this rehabilitation of the existing older housing stock and the building of new units be sufficient in providing affordable housing options to those who need it?





# CHAPTER 3

## Meeting Demand through New Construction and Rehabilitation



After reviewing the limitations in the quality, accessibility, and availability of current affordable housing options, several questions naturally arise; are current affordable housing programs enough to solve issues relating to affordability and quality? If not, will new construction or the rehabilitation of existing housing stock help alleviate the issue significantly? In this chapter, we will review current entitlement programs and awards that fund affordable housing options for low-income communities, followed by an examination of current construction and rehabilitation efforts.

## Home Construction Development Resources

To increase the amount of affordable housing units, the City of Buffalo is able to access grants and other resources available through New York State’s Homes and Community Renewal. A few of these programs are listed below:

### Home Investment Partnership Program (HOME):

HOME is the “largest Federal block grant to state and local governments designed exclusively to create affordable housing for low-income households.”<sup>40</sup> Grants are used for “building, buying, and/or rehabilitating affordable housing for rent or homeownership.”<sup>41</sup> In the city of Buffalo, HOME grants are administered through the Office of Strategic Planning, which assigns the Buffalo Urban Renewal Agency (BURA) to manage the funds.<sup>42</sup> At least 15% of the funds from this program must be set aside and used to assist private non-profit community based organizations, known as Community Housing Development Organizations (CHDO’s), with the development of affordable housing.<sup>43</sup>

### Community Development Block Grant (CDBG):

Awarded by HUD, CDBGs aim to improve the economic opportunities and quality of housing available to low and moderate income neighborhoods.<sup>44</sup> These grants provide funding for the demolition of city-owned abandoned structures, improvements of public facilities, or emergency home repairs, which include: roofs, furnaces, hot water tanks, electrical, and water/sewer systems. CDBGs also go towards the support of programs that serve community youths and seniors.<sup>4</sup>

### Low Income Housing Tax Credits (LIHTC):

Administered by each state’s Housing Finance Agency (HFA), this program typically uses tax reductions to finance the construction and rehabilitation of low-income, affordable rental units.<sup>46</sup> This tax credit serves as an incentive for investors to work alongside developers in creating more low-income housing. Development is subsidized through investor’s equity contributions, who are then repaid in the form of an annual tax credit allotment.

Table 3.1 provides a brief summary of the grant funding amounts awarded to the city of Buffalo between 2015 and 2018, collected directly from the City of Buffalo’s Action Plans from 2018-2016. This information was compiled to provide a snapshot of the amount of funding the city is able to access on a year to year basis to help fund affordable housing programs.

**City of Buffalo Grant Funds SummaryResidences**

Program Year	2018	2017	2016	2015
<b>Entitlement Program</b>				
CDBG	\$13,677,706	\$12,480,174	\$12,543,125	\$12,635,721
HOME	\$3,255,799	\$2,307,774	\$2,414,585	\$2,398,152
<b>Total</b>	<b>\$16,933,505</b>	<b>\$14,787,948</b>	<b>\$14,957,710</b>	<b>\$15,033,873</b>

**Table 3.1:** Comparative view of entitlement program funding.

Source: Adapted from City of Buffalo’s Annual Action Plans 2018-2016.

## Housing Stock Trend

Considering the limited supply of quality housing in Buffalo, one can surmise that new construction of housing units would be taking place at a higher rate. Unfortunately, the quantity of housing has actually decreased in recent years. Various sources including the American Community Survey 2018 5-year estimates<sup>47</sup> and the City of Buffalo’s Consolidated Action Plan both highlight a decrease in housing units, including apartments available.<sup>48</sup> According to 2018 5-Year Estimates, Buffalo has experienced a net loss of 7,306 housing units since 2010, while the only year to experience a significant increase in housing units was 2017, when 1,089 units were added.<sup>49</sup> The Consolidated Action Plan mentions that this decrease in housing stock “is due in part to units falling into such a state of disrepair that they are abandoned and taken off the market, eventually being demolished at City expense.”<sup>50</sup> It is further stated that of the existing housing stock, “as of 2012, only 3,209 housing units were financed with low-income housing tax credits from the federal government...and renters with low-incomes and disabled households are likely to find more limited options.”<sup>51</sup> This makes it clear that a gap exists in the housing market where not enough affordable housing units are being built to help address the large demand.

## New Construction in Buffalo

With a lack of high-quality housing stock, the construction and rehabilitation of units is one of the more feasible options for addressing this problem. According to the City of Buffalo’s Consolidated Annual Performance Reports, between the HOME and CDBG grants, rehabilitation or construction of 118 units during the 2017-2018 program year<sup>52</sup> and 228 units during the 2018-2019 program year have been completed.<sup>53</sup> However, a limitation to the number of units that can be constructed a year exists in part due to construction costs that are often fairly expensive, affecting the impact the city can have on the affordable housing demand.

## Construction and Rehabilitation Costs

With a lack of high-quality housing stock, the construction and rehabilitation of units is one of the more feasible options for addressing this problem. As of 2017, the national average cost of construction for a single-family residence was \$237,760, far more than a low-income earner could afford to pay if the city wanted to sell the unit at cost.<sup>54</sup>

Unfortunately, even HUD-backed programs are not immune to the high construction costs faced by private market development. In 2017, the City of Buffalo’s Department of Audit and Control released an expenditure report consisting of 11 HOME projects that were completed with HOME grant funding received between 2015 and 2017. The report was compiled through expenses stated in contracts for each project, consisting of 6 single family residence and 5 multi-family residence affordable housing projects. The costs of the single family HOME residences are outlined in Table 3.2.<sup>55</sup>

- Builder costs include, but are not limited to; appliances, foundation, demolition, flooring, landscape, insulation, HVAC, etc.
- Soft costs help ensure property meets federal guidelines and include, but are not limited to; architect fees, insurance, marketing, legal fees, asbestos and air monitoring, site plan review, etc.

**HOME funded Project Costs for Single-Family Residences**

Project	175 Laurel St	207 Laurel St	21 S. Ryan St	933 Fillmore St	174 East St
Builder	Burke	Burke	Lamperelli	Lamperelli	Burke
# of Beds	3	3	3	4	4
Square Feet	1,754	1,584	1,041	1,750	1,664
Total Costs Per Sq. Feet	\$202	\$244	\$295	\$216	\$201
Builder Costs	\$311,980	\$320,816	\$276,630	\$344,966	\$292,160
Soft Costs	\$42,342	\$66,092	\$30,544	\$32,252	\$42,400
Total Costs	\$354,322	\$386,908	\$307,174	\$377,218	\$334,560

**Table 3.2:** Summary of construction expenditures of single-family residences. Source: City of Buffalo Department of Audit and Control, 2017.



Through Erie County’s Real Property Tax Services, a property parcel search was conducted to identify the date of construction for HOME funded projects, when they were acquired by a CHDO, and when they were sold to a low-income or moderate-income household as required by HUD. Upon this review, it was found that only one of the projects qualified as a newly constructed residence, while all others were rehabilitation projects. The construction costs analyzed through the city’s Department of Audit and Control were included in Table 3.3, as well as the sale and estimated value records obtained from commercial real estate websites, such as realtor.com, to review the affordability of constructing and owning these homes.

## Construction and Selling Costs of HOME Projects

While HOME provides much-needed housing stock to the city, it is evident that the total expenses put into these homes are substantial, limiting the program’s effectiveness. After reviewing the total cost associated with constructing other HOME projects, the City of Buffalo Comptroller went so far as to recommend that reduction of costs should be reviewed by management so that the grant funding can better service a broader range of residents in need of affordable housing.<sup>58</sup> It should be mentioned that the costs of these units are considerably higher than that of the national average, and are therefore possible outliers to the typical cost of construction in Buffalo. In either case, these units are still expensive to build, and despite a variety of funding sources, Buffalo remains unable to adequately address the housing needs of all its residents experiencing a high cost burden or lacking quality housing.

## Home Construction Development Resources

As shown in this chapter, the construction of new housing units in Buffalo has been occurring at a slower pace while the total number of housing units has been steadily decreasing over time. The high cost of these new units, as well as the rehabilitation of existing housing stock, limits the number of households that can be served using federal and state resources.

In order to provide adequate, affordable housing to those who need it most, a non-traditional form of housing should be explored in Buffalo. Emphasis should be placed on minimizing construction costs where possible while maximizing the number of households served, possibly using grant funding that is already available. To this end, Manufactured Housing may provide a unique opportunity for the city to encompass all three.

**Construction and Selling Costs of HOME Projects**

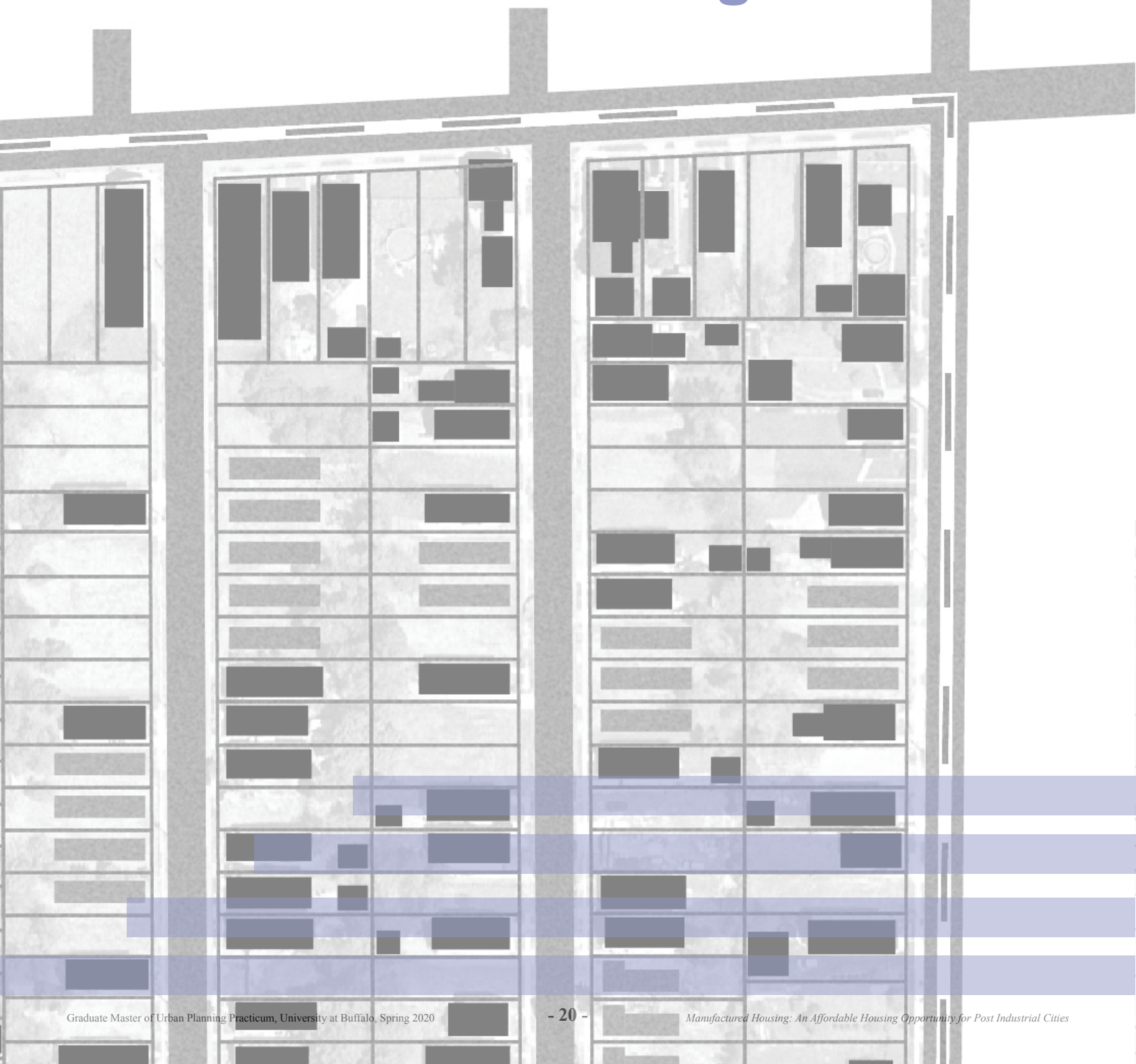
Information Source						
City of Buffalo Department of Audit and Control	Location	175 Laurel St.	207 Laurel St.	21 S. Ryan St.	933 Fillmore St.	174 East St.
Erie County Real Property Tax Services	Project Status	Rehabilitation	Rehabilitation	Rehabilitation	Rehabilitation	New Construction
Erie County Real Property Tax Services	Year Built	1892	1900	1920	1910	2017
Erie County Real Property Tax Services	CHDO acquisition	9/11/2015	9/11/2015	3/30/2015	9/25/2015	9/12/16
Erie County Real Property Tax Services	Sold	10/13/2017	9/21/2017	8/24/2018	7/24/2018	8/24/2018
City of Buffalo Department of Audit and Control	Total Construction Cost	\$354,322	\$386,908	\$307,174	\$377,218	\$334,560
Realtor.com	Selling Price	\$95,000	\$95,000	\$98,000	\$95,000	\$124,000
Realtor.com	Current Estimated Value	\$79,000	\$100,400	\$106,300	\$87,899	\$145,796

**Table 3.3:** Brief summary of construction and selling prices.

*Note:* Information for table was obtained from City of Buffalo’s Department of Audit and Control 2017 expenditure report, Erie County Real Property Tax Services, and Realtor.com.

# CHAPTER 4

## Regulatory Challenges for Manufactured Housing in Cities



To suggest Manufactured Housing in post-industrial cities, we recognize that potential challenges exist from local and state regulations regarding the design, construction, and placement of MH in communities. Although Buffalo is our area of focus, the implementation of MH in similar post-industrial cities may face specific constraints that are not addressed in this report. To this end, there are three separate regulations that must be adhered to that will be explained within this chapter: the Buffalo Green Code Unified Development Ordinance, the New York State Building Code, and the New York State Housing and Community Renewal (HCR) Guidelines.

## The Green Code

Zoning in Buffalo is subject to the Unified Development Ordinance (UDO), also known as the Green Code. A form-based zoning code, it does not include a zone specifically designated for Manufactured Homes. This is advantageous for the implementation of MH development, as it has proven to be a barrier in cities that do not have as flexible zoning ordinances. It is for this reason that we believe Buffalo is well-suited for this form of housing development.

As there is no zone specifically designated for MH, and because it is relatively similar in building type to conventional single-family homes, this report will assume that the same regulations for single-family homes can be applied towards HUD-approved Manufactured Homes. For single-family residences, the Green Code has separate regulations for what is recognized as single-attached and single-detached building types. Single-attached, also recognized in the Green Code as an attached house, “is a building on a narrow lot that shares a building with an adjoining lot, typically designed as a dwelling.”<sup>59</sup> Single-detached, recognized as a detached house by the Green Code, “is a small-scale, freestanding building, typically set back from the public right-of way and elevated above the ground level to provide privacy to occupants, and ideally designed to facilitate residential uses.”<sup>60</sup> It is this single-detached building type that we believe most closely resembles the conventional manufactured house in description.

The City of Buffalo is divided into zones to enforce the regulations of the Green Code ordinance. There are District, Corridor, and Neighborhood zones, the latter of which we will focus on as Manufactured Homes would constitute a residential land use. Neighborhood zones range in “character, function, and intensity”, with “various mixed use and walkable places” throughout the city. Table 4.1 identifies which neighborhood zones single-attached and single-detached houses can be placed within the city of Buffalo.

### Building Types Permissible in Neighborhood Zones

Neighborhood Zone Description	Single-Detached Residences	Single-Attached Residences
Mixed-Use Core		X
Secondary Employment Center		X
Mixed-Use Edge	X	X
Residential	X	X
Mixed-Use Edge	X	X
Residential	X	X
Single-Family	X	
Single-Family	X	

**Table 4.1.** Building types permissible in neighborhood zones.  
Source: Buffalo Green Code, 2016.

**Figure 4.1.** Conventionally built single-family detached residence.  
Source: Buffalo Green Code, 2016.

### Traditional Single-Detached Building Type



## Regulatory Requirements for Single-Detached Units

The Green Code outlines building-type regulations that a single-detached residence – and by extension our proposed manufactured home – must follow. These regulations, outlined in Table 4.2, we believe to be obtainable for the prototypical MH unit. Frontage elements that are allowed, but not required, for this building type include: awning, balcony, canopy, porch, and stoop elements, all subject to further requirements. Reflective wall surface materials, with a “Visible Light Reflectance (VLR) of greater than 15%”, is the only exterior facade material that is prohibited in this building type. Rear yard depth requirements may pose a challenge for MH units with smaller yard areas, as we will outline in Chapter 7 of this report.

We propose that selected additions to conventional MH units will meet these requirements. As discussed later in this report, these will include porches, peaked roofs, and fenestration.

### Site Plan Review

Within the Green Code, a site plan review is the next step in the administrative review cycle, completed by the City Planning Board in collaboration with community members and intended in part to preserve continuity of neighborhood character. A Major Site Plan Review is relevant when a plan includes 9 or more contiguous lots. Examples of considerations that may be made to meet community expectations are: (1) omitting driveways in order to meet lot dimensions, (2) matching roof pitch height, or (3) having a shared wall. We conclude that these considerations do not pose a significant challenge on the implementation of Manufactured Homes, as we believe MH can be designed to be in compliance with current city ordinances.

## New York State Building Regulations

### 2020 Residential Code of New York State

The Residential Code, a subsection of the New York State 2020 Uniform Code, regulates the construction of single-family houses, two-family houses, and buildings with three or more townhouse units. Some of the provisions of this code that apply to MH include:

- Construction
- Alteration
- Movement
- Equipment
- Use & Occupancy
- Location

Green Code Requirements for Single-Detached Residences

Regulation	Min.	Max
Lot Area	*1500 (Sq. Ft)	*4,000 (Sq. Ft)
Lot Width	*25'	*75' / None
Building Coverage	-	50 - 70%
Impervious Coverage	-	60 - 80%
Building Setback	+/- 5' from Yard Line	-
Build-to Percentage: Front Facade	65%	-
Corner Side Yard	3' - 6'	-
Interior Side Yard	3' - 6'	-
Rear Yard	15 - 25% of Lot Depth	-
Building Height	-	3 Stories / 40'
Transparency: Ground Floor (Front Facade)	20%	-
Ground Floor (Corner Side Facade)	20%	-
Upper Floor (Front and Corner Side Facade)	20%	-
Pedestrian Access	Front Entrance	-

Table 4.2. Local regulations for single-detached residences. Source: Buffalo Green Code, 2016.

With respect to Manufactured Housing, the code states the following:

**[NY] R101.7 Manufactured homes.** *Manufactured homes shall be constructed in accordance with the requirements of the applicable US Department of Housing and Urban Development Manufactured Home Construction and Safety Standards (24 CFR Part 3280); and assembled and installed in accordance with the requirements of this code and in accordance with the 19 NYCRR Part 1210 (entitled “Manufactured Homes”), as currently in effect and as hereafter amended from this time.*<sup>63</sup>

As per the above stated regulation, all Manufactured Homes within the state of New York must be constructed in accordance with *HUD Manufactured Home Construction and Safety Standards*.<sup>64</sup> Additionally, the regulation states that MH must be assembled and installed as per the requirements of the *2019 New York Codes, Rules and Regulations*.<sup>65</sup> These codes and regulations apply to the manufacturers, installers, and retailers involved in the Manufactured Housing industry and/or provide installation or other MH related services.

Because all new MH units sold in New York State must comply with the HUD Manufactured Home Construction and Safety Standards, the 2020 New York State Uniform Code does not appear to be a hindrance to a Manufactured Housing development in New York State.

## Buffalo Local Standards

In addition to the New York State building code, the local standards for the City of Buffalo do not appear to pose any significant challenges to the implementation of Manufactured Homes.<sup>66</sup>

These Local Standards include:

- **48-inch Frost Depth:** Depth at which groundwater in soil is expected to freeze, and is dependent on the climatic conditions of the area and the heat transfer properties of the soil and adjacent materials.<sup>67</sup> Building foundations, water piping, and sewage piping must be buried below this frost line.
- **90 Mile-per-hour Wind Speed:** Manufactured Homes are required, by HUD, to be constructed to meet the wind safety standards depending on the wind zones.<sup>68</sup> Because HUD reinforces these standards, these local standards will not be a constraint.
- **50-Pound Snow Load:** Minimum required pitch of roof is an angle of 6/12 degrees to sustain a snow load of 50 pounds. For MH, required pitch can only be achieved if the roof of the unit is transported unattached, with hinged rafters installed on site.

## The Green Code

The 2018 New York State Housing and Community Renewal (HCR) Design Handbook provides guidelines and specifications for architects and applicants requesting HCR funding. This Handbook includes requirements for design, specification, site development, construction contracting, and submission. These requirements apply to all projects applying for HCR funding except the following:<sup>69</sup>

- Housing Development Fund (HDF)
- Low-Income Housing Credit Program (LIHC)
- Rural Rental Assistance Program (RRAP)
- Home Program: Local Program Administrator awards
- RARP, UI

## Permissible Deviations

Deviations from the design and specification requirements are allowed if they result in superior design characteristics. Such requests for variations will be reviewed and approved by the Assistant Commissioner of the Office of Finance and Development based on the applicant's ability to demonstrate one of the following:

- Cost-effectiveness of alternate proposal
- Functional suitability of alternate proposal
- Durability and operating suitability of alternate proposal
- Impact on operating costs

## Impact of Design and Specification Requirements on Manufactured Housing

It is important to note that the Handbook provides general guidelines for affordable housing projects, and is not specific to Manufactured Housing itself. Therefore, these guidelines may pose potential challenges to MH as an affordable housing option. See Appendix A and B for specific requirements outlined in the Handbook that are relevant to MH implementation.

Manufactured Homes, by and large, will comply with the design guidelines applicable to affordable housing developments, prescribed in the HCR Handbook. A few of the specifications presumed to be challenging for the Manufactured Housing industry, however, can be addressed by introducing design characteristics that conform to the existing neighborhood character. Porches, roof variation, and building setbacks specific to Buffalo can be integrated while adhering to any requirements of Manufactured Homes.

It should be noted that this chapter derives conclusions in accordance with the HCR Design Handbook, which is undergoing revisions as of May 2020. We do not yet know of the outcome of these changes, but note that the Handbook has not traditionally included references to Manufactured Housing. We suggest that future editions should introduce guidelines regulating the design and specification of manufactured units, so as to ensure similar quality standards to that of conventional (site-built) affordable housing.

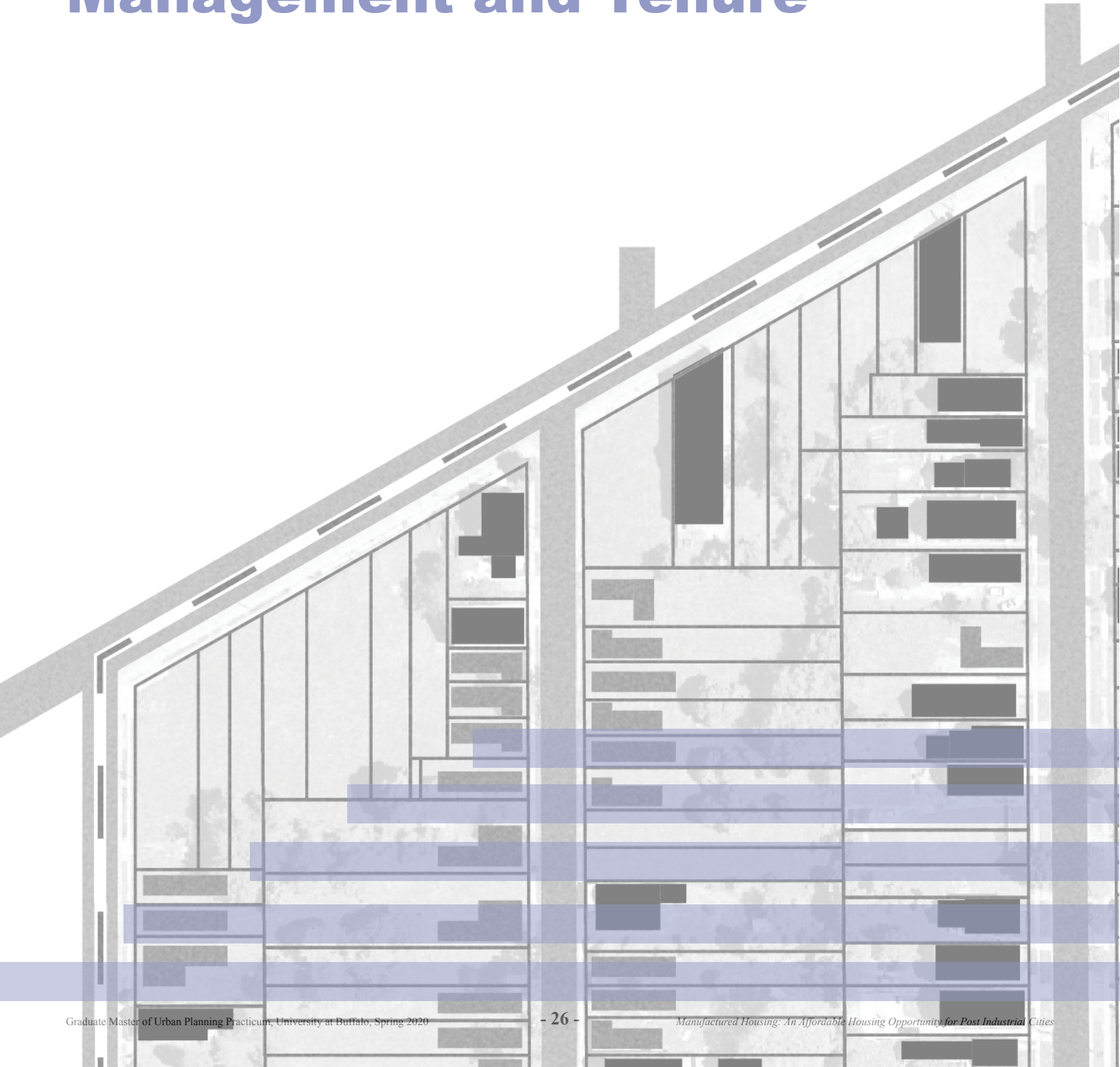
## Is Manufactured Housing Feasible from a Design or Construction Standpoint?

Incorporating the Buffalo Green Code, the NYS Building Code, and HCR handbook, Manufactured Housing can be developed in a way that both adheres to structural regulations while providing an appealing dwelling for New York residents. While certain specifications do exist that challenge the placement of Manufactured Housing units, we believe they can be overcome. Through various prototypes and design variations, we are confident that Manufactured Housing will achieve the same building standards and community character appropriate for the city of Buffalo.



# CHAPTER 5

## Options for Development, Management and Tenure





## Development Costs and Process for Manufactured Housing:

Historically and in the present day, Manufactured Housing has run into issues with regards to land development. Companies that produce Manufactured Homes typically are not involved in the land development and retail process, instead relying on third-party installer companies or the purchasers of MH to develop the land themselves. Because these manufacturers concentrate solely on the production of Manufactured Homes, they lack control over the location and dispersion of the final unit, unlike the developers of traditional site-built homes. HUD Code MH homes have also historically been subject to zoning-based restrictions in many communities, further reducing the supply of suitable home sites for development.

There are a variety of ways to calculate the cost of development and installation for Manufactured Homes, though they are overwhelmingly based around individual and non-collaborative ownership of MH units. Retailers (dealers) are the primary avenue through which these costs are calculated, accounting for most of the consumer financing of MH through individual banks and financing companies. According to a Manufactured Housing Institute (MHI) survey, almost 78 percent of loans and 80 percent of the dollars for Manufactured Housing loans were placed through dealers in 1996.<sup>70</sup> Full-service retailers buy, develop, and sell land to customers in addition to the manufactured home; these retailers can also package the ownership or rental of lots in scattered locations, or in community parks, as a part of the home sale. Additionally, these retailers also sell MH to customers that already own their land, and/or redirect customers to owners of Manufactured Housing projects or developments. Given the nature of this report, however, this is unlikely to be a viable option within the City of Buffalo.

Manufacturers of MH units are also expanding their ability to develop land. By entering into business ventures with land developers and working more closely with MH dealers, manufacturers like Clayton Homes and Zaring are seeking to gain more oversight of the land development process. This involves cooperating with existing networks of dealers, and collaborating with large-site land developers to run their own Manufactured Housing communities.<sup>71</sup>

HUD codes related to MH do not regulate or monitor the land development and installation process, and producers of Manufactured Homes are often not interested in this aspect of MH development as a result.<sup>72</sup> Because of this, land development and installation costs vary depending on the source for purchasing of Manufactured Housing units. Full-service dealers and dealer-developers typically include the costs of land development, preliminary site work, and installation with the cost of the unit as a whole. Independent dealers offer this as well, but may also allow the MH purchaser to source third-party contractors related to land development and installation.

## Tenure Models:

### Land-Lease

In a developer ownership or land-lease tenure model, the Manufactured Home unit itself is owned by the resident, but the land upon which MH units are placed is owned by a private development or investment firm. This can be an attractive option for some occupants. Housing costs and property taxes are typically low, as residents do not have to purchase and own the land themselves. Land-lease communities often include amenities for residents as well, such as community centers, playgrounds, and athletic facilities; in a 2000 report conducted by the Department of Housing and Urban Development and the Partnership for Advancing Technology in Housing (PATH), a survey of Manufactured Home communities found that “almost three-quarters of the surveyed communities mandate that manufactured housing developments contain common open space.”<sup>73</sup>

There are, however, several downsides for residents that are a part of a land-lease development model. Because residents do not own the land itself, there is little potential for appreciation in the residents' home value and the creation of generational wealth. Land-lease communities also typically feature a homeowners' association whose fees can add to the overall housing burden placed on residents.<sup>74</sup> With residents having no direct interest in the land and having little collateral, mortgages can be comparatively difficult to acquire, especially at rates comparable to site-built mortgages.<sup>75</sup> Additionally, land leases will eventually expire for residents often requiring them to vacate the land, which involves disassembling and transporting their MH unit to a new site; this is an expensive, impractical, and inconvenient process. For these reasons, land-lease or developer ownership of land must be viewed with skepticism when considered as a long-term option to promote housing affordability.

## Private Ownership

Resident ownership, not just of the Manufactured Home itself but the land that the unit is located on, is a good way to address issues of maintenance and promote long-term tenancy. Resident ownership of land improves residents' sense of community, while offering them greater stability compared to land-lease models of tenure. This model also offers more control over rents, better equity, access to mortgages and loan conditions, along with capital improvement investments. There is also the added benefit of local governance, improved access to financial resources available to homeowners associations, and less risk of displacement due to land sales or redevelopment pressure compared to land lease developments.

There are two major models of resident ownership: individual development and subdivision. An individual development is simply a single buyer going through the entire development process to install a Manufactured Housing unit on a private parcel, while subdivision development places individual lots up for sale to prospective residents. If plots are located as part of a contiguous multi-plot development, common areas and infrastructure are typically maintained by resident-led homeowners associations, with dues collected to cover maintenance and upkeep costs. Subdivision development models can include a variety of deed restrictions to accommodate housing affordability needs. A development in Aspen, CO, managed via the Aspen/Pitkin County Housing Authority (APCHA), features a variety of deed restrictions to promote housing affordability. The APCHA restrictions in place ensure occupancy by existing residents, set income qualification for purchasing, set sale price limitations upon reselling, and set rent limits for rental lots.

## Lease-Purchase

Lease-Purchase is a tenure model that supports both affordable rental and homeownership. A national leader in this approach is the Cleveland Housing Network (CHN), which has developed over 1,000 lease-purchase homes using Low Income Housing Tax Credits (LIHTC).<sup>76</sup> The lease-purchase agreement works much like a traditional lease, whereby the tenant is afforded protections and after a set period of time is given the option to purchase the property at a fixed price. This works particularly well with single-family homes financed with LIHTC credits that sunset/expire after approximately 15 years. When the LIHTC compliance period is over, renters have an opportunity to purchase their unit, where in the case of CHN, the median sale price for a single family home is less than \$20,000.<sup>77</sup> The lease-purchase option is of mutual benefit to both parties, as the tenant/owner receives an affordable home while the developer is able to offload responsibility of an expired LIHTC unit to the new owner.

## Co-Operative Housing Ownership

Co-operative housing ownership arrangements, or "Co-Ops", place ownership of a collection of lots under a resident-led housing organization or land trust, where each resident occupies a lot in that Co-Op retains a voting share. Co-Ops typically have a board of directors that handle governance of the co-operative, and often hire a day manager to oversee day to day maintenance and operation. Non-members are also able to rent Co-Op owned property, but typically must pay a higher fee or rent than members do. Creating a housing co-operative

does not require every homeowner to acquire a loan to purchase their own lot, bypassing the often lengthy or complicated subdivision process, so often facilitating MH development.

A housing co-operative can be formed in one of two ways. Residents can self-organize, purchasing their lots together and subdividing the assembled lots as a Co-Op. Alternatively, many nonprofit organizations offer capacity building assistance for residents to establish their own co-operative housing development. Resident Owned Communities, or ROC USA, is a nonprofit that provides local residents and community organizations with technical assistance in the collective purchasing of lots.<sup>78</sup> Additionally, many nonprofit community organizations, such as the California-based Augusta Communities, own and operate manufactured housing co-operatives directly.<sup>79</sup>

While co-operative ownership development plans can certainly be successful under the right conditions, there are potential obstacles that would need to be overcome for a successful MH development. The cost of operating a housing co-operative can become expensive, particularly if significant investments into infrastructure, maintenance, and code adherence are required. The subdivision process for private land ownership can also become a long-term commitment, as many potential residents simply cannot afford to wait months in order to purchase their own subdivided lot. Financial support is necessary if any MH housing cooperative ownership plan is going to be undertaken.

## Nonprofit Ownership

Nonprofit ownership is typically conducted through a local nonprofit housing organization, such as a community land trust or housing authority, and can be particularly advantageous at maintaining or creating a stock of affordable housing. When operating a Manufactured Housing development as affordable housing, nonprofits can often keep rents or purchase prices lower than they would be under conventional private ownership models. Nonprofit ownership programs can also streamline the processes of maintenance, infrastructure repair, and common area oversight, a difficult task under any affordable housing development. Perhaps most importantly, nonprofit ownership programs typically have greater access to governmental funding sources at the federal, state, and local levels compared to private owners and corporations. Access to low-interest loans and other governmental grants can enable nonprofit housing organizations to perform improvements to infrastructure, maintenance, and common areas without increasing rents, as was the case in the Yampa Valley Housing Authority in Steamboat Springs, CO.<sup>80</sup>

Community Land Trusts (CLT) are the non-profit organizations that may have the most potential utility regarding a nonprofit-based ownership model for Manufactured Housing development. Community land trusts have been formally defined in the United States Housing and Community Development Act of 1992, classified as non-profit organizations per the United States Tax Code.<sup>81</sup> They function by purchasing land and maintaining ownership, while providing long-term (99-year) leases of the property. A potential homebuyer then acquires a mortgage for the home atop the land, agreeing to resale-restrictions established in the ground lease to keep the home affordable for the next buyer, while also retaining a portion of the equity gained by the appreciation in home value.<sup>82</sup> This allows the price of the land and the cost of housing to remain stable, so long as the resident pays their lease and the community land trust pays the property tax. Membership in a community land trust typically consists of three major parties: leaseholders, who occupy the housing on the land; members of the surrounding community, and related community organizations; and representatives from municipal governments, funding agencies, and nonprofit organizations.<sup>83</sup> As land trusts may have special promise, but are not yet common, we provide added details on them below.

## Community Land Trusts as a Tenure and Management Option

### Community Land Trust Funding Sources

Though a community land trust is a substantial initial investment on the part of a nonprofit housing organization, there are a variety of federal policies, funds, and programs that may be leveraged in the establishment and furthering of a community land trust. Federal funding can come from direct sources, such as Community Development Block Grants (CDBGs), and initiatives from the Department of Housing and Urban Development, such as the HOME Investment Partnerships Program and the Choice Neighborhoods Program. Aside from direct funding, CLTs are also eligible for federal tax credits, such as LIHTC and Historic Preservation Tax Credits.<sup>84</sup> Additional sources for federal funding and assistance are available through the Neighborhood Reinvestment Act and the Self-Help Homeownership Opportunity Program (SHOP), both of which intend to reduce the costs of land acquisition and infrastructure development with regards to affordable housing and neighborhood development.<sup>85</sup>

Community land trusts are able to access funding to begin the process of acquiring land through sources such as: private philanthropic donations, federal housing subsidies, donation of city-owned property, community foundations and neighborhood organizations, and anchor institutions, such as hospitals and universities.<sup>86</sup> In municipalities that are supportive of community land trusts and their efforts, city governments are often able to transfer lots to the land trust at below market cost. City governments are also able to facilitate this transfer by encouraging private developers to “donate” land to community land trusts, typically in return for concessions or code variance approvals, or to bring developers in compliance with city ordinances like inclusionary zoning.<sup>87</sup> There is precedent for this in the city of Buffalo; 20 vacant parcels of land were transferred by the city government to the Fruit Belt Community Land Trust.<sup>88</sup> A similar program in one of the targeted areas suggested in Chapter 6 of this report would greatly assist any prospective CLT in getting off the ground for future MH development.

New York State has formulated policy and funding avenues with regards to community land trusts. One of the more prominent government programs is the Community Land Trusts Capacity Building Initiative (CLTCBI). Created as a partnership between the Office of the New York State Attorney General and the nonprofit affordable housing organization Enterprise Community Partners, the CLTCBI has provided funding and technical assistance to numerous community land trusts in New York State.<sup>89</sup> This funding was intended to help land banks in acquiring vacant or abandoned property for the purpose of either rehabilitating it or transferring possession to nonprofit organizations that intend to redevelop it.<sup>90</sup> Through both community land trusts and land banks, New York State has made an effort to support urban neighborhood revitalization or land preservation initiatives.

### Management Resources Available to Community Land Trusts

Prospective community land trusts have a wealth of potential resources afforded to them through membership in, or assistance from a member of, the National Community Land Trust Network (NCLTN). Organized in 2006, the NCLTN consists of 111 community land trusts, as well as other organizations in the associated Grounded Solutions Network. The NCLTN provides resources to developers, community organizations, public agencies, and individuals. These resources offered include: technical assistance, networking capability, connections with other CLTs, training, grants, scholarships, events, sponsorships, visibility and social media networking prominence, and advocacy at the regional, state, and federal level.<sup>91</sup> The NCLTN also provides prospective organizers of a community land trust with the Startup Community Land Trust toolkit. This resource provides any would-be community land trust organizers with information regarding establishing a specific vision for a CLT, determining area(s) to service with a CLT, and establishing an organizational and governance structure. Information regarding the development of long-term implementation plans, determining what resources are necessary, establishing initial CLT projects, and developing an advocacy plan for a CLT are also provided.<sup>92</sup>

## Drawbacks to Community Land Trusts

Despite the potential advantages of a CLT nonprofit manufactured housing development – in terms of administration, operation, and funding sources – there are notable risks to consider when attempting a community land trust. CLTs may struggle if they are too small in scale or in level of support, as smaller community land trusts lack the same access to capital and leadership that make larger CLTs a success. Similarly, dedication, leadership, and relevant experience are required from potential CLT leaders and organizers. Coordinating the financing, real estate expertise, resident organizing, and community outreach necessary to make a community land trust a success requires strong leadership, professional know-how, and/or technical assistance from more experienced organizations in order to avoid failure. Community land trusts require a great deal of consideration to the financial aspects of a housing organization. Rents alone rarely cover all of the expenditures encountered by a community land trust, particularly if large investments into infrastructure, maintenance, and/or land rehabilitation are required. Finally, attention must be paid to tenancy restrictions and regulations if affordable housing is to be sustained long term. The inclusion of mechanisms for affordability, such as income restrictions, resale regulations, and asset restrictions, are a necessity to ensure that housing demand does not corrupt what is supposed to be an affordable housing initiative away from its intended purpose.<sup>94</sup>

## Case Studies of Community Land Trusts

The Oakland Community Housing Initiative (OCHI), founded in 1973 by religious groups as a non-profit housing developer, utilized community land trusts in the creation of affordable housing. The main mission of OCHI was to build and manage affordable housing that was safe, while promoting self-sufficiency of its tenants.<sup>95</sup> The organization's 2006 Infill Homeownership Initiative transformed vacant properties by providing Manufactured Housing to low and moderate-income individuals who may not have been able to afford home ownership otherwise. While no longer in operation, it served as a major catalyst of MH affordable housing development in the city of Oakland.

## Tenure Recommendations for MH

It is difficult to definitively recommend one single development strategy for a Manufactured Housing project over another, as blanket solutions or development programs will not apply to the entire metropolitan area. Issues related to housing cost burden, property management, tenant enthusiasm, and dedication from related housing organizations, cooperatives, or nonprofits must be addressed in a local neighborhood-based context. There are three models of development and tenure, however, that should be considered in Buffalo and similar post-industrial cities: private ownership, lease-purchase under nonprofit management, and a community land trust. Private ownership is a simple and straightforward approach to introduce Manufactured Housing to the private market. A lease-purchase model allows for a soft introduction of MH as a homeownership opportunity as opposed to outright sale to a private buyer. In an ideal scenario, a nonprofit community developer would finance a LIHTC pilot project with no less than a dozen Manufactured Homes to be rented as affordable single-family units. The demand for affordable rental housing almost ensures that the units would be filled in the interim while the community and potential homeowners become familiar with MH. Once Manufactured Housing is adopted into the neighborhood character, developers can expand MH housing options to direct private sales. The long-term success of this strategy facilitates the steady growth of both homeownership and affordable rental with minimal risk to developers, tenants, and homeowners.

The third tenure model we recommend is the community land trust model. CLTs provide the opportunity to rehabilitate vacant parcels of land, addressing the issues of vacancy and housing degradation in underdeveloped neighborhoods, while also preserving permanent affordability and community control. An established CLT can uniquely support renters, homeowners and neighborhoods providing long-term stability. Over time, CLTs create a strong sense of community cohesion and cherished identity that is uncommon among the other tenure models, all while homeowners build home equity and remain protected against gentrification. These three tenure

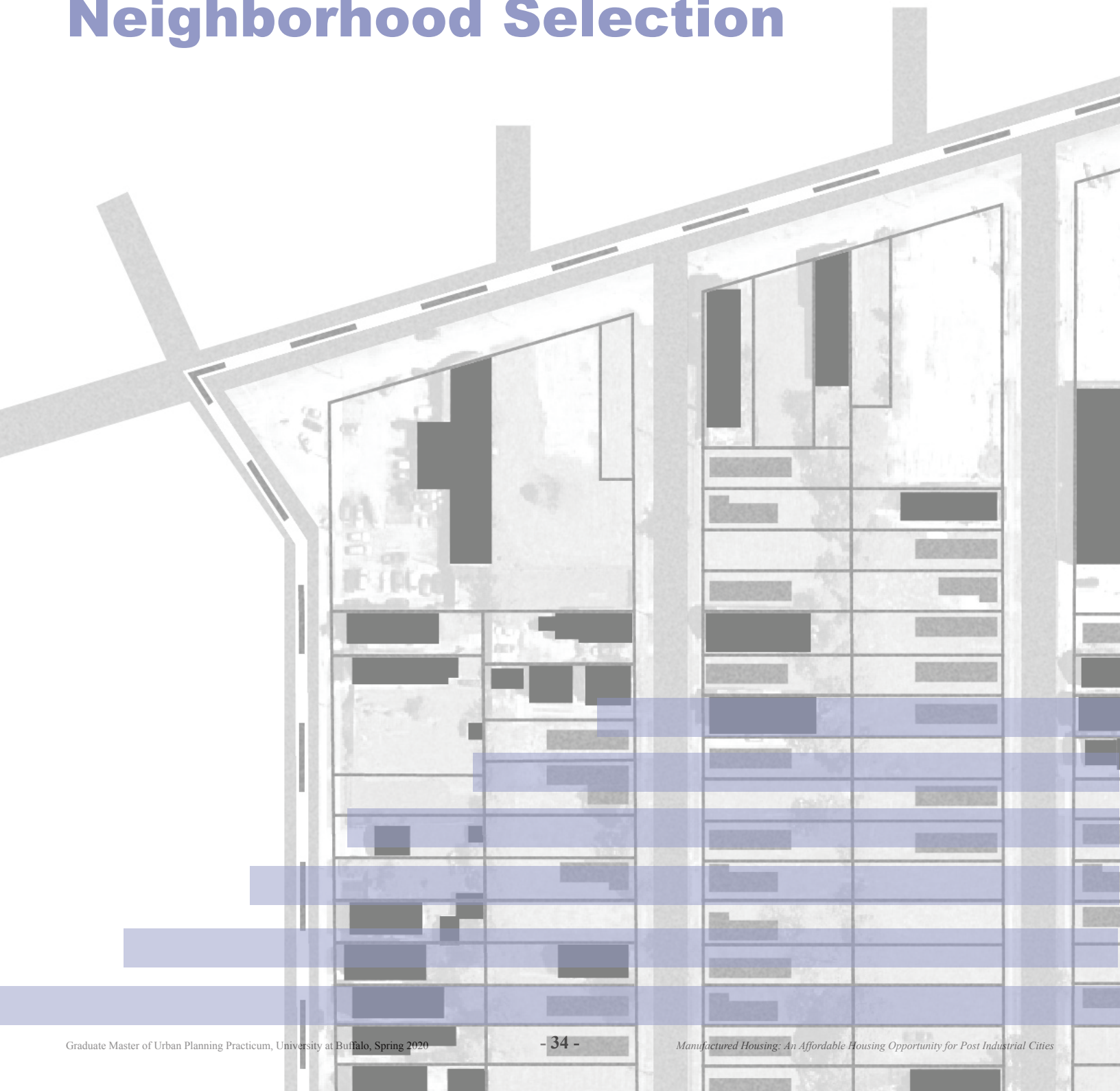
models are not the only viable options for a Manufactured Housing development, but we believe they hold the most promise in pilot development and long-term housing affordability for Buffalo. The City of Buffalo and State-level partners should work together to ensure that legal, regulatory, and financing processes affirmatively support the introduction of Manufactured Housing. Further coordination with city, state, and non-governmental partners will be needed to support and promote affordable manufactured rental and home-ownership opportunities as a cohesive strategy in our community.





# CHAPTER 6

## Manufactured Homes in Buffalo: Neighborhood Selection





If Manufactured Housing developments are to be implemented in Buffalo, where in the city should they go? In this chapter, we use two sets of frameworks to analyze geographic and municipal data to figure out the most promising locations. We conducted our analysis using US Census group and parcel level data. From our results, we recommend tracts of Buffalo for further consideration, to be followed up with public participatory activities in the selected neighborhoods.

## The Importance of Site Selection

To identify which communities can benefit most from the addition of affordable MH developments, we referred to the Buffalo Housing Opportunity Strategy (BHOS) report that classifies levels of housing demand by neighborhoods throughout the city. Building off of this, we then examined portions of the city of Buffalo at the census tract, census block group, and parcel levels. GIS shapefiles were accessed from the NYS GIS Clearinghouse to analyze neighborhoods of potential development sites in Buffalo, while satellite imagery was taken from Google Earth and Google Maps to present these neighborhoods visually. Demographic data was gathered from the United States Census and 2018 American Community Survey 5-Year estimates to understand current neighborhood characteristics. Based on the optimal confluence of key criteria indicating suitability, ten census tracts and viable block groups were identified as the most promising candidates for Manufactured Housing developments in Buffalo.

### Selection Criteria:

#### Vacancy

Targeting census tracts with a higher number of vacant lots ensures a more available supply of land that can be developed for any prospective MH development. Additionally, vacancy confers a wide variety of advantages with regards to sustainable development and density. These lots will likely have connections to sewer, water, electric, and other utility lines already installed, along with rights-of-way on the existing street network. Preferably, vacant lots should reinforce denser areas of the city, or be located along major thoroughfares already within reasonable walking distance to transportation options.

#### Parcel Ownership

Determining the owner of these vacant lots is also important in assessing the viability of any potential housing development project. Many post-industrial cities have acquired the rights to vacant lots, either directly or through city development corporations, which is advantageous for any form of housing development. The City of Buffalo is similar in this regard, as they have acquired significant land over time through partnerships with organizations like the Buffalo Erie Niagara Land Improvement Corporation.

#### Proximity to Other Instances of Vacancy

Not only is it important to identify census tracts with high levels of vacancy, but it is equally important that these vacant sites are in close proximity to each other, without being restricted to pre-existing neighborhood or administrative boundaries. Development, therefore, should be focused on census tracts and neighborhoods that provide opportunities for high-density development, whether within one tract or overlapping multiple. This density also allows for the better coordination of utilities between housing units compared to single, isolated lots.

#### Level of Housing Demand

The selection of potential sites for MH housing development is dependent on the level of current housing demand for a given census tract. An analysis conducted by the Buffalo Niagara Partnership (Figure 6.1) provides a level of housing demand, on a scale from 1 to 5, by census tract. An analysis conducted by the

Partnership (Figure 6.1) provides a level of housing demand, on a scale from 1 to 5, by census tract.<sup>97</sup> Census tracts with moderate to lower levels of housing demand appear to be candidates for a housing development strategy with a higher probability of success, especially when compared to the lowest-demand tracts: “[Fixating] on broad and seemingly intractable problems ... are more likely to result in paralysis and hopelessness than tangible progress.”<sup>98</sup> Moderate to lower-demand neighborhoods often combine sufficient quantities of available vacant land with adjacency to potential community assets. In the Buffalo Housing Opportunity Strategy, this strategy is recommended: “Areas where stronger markets transition to softer markets are ideal as they represent opportunities to protect areas with momentum while spreading confidence to areas where private investment is needed to improve housing conditions.”<sup>99</sup>

## Diversity

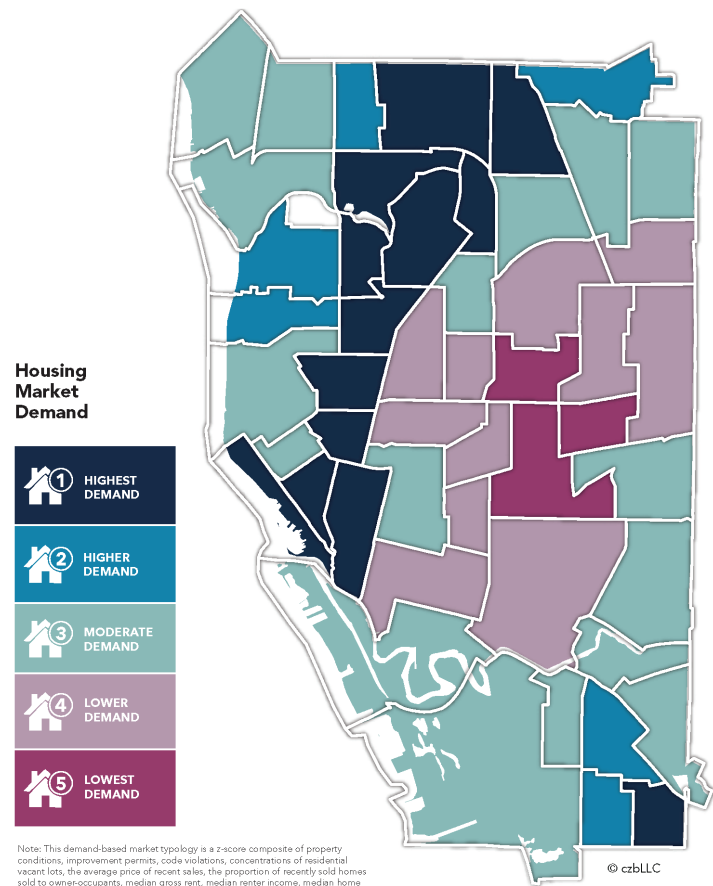
Diversity is an important factor to consider in the selection of prospective housing development sites. With this criterion, our report faced a dilemma: do we recommend that projects go to existing neighborhoods that reflect patterns of racial segregation and socioeconomic disparity? Alternatively, might we suggest areas that display either a high level of ethnic and racial diversity or boundary areas in which different communities live in relatively close proximity to each other? As the Partnership for the Public Good states in their Housing Opportunity Strategy, “A city that remains deeply disconnected along historical racial, ethnic, income, and disability divides ... is unlikely to prosper”.<sup>100</sup>

## Selection Process:

Analysis for eligible census tracts, block groups, and tax parcels was done via the ArcGIS mapping software. Selection of tracts occurred through a four step process:

### Data Collection

GIS data entailing the bounds of census tracts, neighborhoods, block groups, and tax parcels within the city of Buffalo was retrieved from NYS



**Figure 6.1.** Housing demand in Buffalo, NY. Source: Buffalo Housing Opportunity Strategy, 2017.

### Box 6.1: Methodology of site selection

#### Data Collection:

We collected data from the NYS GIS Clearinghouse, the US Census Bureau, the American Community Survey, and from OpenData Buffalo.

#### Vacancy Selection:

We used census tracts as the boundaries for selecting areas of Buffalo. Census tracts with more than 15% of parcels with the property code 311 (vacant or abandoned property) were selected. From this selection of parcels, we refined the selection to city-owned vacant parcels, selecting all parcels with an owner address of 65 Niagara Square.

#### Housing Demand Selection:

We created an index for census tracts in Buffalo based on the level of housing demand observed in the Buffalo Housing Opportunity Strategy Report, ranging from 1 (highest) to 5 (lowest). Tracts with a value of 3 or 4 were prioritized.

#### Proximity Analysis:

We looked at vacant parcels within the city as a whole, and looked for census tracts that both had a decent number of vacant parcels and were adjacent to other tracts with a decent number of vacant parcels.

GIS Clearinghouse, OpenData Buffalo, and from the United States Census Bureau. Statistical data regarding the demographics, poverty rate, median income, and household composition of census tracts within Buffalo was retrieved from the American Community Survey's 5-Year estimates.

## Vacancy Selection

Census tracts were selected as potential sites based on the number of vacant parcels within their bounds. Parcels with the New York State property code '311' - indicating vacant or abandoned parcels - were highlighted in GIS for the city of Buffalo as a whole. Following this, census tract boundaries were adjusted to prioritize tracts with at least 15 percent of tax parcels featuring this code. Through this, a collection of parcels with sufficient levels of vacancy for this project was achieved. Following vacancy, the tax parcel selection was further refined to include all tax parcels owned by the City of Buffalo. These two selections resulted in a collection of census tracts with a sufficient amount of vacant developable land.

## Housing Demand Selection

Following the selection process for vacancy, an index was created for each census tract in the City of Buffalo based on the levels of housing demand outlined by the Buffalo Housing Opportunity Strategy report as shown in Figure 6.1. The index ranged from 1 (highest level of housing demand) to 5 (lowest level of housing demand). Census tracts with a housing demand level of 3 (moderate) and 4 (lower), were the only tracts observed during this selection process.

## Proximity Analysis

To determine which tracts to prioritize, proximity to other census tracts and instances of vacancy was also examined. In this selection, census tracts of moderate to lower demand were prioritized if they were adjacent to other census tracts of equal or higher demand. As an example, Census Tracts 14.02 and 25.02, both tracts of moderate housing demand, are adjacent to each other, so a housing development in one tract could also involve vacant parcels in the other. Through this proximity analysis, the tracts most suited to housing developments that span census tract and/or neighborhood boundaries were identified.

## MH Development Patterns:

For selecting areas within Buffalo, we considered three potential development patterns. **Infill** development refers to a housing development strategy in which single vacant parcels, in proximity to each other but typically not contiguous, are targeted for the installation of manufactured homes. **Cluster** development refers to a development strategy whereby larger groups of vacant parcels are targeted, for the establishment of larger collections of residential parcels where manufactured homes would be installed. **Block** development refers to a development strategy in which large-scale collections of contiguous or highly-contiguous vacant parcels are accumulated. This last form of development may help reduce the stigma attached to a Manufactured Housing-based development, while assimilating better within the urban setting.

## Strategy A:

Using vacancy as the first criteria, Strategy A prioritizes infill and cluster patterns of housing development. As vacant land must be available for a large-scale housing development project, selected tracts and block groups must have a vacancy rate of at least 10%. However, in order to select tracts that are stable and not in areas of the lowest level of housing demand, this strategy caps vacancy rates at 40%. Ownership status is then added as an additional criterion. For a prospective site under Strategy A, it is recommended that at least 25% of vacant land be city-owned property.

Beyond the question of vacancy and housing demand, Strategy A prioritizes available land in census tracts and block groups with a particular focus on diversity. Prospective neighborhoods, census tracts, and block groups with a high level of racial diversity are preferred. This is done in an attempt to reduce reinforcement of pre-existing disparities in the city of Buffalo and eliminate potential stigmas that often accompany pre-1976 Manufactured Housing developments. However, given the highly segregated nature of Buffalo's housing market, and the fact that much of Buffalo's vacant land is located in predominantly African-American neighborhoods of the East Side, these are difficult criteria to achieve.

Finally, Strategy A prioritizes prospective site locations in terms of their accessibility. Proximity to employment centers, like Buffalo's Central Business District, is a priority. In lieu of this, access to reliable modes of transportation is necessary to access these employment centers. Proximity to major thoroughfares is also important, as they are more likely to have reliable transit services and be located near essential services (grocery stores, banks and financial services, etc.).

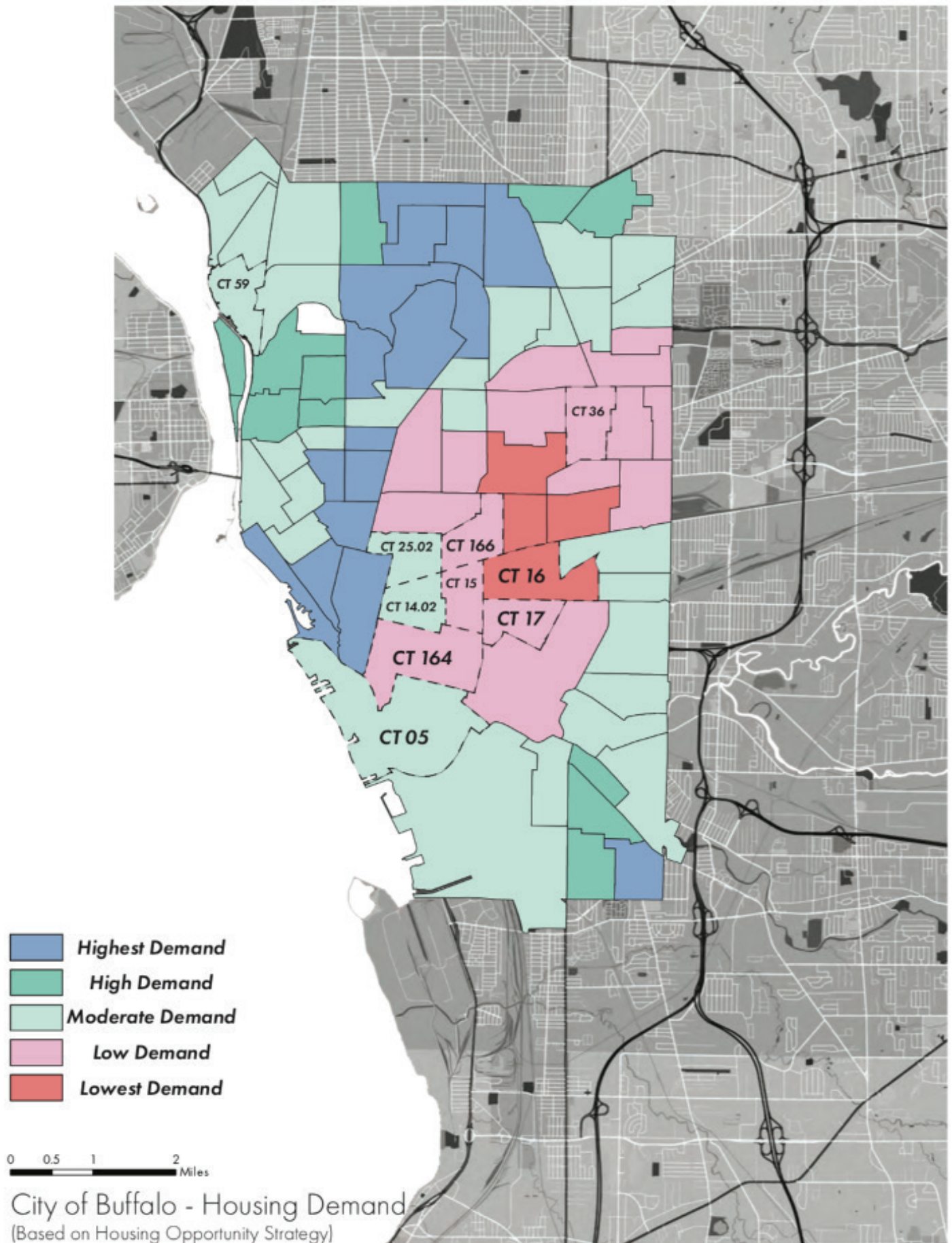
### **Strategy B:**

Similar to Strategy A, Strategy B prioritizes vacancy for its site selection criteria. Where it differs, however, is its predication on a block development strategy. To this end, to make land acquisition less of a concern in the future for this style of development, priority is on city-owned vacant lots in areas with higher housing demand. Thus, Strategy B must begin by selecting census tracts with at least 100 parcels of city-owned vacant land. Ideally, these parcels are contiguous with each other so as to better enable coordination of MH unit installation, utilities hookups, and provision of neighborhood and municipal services. Because city-owned residential parcels are largely vacant, vacancy rates themselves become less of a priority than in Strategy A.

### **Selected Census Tracts:**

Using the above selection criteria and selection strategies, we identified 10 Census Tracts (CT) and Block Groups (BG) within the city of Buffalo where Manufactured Housing could be most feasible. Eight of these census tracts are concentrated to the immediate south and east of Buffalo's Central Business District: the Fruit Belt, Willert Park, Ellicott, First Ward, and Broadway-Fillmore neighborhoods. Two census tracts were selected outside of this primary cluster: CT 36, located in the Genesee-Moselle neighborhood in Buffalo's East Side, and CT 59, located in the Black Rock neighborhood in North Buffalo. Socioeconomic data was also compiled to further demonstrate the need for housing and housing affordability in each tract.<sup>101</sup>





**Figure 7.3.** Map of census tract 5 in Buffalo-Erie County. Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020)



## Prospective Tracts for Strategy A

### Census Tract 05

Block Groups 1, 2

### Census Tract 164

Block Groups 2, 3, 4

### Census Tract 14.02

Block Group 4

### Census Tract 15

Block Groups 1, 2

### Census Tract 25.02

Block Group 2

### Census Tract 59

Block Groups 3, 4

# City of Buffalo - Census Tract 05



- City Owned Property
- City Owned + Vacant Property
- Occupied Property
- Vacant Property

## Census Tract 16

Census Tract: 5	Strategy: A
<b>Lot Vacancy Rate</b>	23%
<b>Block Groups</b>	1, 2
<b>Neighborhoods</b>	South Buffalo, Old First Ward
<b>Housing Demand</b>	Moderate
<b>Median Income</b>	\$26,605
<b>Poverty Rate</b>	26%
<b>Rent Burden Average</b>	42.50%
<b>Major Thoroughfares</b>	South Park Avenue, Main Street
<b>Racial Diversity</b>	88% White, 6% Black, 4% Multiracial, 2% Some Other Race
<b>Advantages</b>	Near Central Business District, Substantial Public Transit Access

**Figure 7.3.** Map of census tract 5 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, "Manufactured Housing Census Tract Selections" (University at Buffalo, 2020).

**Table 7.1.** Census Tract 5.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 164



0 0.125 0.25 0.5 Miles



## Census Tract 164

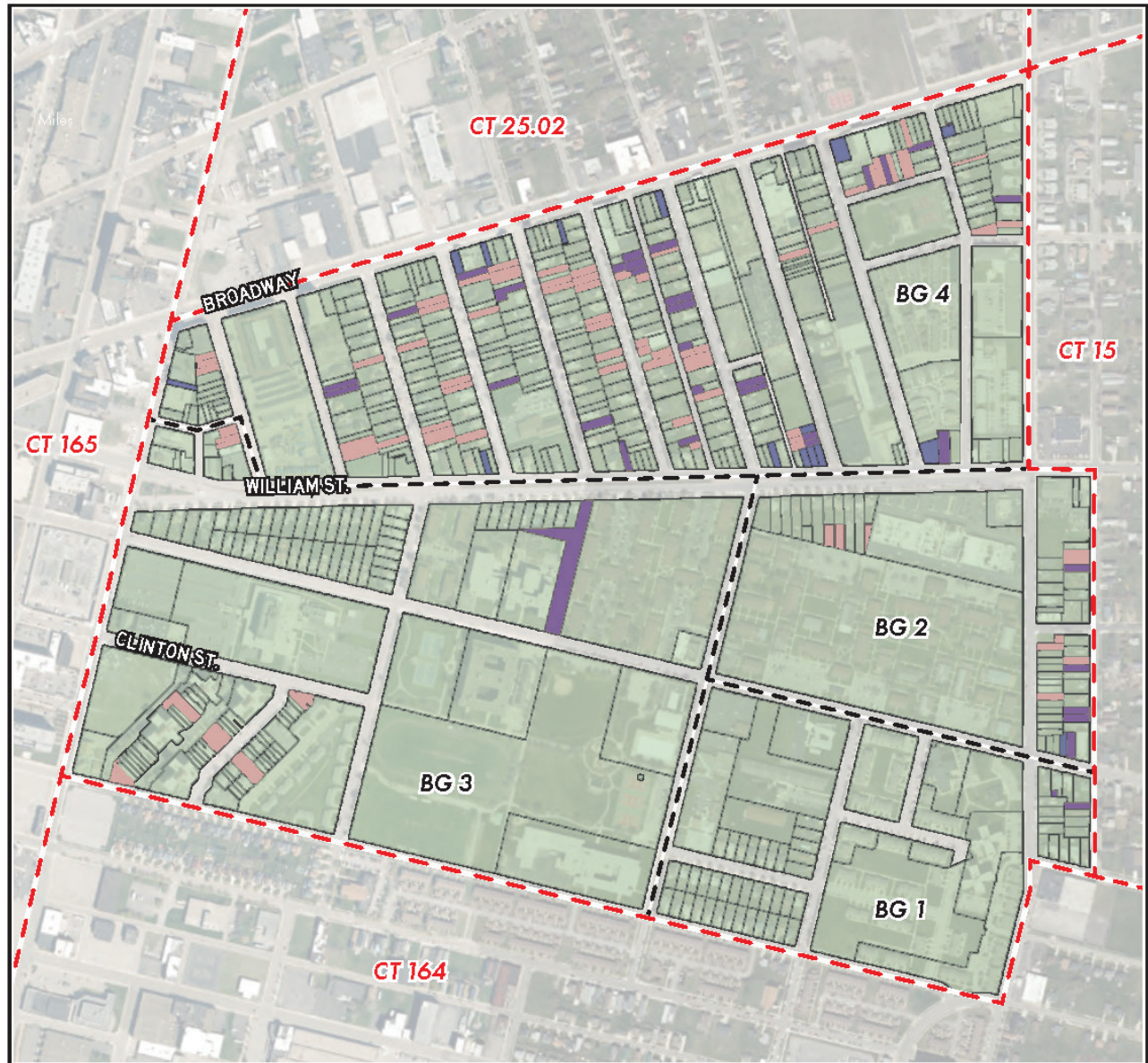
Census Tract: 164	Strategy: A
<b>Lot Vacancy Rate</b>	23%
<b>Block Groups</b>	2, 3, 4
<b>Neighborhoods</b>	Ellicott, Willert Park, Broadway-Fillmore, First Ward
<b>Housing Demand</b>	Lower
<b>Median Income</b>	\$30, 708
<b>Poverty Rate</b>	22%
<b>Rent Burden Average</b>	32.10%
<b>Major Thoroughfares</b>	South Park Avenue, NY Thruway I-190, Main Street
<b>Racial Diversity</b>	47% Black, 29% White, 13% Some Other Race, 8% Multiracial, 3% Asian
<b>Advantages</b>	Proximity to Downtown Buffalo, Near Waterfront

**Figure 7.2.** Map of census tract 164 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, "Manufactured Housing Census Tract Selections" (University at Buffalo, 2020).

**Table 7.4.** Census Tract 164.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).



# City of Buffalo - Census Tract 14.02



0 0.125 0.25 Miles



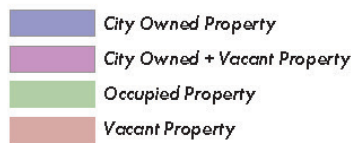
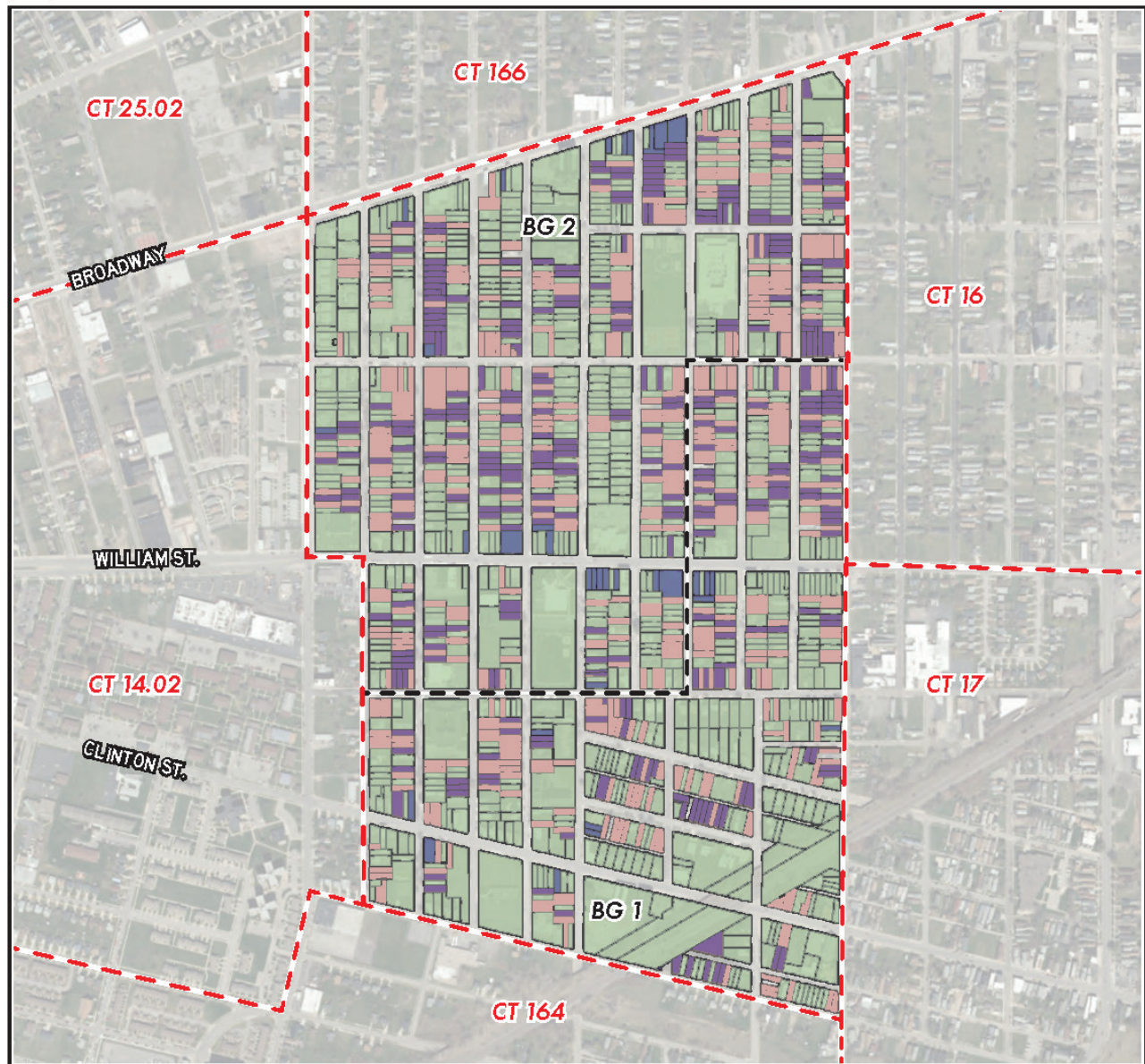
**Census Tract 14.02**

Census Tract 14.02	Strategy: A
Lot Vacancy Rate	22%
Block Groups	4
Neighborhoods	Willert Park, Broadway-Fillmore
Housing Demand	Moderate
Median Income	\$15,182
Poverty Rate	25%
Rent Burden Average	33.20%
Major Thoroughfares	Broadway Avenue, William Street, Clinton Street
Racial Diversity	87% Black, 9% White, 2% Multiracial, 2% Some Other Race
Advantages	Near Central Business District, Proximity to Main Street Corridor, Adequate Transit Access

**Figure 7.3.** Map of census tract 14.02 in Buffalo-Erie County.  
Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020).

**Table 7.5.** Census Tract 14.02.  
Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 15



**Census Tract 15**

Census Tract: 15	Strategy: A
Lot Vacancy Rate	23%
Block Groups	1, 2
Neighborhoods	Broadway-Fillmore
Housing Demand	Lower
Median Income	\$27,788
Poverty Rate	18%
Rent Burden Average	51%
Major Thoroughfares	Broadway Street, Clinton Street, William Street
Racial Diversity	86% Black, 7% White, 7% Multiracial
Advantages	Proximity to Broadway Market & Buffalo Central Terminal

**Figure 7.4.** Map of census tract 15 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, "Manufactured Housing Census Tract Selections" (University at Buffalo, 2020).

**Table 7.6.** Census Tract 15.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 25.02



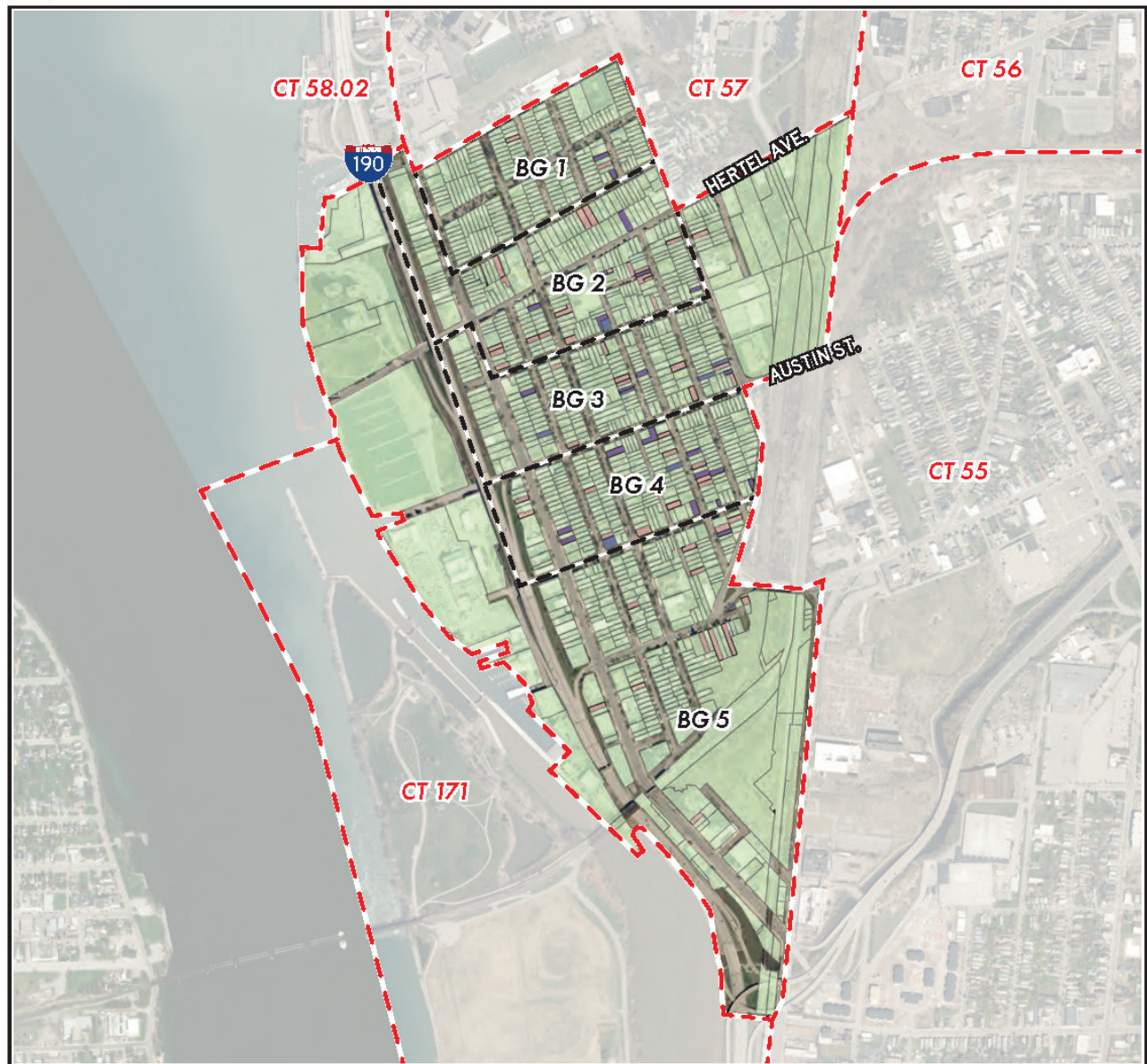
**Census Tract 25.02**

Census Tract: 25.02	Strategy: A
Lot Vacancy Rate	10%
Block Groups	2
Neighborhoods	Willert Park
Housing Demand	Moderate
Median Income	\$34,082
Poverty Rate	15%
Rent Burden Average	28.30%
Major Thoroughfares	Kensington Expressway, Genesee Street, Jefferson Avenue, Michigan Avenue
Racial Diversity	91% Black, 7% White, 2% Multiracial
Advantages	Near Central Business District, Proximity to Main Street Corridor, Near Allentown Historic District

**Figure 7.5.** Map of census tract 25.02 in Buffalo-Erie County. Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020).

**Table 7.7.** Census Tract 25.02. Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 59



- City Owned Property
- City Owned + Vacant Property
- Occupied Property
- Vacant Property

**Figure 7.6.** Map of census tract 59 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020).

**Table 7.8.** Census Tract 59.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

## Census Tract 59

Census Tract: 59	Strategy: A
Lot Vacancy Rate	14%
Block Groups	3, 4
Neighborhoods	Black Rock
Housing Demand	Moderate
Median Income	\$24,844
Poverty Rate	26%
Rent Burden Average	31%
Major Thoroughfares	Niagara Street
Racial Diversity	48% White, 15% Black, 8% Asian, 19% Other, 10% Multi-racial
Advantages	Near NFTA Black Rock Riverside Transit Hub



**Prospective Tracts for Strategy B**

**Census Tract 16**

Block Groups 1, 3, 4

**Census Tract 17**

Block Group 2

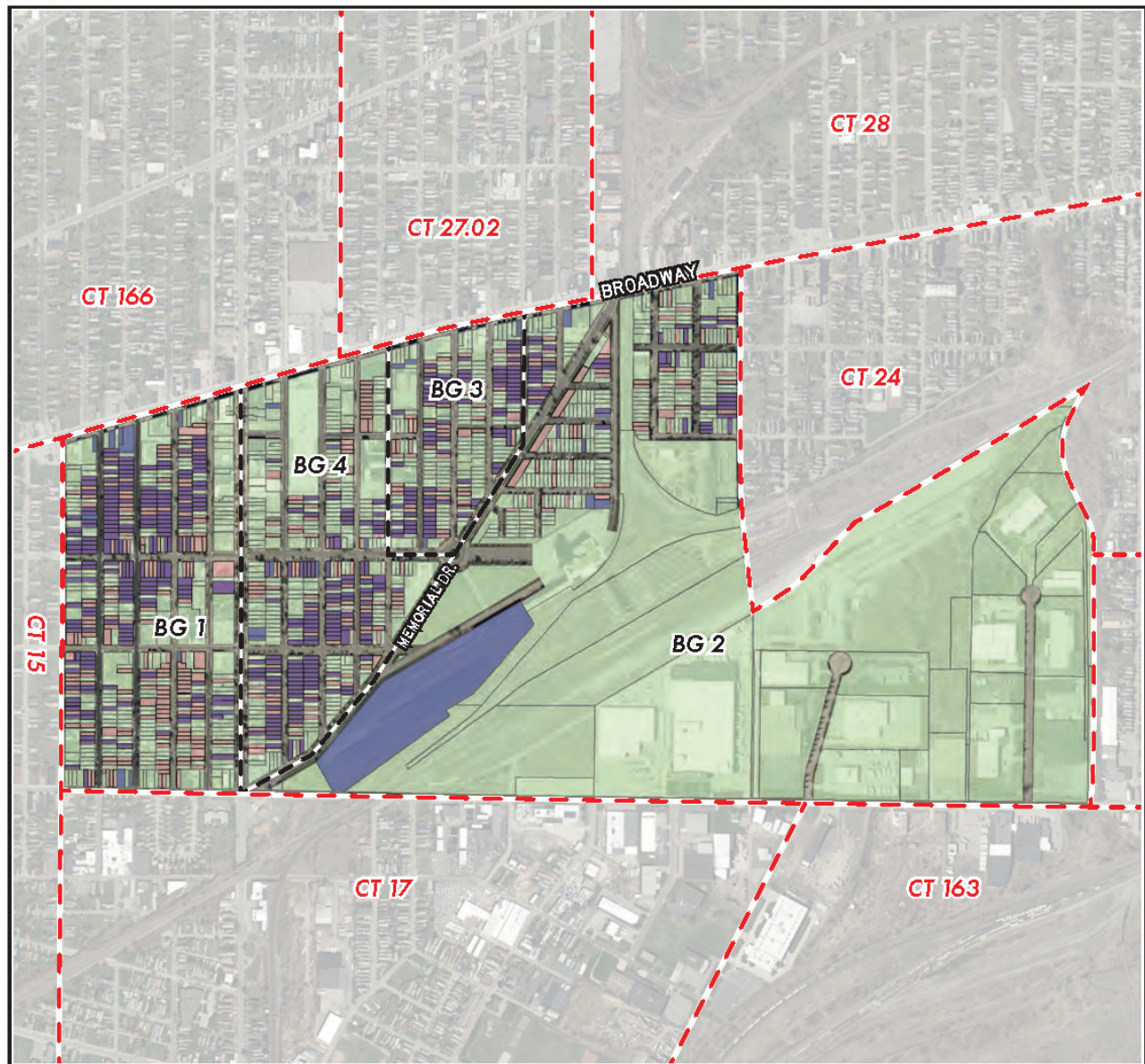
**Census Tract 166**

Block Groups 1, 2, 3, 4

**Census Tract 36**

Block Groups 1, 3

# City of Buffalo - Census Tract 16



0 0.125 0.25 0.5

Miles

- City Owned Property
- City Owned + Vacant Property
- Occupied Property
- Vacant Property

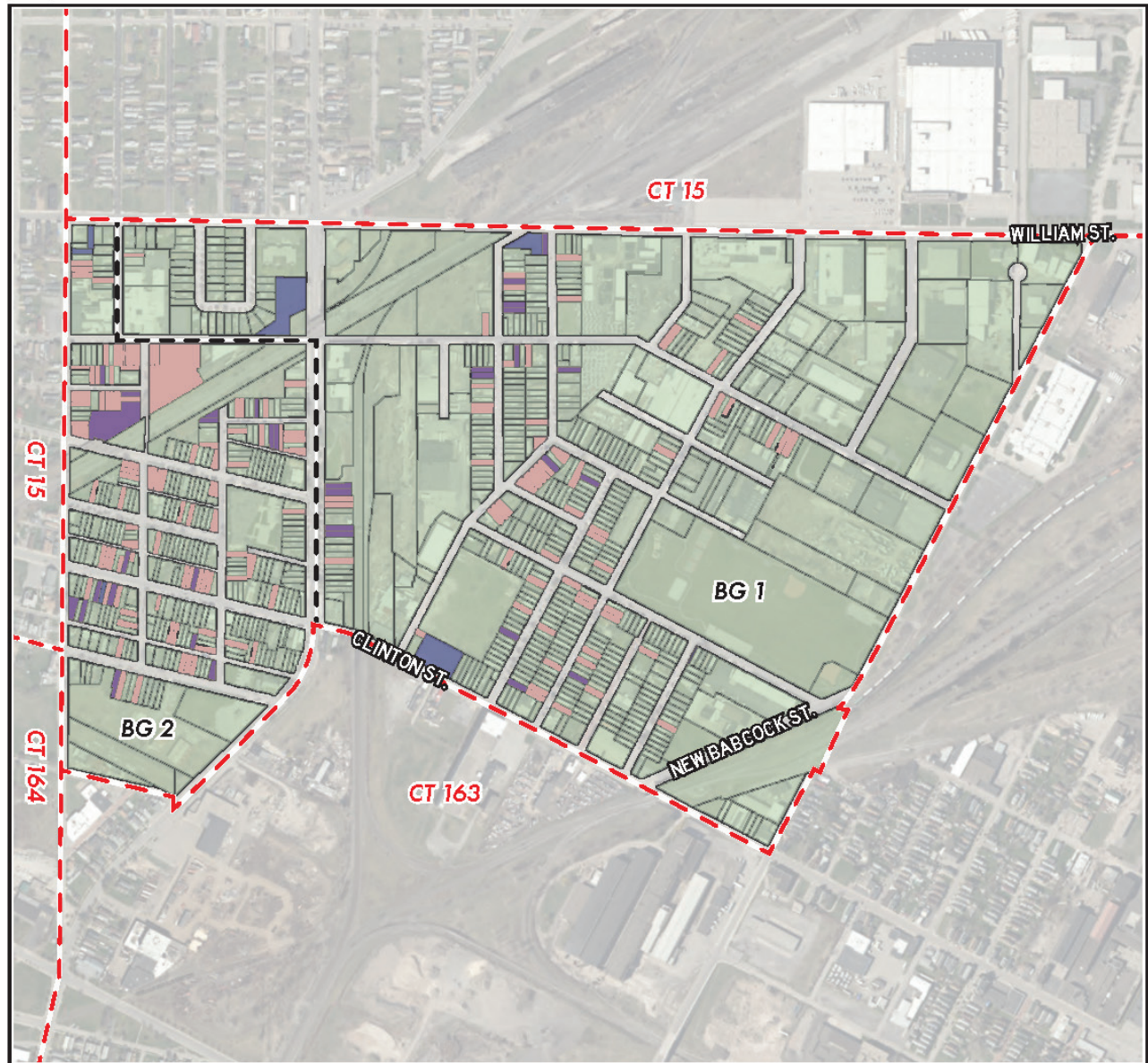
## Census Tract 16

Census Tract: 16	Strategy: B
Lot Vacancy Rate	33%
Block Groups	1, 3, 4
Neighborhoods	Broadway-Fillmore
Housing Demand	Lower
Median Income	\$16,605
Poverty Rate	34%
Rent Burden Average	45.10%
Major Thoroughfares	Broadway Avenue, Fillmore Avenue
Racial Diversity	52% Black, 28% White, 10% Some Other Race, 7% Asian, 3% Multiracial
Advantages	Substantial Public Transit Access, Proximity to Broadway Market & Buffalo Central Terminal

**Figure 7.7.** Map of census tract 16 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, "Manufactured Housing Census Tract Selections" (University at Buffalo, 2020).

**Table 7.9.** Census Tract 16.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 17



- City Owned Property
- City Owned + Vacant Property
- Occupied Property
- Vacant Property

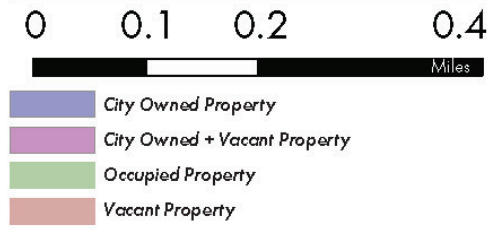
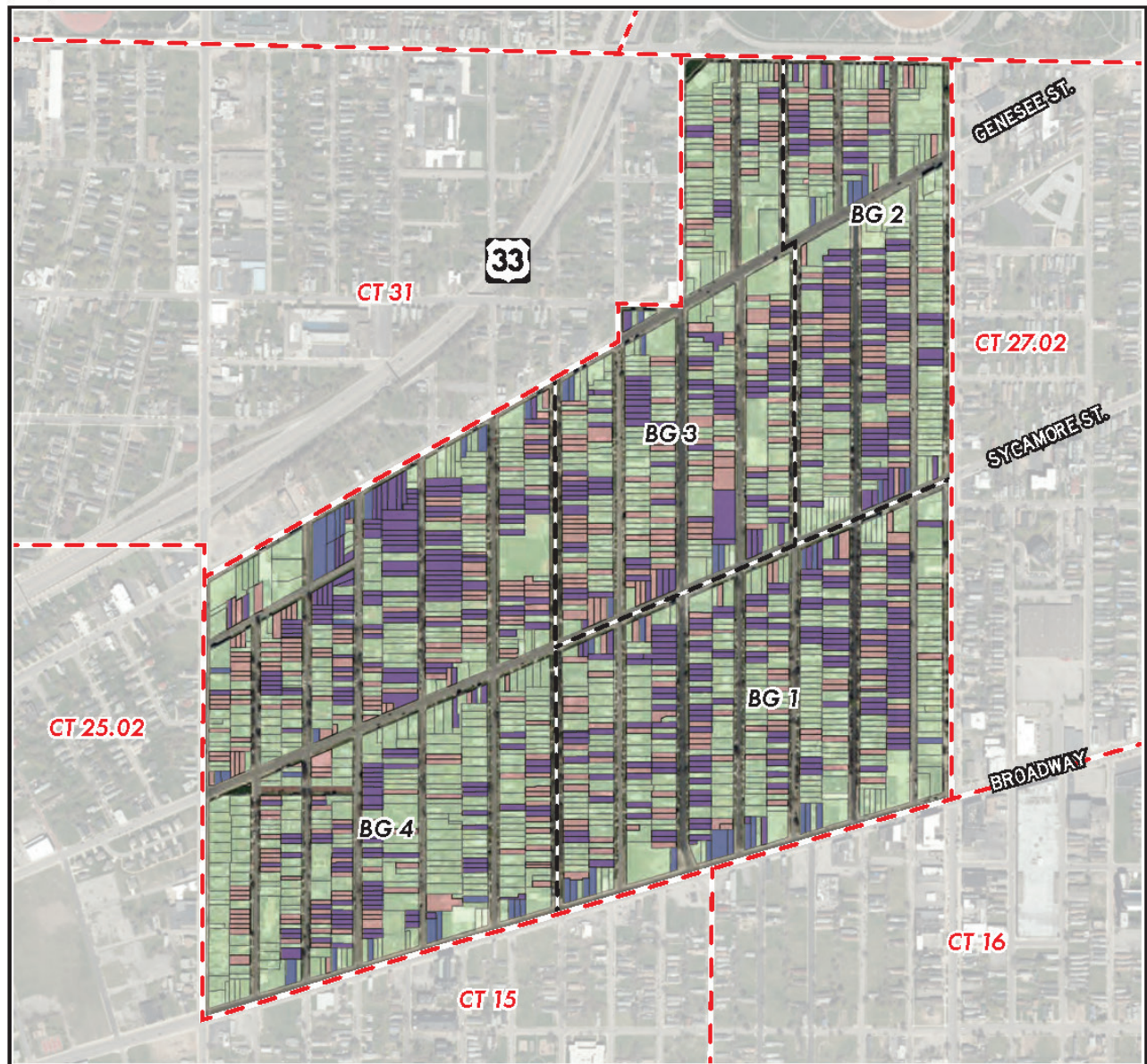
**Census Tract 17**

Census Tract: 17	Strategy: B
Lot Vacancy Rate	22%
Block Groups	2
Neighborhoods	Broadway-Fillmore, Babcock
Housing Demand	Lower
Median Income	\$17,360
Poverty Rate	32%
Rent Burden Average	51%
Major Thoroughfares	Williams Street, Fillmore Avenue
Racial Diversity	56% White, 28% Black, 11% Some Other Race, 3% Multiracial, 2% Asian
Advantages	Substantial Public Transit Access, Access to Greenspace

**Figure 7.8.** Map of census tract 17 in Buffalo-Erie County.  
 Source: Wilcox, Joshua, "Manufactured Housing Census Tract Selections" (University at Buffalo, 2020).

**Table 7.10.** Census Tract 17.  
 Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

# City of Buffalo - Census Tract 166



**Census Tract 166**

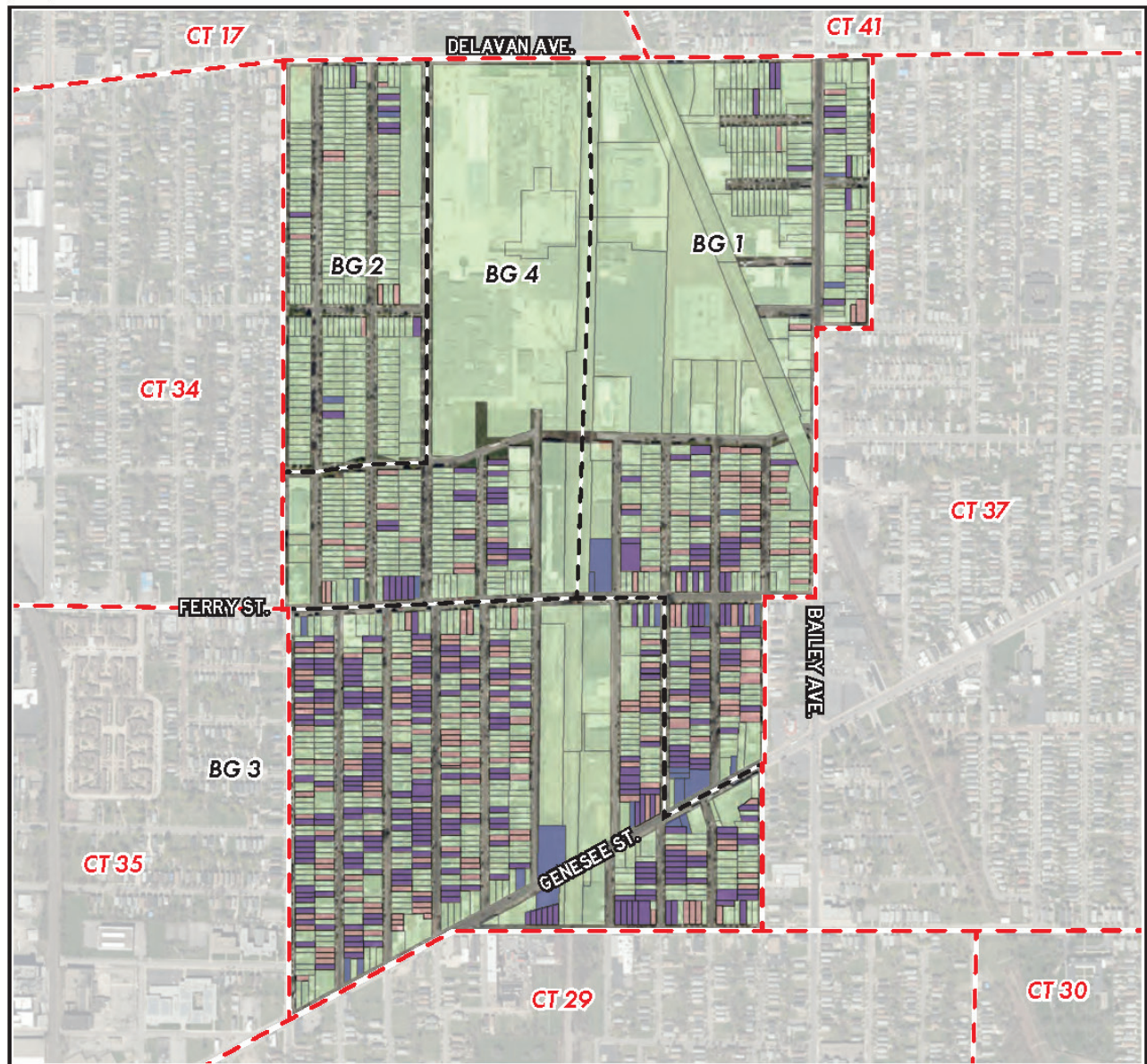
Census Tract: 166	Strategy: B
Lot Vacancy Rate	24%
Block Groups	1, 2, 3, 4
Neighborhoods	Broadway-Fillmore, Willert Park
Housing Demand	Lower
Median Income	\$26,611
Poverty Rate	20%
Rent Burden Average	42.50%
Major Thoroughfares	Best Street, Genesee Street, Sycamore Street, Broadway Avenue, Fillmore Avenue
Racial Diversity	92% Black, 4% Multiracial, 2% White, 2% Some Other Race
Advantages	Adequate Public Transit Access, Proximity to MLK Park & Buffalo Museum of Science

**Figure 7.9.** Map of census tract 166 in Buffalo-Erie County. Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020).

**Table 7.11.** Census Tract 166. Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).



# City of Buffalo - Census Tract 36



**Census Tract 36**

Census Tract: 36	Strategy: B
Lot Vacancy Rate	18%
Block Groups	1, 3
Neighborhoods	Genesee-Moselle
Housing Demand	Lower
Median Income	\$25,930
Poverty Rate	23%
Rent Burden Average	33.80%
Major Thoroughfares	Genesee Street, Bailey Avenue
Racial Diversity	86% Black, 7% White, 4% Asian, 3% Some Other Race
Advantages	Substantial Public Transit Access, Proximity to Employment Opportunities, Near Erie County Medical Center

**Figure 7.10.** Map of census tract 36 in Buffalo-Erie County. Source: Wilcox, Joshua, “Manufactured Housing Census Tract Selections” (University at Buffalo, 2020).

**Table 7.12.** Census Tract 36. Source: Social Explorer Tables: ACS-2018 (5-Year Estimates), U.S. Census Bureau, NYS GIS Clearinghouse (2019).

## Moving Forward

Given the variety of tracts selected for consideration in this chapter, it is clear that any potential affordable housing development utilizing Manufactured Housing would have a wide range of options to consider. With the versatility of MH for redeveloping vacant residential parcels, it would be an option for both small-scale (Strategy A) and large-scale (Strategy B) housing development approaches.

Strategy A relies heavily on proximity to centers of employment to be a successful model of Manufactured Housing development. Tracts closest to business centers, like Buffalo's Central Business District, score higher under this criterion. To this end, **Tract's 164, 14.02, and 25.02** (Tables 6.2 - 6.4) **are recommended under this criteria.** In tracts where proximity to employment centers is lacking, access to reliable public transportation is necessary. This is reflected in **Tract 59** (Table 6.6), where proximity to NFTA's Black Rock Regional Transit Hub provides access to the Central Business District and Main Street Corridor. Neighborhood stability can be reflected through the deployment of small-scale housing development in tracts with relatively low vacancy rates under this strategy. The placement of individual units or small clusters in tracts targeted under Strategy A would make the streetscape more contiguous, leading to a more inviting and walkable environment than any vacant and/or dilapidated lots currently in place. By acting as the "missing teeth" in these housing markets, this pattern of MH development would offer much needed affordable housing while assimilating into the housing stock already present.

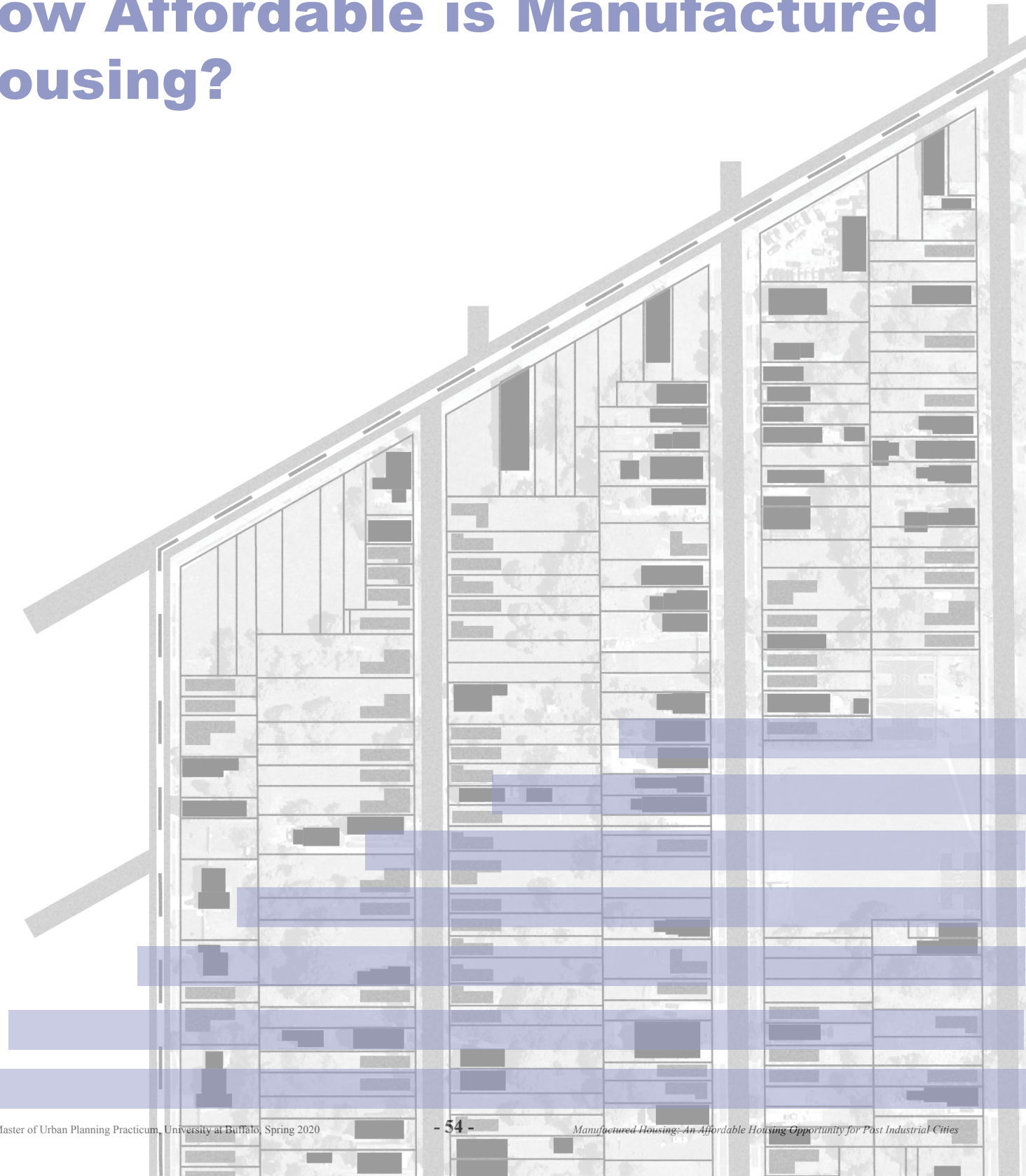
Strategy B relies primarily on access to vacancy, as it is predicated on a large-scale housing development of some form. Access to major thoroughfares and reliable public transportation should be prioritized to minimize the impact of long travel times and/or distance serving as a barrier to major employment centers. **Tract 166** (Table 6.9), located along Broadway and Fillmore Avenue, and **Tract 36** (Table 6.10), located along Genesee Street and Bailey Avenue, are appropriate tracts for this strategy. Strategy B must be especially careful to avoid the stigma surrounding "Mobile Home parks" discussed in the first chapter of this report, as the construction of MH units in close proximity on large plots of vacant land may be mistaken for this stereotype. To counter this, several aesthetic and site layout conditions are recommended. Units should be outwards-facing, as homes facing the streetscape will appear less out of place amongst neighboring homes. Block-scale projects should also utilize the existing streetscape and utility hookups whenever possible, as this will help integrate the MH units with the surrounding community. Finally, proximity to nearby amenities should be considered when constructing block-scale projects, as access to parks and public spaces is closely tied to quality of life. Despite its advantages, to avoid the reconcentration of poverty and racially-homogenous communities, special care must be taken when utilizing this strategy.

Given the suitability of Manufactured Housing to both large-scale and small-scale housing developments, there are a number of aspects to consider. Lot vacancy rates, housing demand, and existing neighborhood characteristics, will ultimately dictate the best strategy to deploy, but the flexibility MH affords will be an asset in the mass construction of affordable housing units. The cost of these units, however, will serve as the ultimate determinant in the feasibility of MH implementation in Buffalo.



# CHAPTER 7

## How Affordable is Manufactured Housing?



To estimate the costs of the Manufactured Housing units discussed in this report, we are proposing a standard prototype. Due to state highway restrictions, we foresee this prototype to be 840 square feet, or 14 feet in width and 80 feet in length. To avoid the barrack-like appearance commonly associated with single-wide models – often limiting internal room configurations – we propose separating these homes into segments during the construction and delivery process. Additional specifications can be found in Appendix C, D and E.

## Prototype Description

To provide an alternative to the conventional single wide MH typically consisting of narrow and congested living spaces, while conforming to current New York State highway restrictions, we propose two unique variations of Manufactured Housing:

- **Prototype 1; ½ by ½ Single-Wide**
  - 2 units, 14 by 30 feet
- **Prototype 2; ⅓ By ⅔ Single-Wide**
  - 1 unit, 14 by 20 feet
  - 1 unit, 14 by 40 feet

Both prototypes will satisfy design and construction requirements for single-detached homes, outlined in the Buffalo Green Code Unified Development Ordinance. Figure 7.1 showcases these unit variations, to be arranged on a single lot.

## Manufactured Home Pricing

Upon obtaining prices from manufacturers of MH, we were able to better estimate the starting costs of these units to be between \$42,990 and \$60,000, excluding delivery, set up, site preparation, land, tax, and legal fees.<sup>102</sup> Table 7.1 outlines these specific manufacturers and models, and includes square footage and bedroom/bathroom comparisons.

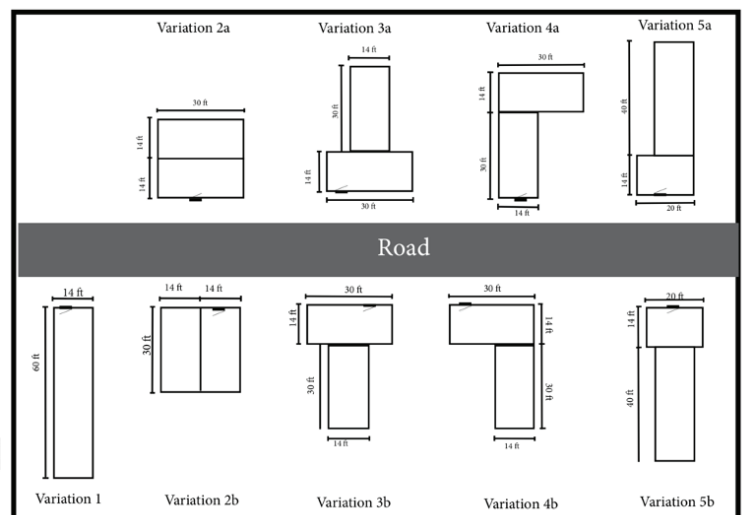
Based on the prices shown in Table 7.1, we make the conservative assumption that a unit with high quality materials and durability will be priced at \$60,000. However, since we expect that 50 - 100 units will be ordered per MH development, we estimate a per-unit savings of 15% can be obtained from the manufacturer for such a large order, reducing our prototype price to **\$51,000**.

## Supplemental Costs

### LAND PREPARATION

Given the City’s extensive land-holdings of vacant or tax-delinquent parcels, and after discussions with the Buffalo Erie Niagara County Land Bank,

Proposed Manufactured Housing Arrangement Variations



**Figure 7.1.** Variations for arranging two segments of a single-wide MH unit.

Source: Nagaraj, Rakshanda; Hill, Nicole, “Manufactured Housing Arrangement Variations” (University at Buffalo, 2020)

### MH Cost Comparison

Manufacturer	Model	Sq/ft	Beds/Bathrooms	Price
Champion (California)	CM6622L Home*	887	2/2	\$59,000
Clayton Homes	Merion	880	2/2	\$60,000
Clayton Homes	Topaz	880	3/2	\$50,000
Golden West Oregon	Golden Series	702	2/1	\$45,000
Palm Harbor Springs	Paradise Home	586	1/1	\$44,990
Palmer	Commodore Truglory	1,039	1/1	\$42,990
Durango Homes-Cavco	EP14663A Home	880	3/2	\$53,900
Redman	---	980	2/2	\$54,995

**Table 7.1.** Manufacturer of MH comparison.

Source: Information from manufacturer websites.

Note: \*Price includes porch and 9-foot cathedral ceilings.

we can assume that land acquisition cost will be an average of **\$1,500 - \$3,000** for each lot acquired, or approximately \$1 per square foot.

Drainage features are essential elements to MH implementation, as improper water drainage can significantly damage the structural durability of Manufactured Homes. Due to HUD requirements for a 5-6" slope surrounding the immediate 10 feet of the home, we calculate these drainage features will add an average of **\$3,000** per site.<sup>103</sup>

In Buffalo, land parcels owned by the City have already been surveyed and leveled, minimizing the cost of land preparation further. The scheduling of MH implementation during the off-peak season – fall or winter in Buffalo – may also impact land preparation costs. For these reasons, we generally expect inexpensive land preparation overall, averaging out to less than \$1 per square foot for a total of **\$2,700**.<sup>104</sup>

## FOUNDATION

There are numerous variations in foundations for MH, including pier-and-beam, slab, basement, and crawl spaces.<sup>105</sup> For the purposes of our report, we have chosen to focus on the monolithic concrete slab foundation option, as it is the most affordable of the four.<sup>106</sup> In Buffalo, this slab foundation will average roughly \$4 per square foot, with an 840 square foot unit costing an estimated **\$3,400**.

## DELIVERY

The delivery process for manufactured housing units is subject to local and state regulations, with the dimensions of the unit determining which public right-of-ways are optimal for transportation. In New York State, the maximum allowable dimensions for the transport of a Manufactured Housing unit is 80 feet in length, by 14 feet in width, by 14.6 feet in height, which is equivalent to that of a single-wide MH unit.<sup>107</sup> The cost of delivery will vary depending on the distance traveled and the complexity of the installation site, with an average fee of \$5 to \$16 per mile.<sup>108</sup> Assuming an average of \$11 per mile, for a hypothetical distance of 200 miles, we believe the delivery cost to be near **\$2,200**.

## COST OF INSTALLATION AND INSPECTION

There is a fee for the installation and inspection of Manufactured Homes upon its arrival to the final destination, often starting at \$1,500 for single-wide units, but is ultimately dependent on its size.<sup>109</sup> For the purposes of our prototype, we will require the attachment of two segments, for an estimated cost of **\$3,000**.

## DEVELOPMENT & PERMIT COSTS

There is an additional developer fee for the construction of traditional affordable housing, which typically ranges anywhere from 3% to 5% of the total project costs.<sup>110</sup> While this is not explicitly stated in regards to

### Supplemental Costs Summary

Regulation	Min.	Max
Lot Area	*1500 (Sq. Ft)	*4,000 (Sq. Ft)
Lot Width	*25'	*75' / None
Building Coverage	-	50 - 70%
Impervious Coverage	-	60 - 80%
Building Setback	+/- 5' from Yard Line	-
Build-to Percentage: Front Facade	65%	-
Comer Side Yard	3' - 6'	-
Interior Side Yard	3' - 6'	-
Rear Yard	15 - 25% of Lot Depth	-
Building Height	-	3 Stories / 40'
Transparency: Ground Floor (Front Facade)	20%	-
Ground Floor (Comer Side Facade)	20%	-
Upper Floor (Front and Comer Side Facade)	20%	-
Pedestrian Access	Front Entrance	-

**Table 7.2.** *Estimated costs of MH prototype in Buffalo.*  
Source: Adapted from multiple sources.

MH, we nonetheless assume a development fee of 5% of the entire MH unit cost, or **\$3,600**. As for obtaining the required utility permits, we believe the fees for the building, sewer/plumbing, electricity, and fuel hookups to be \$1,100, per the City of Buffalo.<sup>111</sup>

## Costs of Additional Features

### PORCH

According to HomeAdvisor, the cost of a 200 square foot porch (including flooring, steps, posts, railing, and roofing) starts at \$4,600, or \$23 per square per foot.<sup>112</sup> With this estimate, we assume a 112 square foot porch – the width of a double-wide MH unit – to be roughly **\$2,576** all told. The installation and delivery of the porch may or may not be included within that range, depending on the manufacturer.

### ACCESSIBILITY

With wood as the chosen material for construction of any ADA-compliant ramps, we estimate this cost to be between \$1,285 and \$1,841, with an estimated average of **\$1,500**.<sup>113</sup> To be compliant with HCR guidelines, we suggest that 10% of the MH units in any manufactured housing development include these ramps.<sup>114</sup>

### PITCHED ROOF

Restrictions in the transportation of MH limits the roof pitch that can be built to a maximum of 4/12 degrees. Due to Buffalo’s construction requirements, however, these same units must have a minimum roof pitch of 6/12 degrees that can be achieved with a “hinged” or site-built roof.<sup>115</sup> While we were unable to obtain local pricing for either, we believe this feature will cost roughly **\$5,000** and include on-site installation and inspections.<sup>116</sup>

### FENESTRATION

The fenestration of MH units will largely depend on the model and square footage of the unit, but it can be safely assumed that each window will cost between \$150 to \$200. Per Buffalo building standards, requiring 8% of the front surface of the unit to allow for natural light, we calculate six windows will be needed and cost up to **\$1,200**.<sup>117</sup>

### LANDSCAPING

To better assimilate with the surrounding environment, we propose the addition of landscape features (lawn, trees, shrubbery, etc.) that will make the manufactured housing unit more appealing. We have allocated \$3,000 for general lawn care, 2 trees and 4 shrubs that are roughly \$250 and \$75 each respectively, for a total of **\$3,800**.<sup>118</sup>

Table 7.3 outlines the additional features that are either required or strongly recommended, per the Buffalo Green Code and NYS HCR. Optional features that will further increase the cost of an MH unit, but are dependent on the residents’ individual preferences, include a garage, carport, or additional segments for home expansion.

Summary of Additional Features

Description	Remarks	Total
Porch	112/sq.ft * \$23/sq.ft	\$ 2,576
ADA Ramp	Wood Material	\$ 1,500
Pitched Roof	"Hinged" On-Site	\$ 5,000
Fenestration	8% of Front-Facing Requirement	\$ 1,200
Landscaping	General Landscaping, 2 Trees, 4 Shrubs	\$ 3,800
<b>Total</b>		<b>\$ 14,076</b>

**Table 7.3.** Required features for MH per local/state regulations. Source: Modified from multiple sources.

## Energy Considerations

Energy consumption, while a large determinant in the overall cost of an MH unit, has proven difficult to estimate. Solar panels, batteries, and other options that avoid fossil fuels are highly desirable, but vary in cost significantly. Net-zero MH construction is ideal, but more research would need to be conducted to understand potential price points, and their impact on the implementation of Manufactured Housing. That being said, energy-efficient alternatives are preferred wherever possible. Due to the uncertainty in costs of energy-efficient features, we instead propose allocating funding towards elements that promote energy conservancy while decreasing costs over the long run. To determine the best value for this investment, specialized studies will have to be done.

## Total Cost & Considerations

After the summation of all costs associated with the design, construction, and additions of features not standard to MH, we believe a prototype of an 840 square foot Manufactured Housing unit is approximately \$90,726. While certainly optional, we believe an additional \$10,000 could be allocated towards increased energy-efficiency through the purchase of additional solar panels and EnergyStar appliances, bringing the total MH unit cost to **\$100,726**.

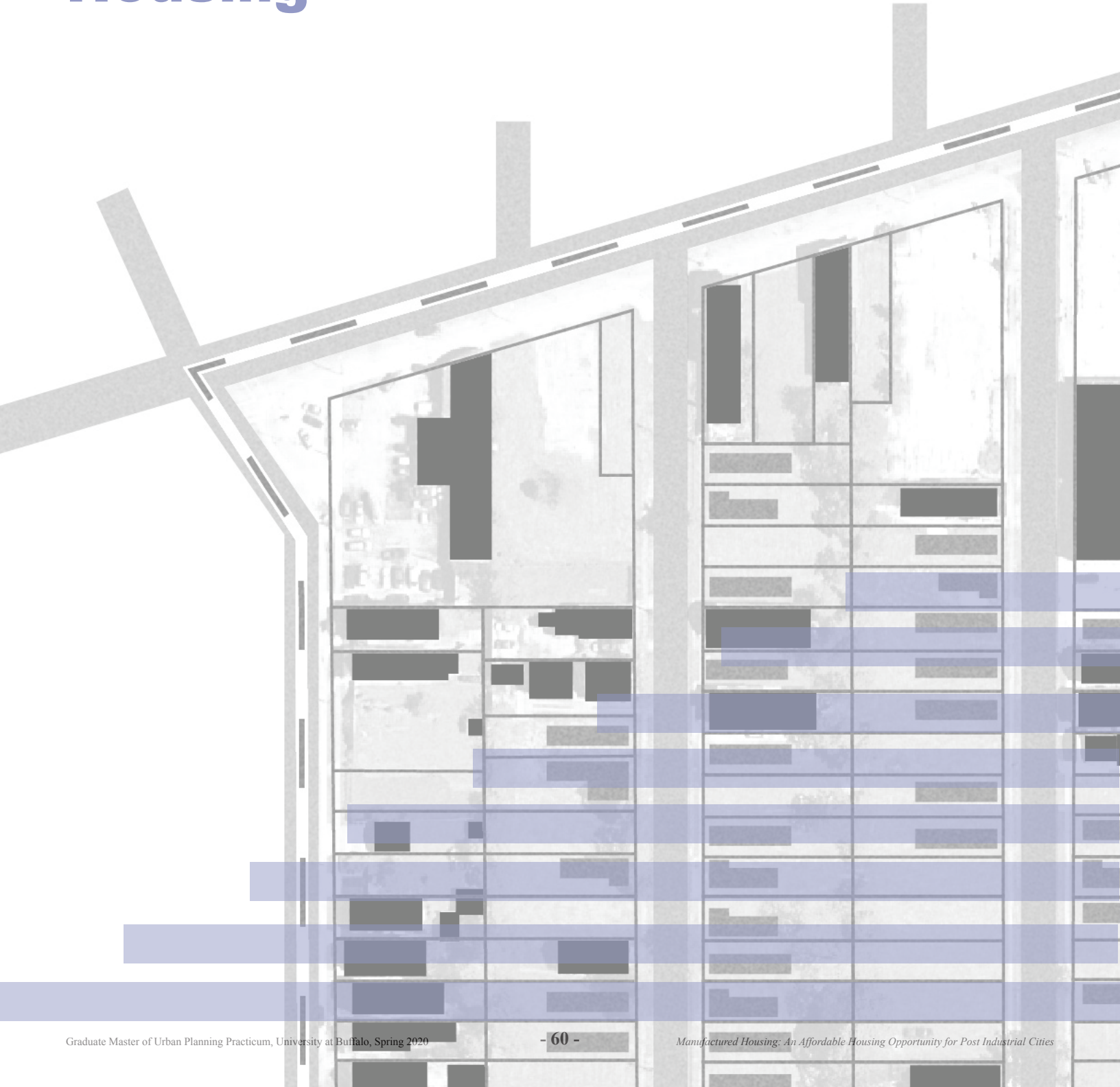
As discussed in Chapter 3 of this report, it is evident that our perceived cost of a Manufactured Housing unit is at least half – if not a third – of the cost of conventional site-built construction for a single-family residence. If purchased on a large-scale, we infer that there may be additional construction cost reductions to be had from the manufacturer on a per unit basis.





# CHAPTER 8

## Visualizing Manufactured Housing



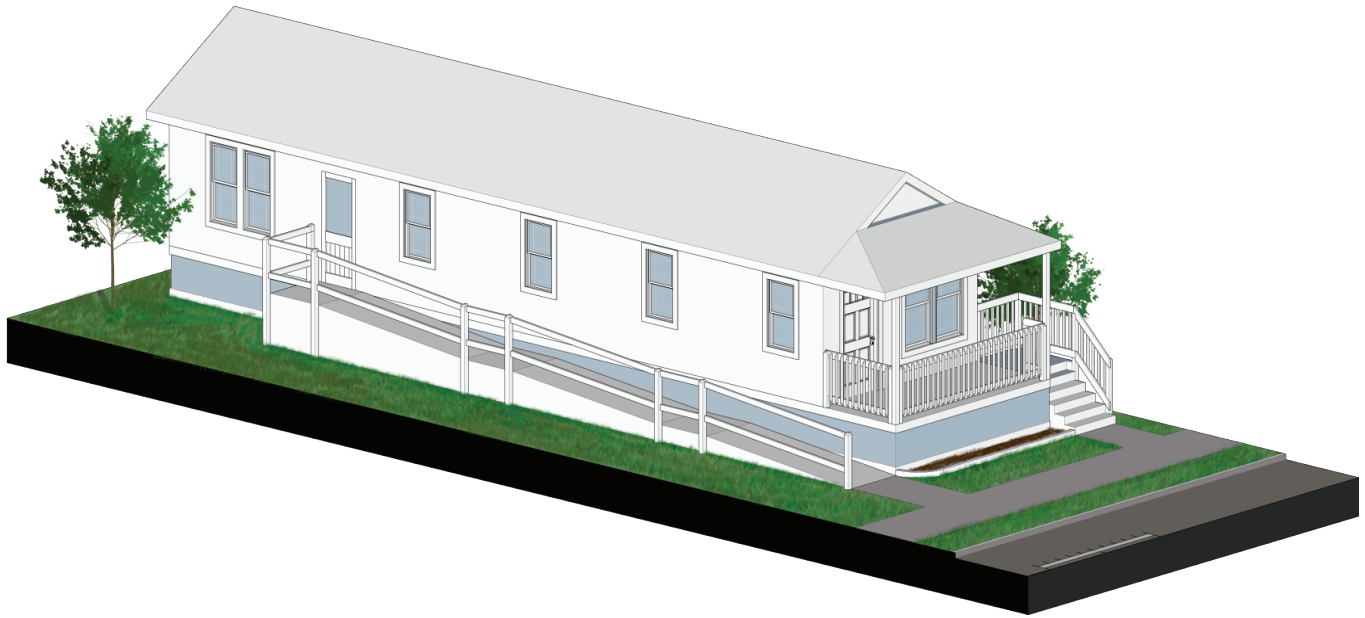
## Introduction

To properly locate, site, and implement a plan for the establishment of MH homes within existing neighborhoods – in conformance with the current Buffalo Green Code Unified Development Ordinance – significant considerations should be given towards architectural qualities already existing within the current Buffalo housing stock. Included in this chapter are five models designed to match various characteristics of the typical Buffalo Bungalow-style home. The first four models will feature an interior space of 840 square feet, while an additional model will consist of 1260 square feet of occupiable space.

An aerial, isometric view of a residential lot filled with various styles of manufactured housing. The units are arranged in several rows, separated by narrow paths. The designs vary in size, roof style (some with gables, some with flat roofs), and window placement. Some units have small porches or covered entryways. The overall appearance is that of a diverse and dense housing development.

## Manufactured Housing Variations

## MANUFACTURED HOUSING VARIATION - #1

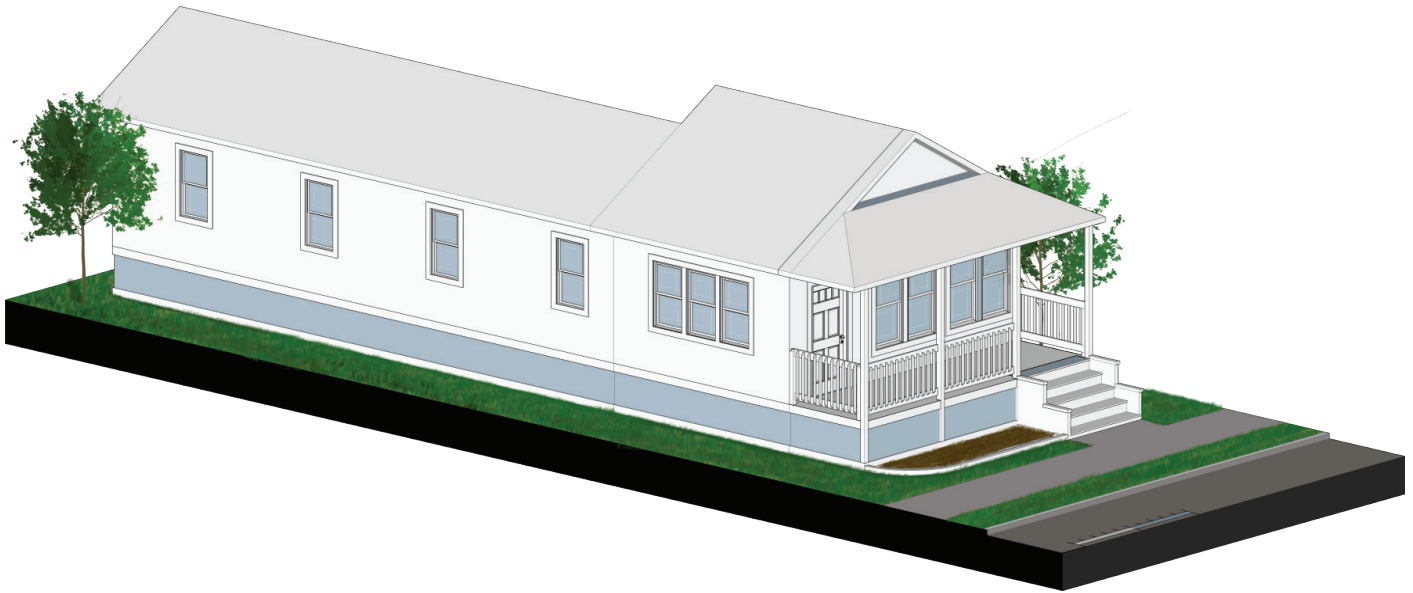


**Figure 8.1.** *Unit placed on a typical 70' by 25' parcel.*

Source: Nagaraj, Rakshanda; Wilcox, Joshua, "Manufactured Housing Variations" (University at Buffalo, 2020).

The interior space of our MH prototype would need to accommodate at least two bedrooms and one bathroom, with egress into the unit at two points. Additionally, a conventional single-wide unit should have an overall length and width of 60' by 14', not including the 6' by 14' front porch required by Buffalo's Green Code. A front porch should be built atop of the unit's 34.3 yd<sup>3</sup>, 12" thick reinforced and insulated concrete foundation, separate from the mobile chassis while maintaining an anchored connection to the unit's street-front facing entry point. To allow for delivery of a single-wide MH unit, the lot (excluding a corner parcel) must have a minimum of 25' of street-facing width. Figure 8.1. showcases the unit placed on a typical 70' by 25' parcel.

## MANUFACTURED HOUSING VARIATION - #2

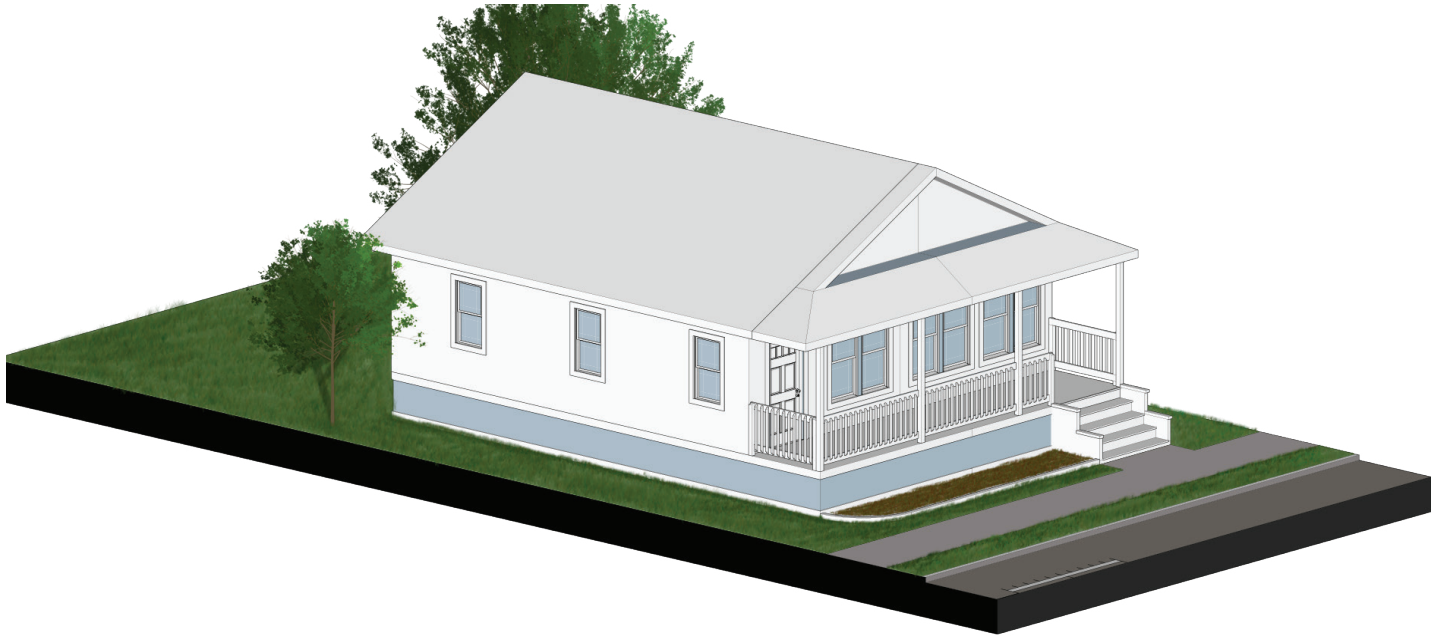


**Figure 8.2.** *Unit installed on a typical 70' by 30' parcel.*

Source: Nagaraj, Rakshanda; Wilcox, Joshua, "Manufactured Housing Variations" (University at Buffalo, 2020).

The one-third + two-third MH unit configuration would include one 40' by 14' unit, with the 40' length placed parallel to the side property lines of the lot. A second unit, measuring 14' by 20', will be attached to the front-end of the first unit, with the 20' span facing the street. As discussed previously, both segments could be transported and installed on-site using a single tractor-trailer delivery method.

For this configuration, any appropriate lot (excluding a corner parcel) should have a minimum street-facing width of 30'. A front porch for this model, measuring 6' by 20', should be built atop the 35.5 yd<sup>3</sup>, 12" thick concrete foundation. This porch is again separate from the mobile chassis, and maintains an anchored connection to the unit's street-front facing entry point. Figure 8.2. showcases the unit installed on a typical 70' by 30' parcel.



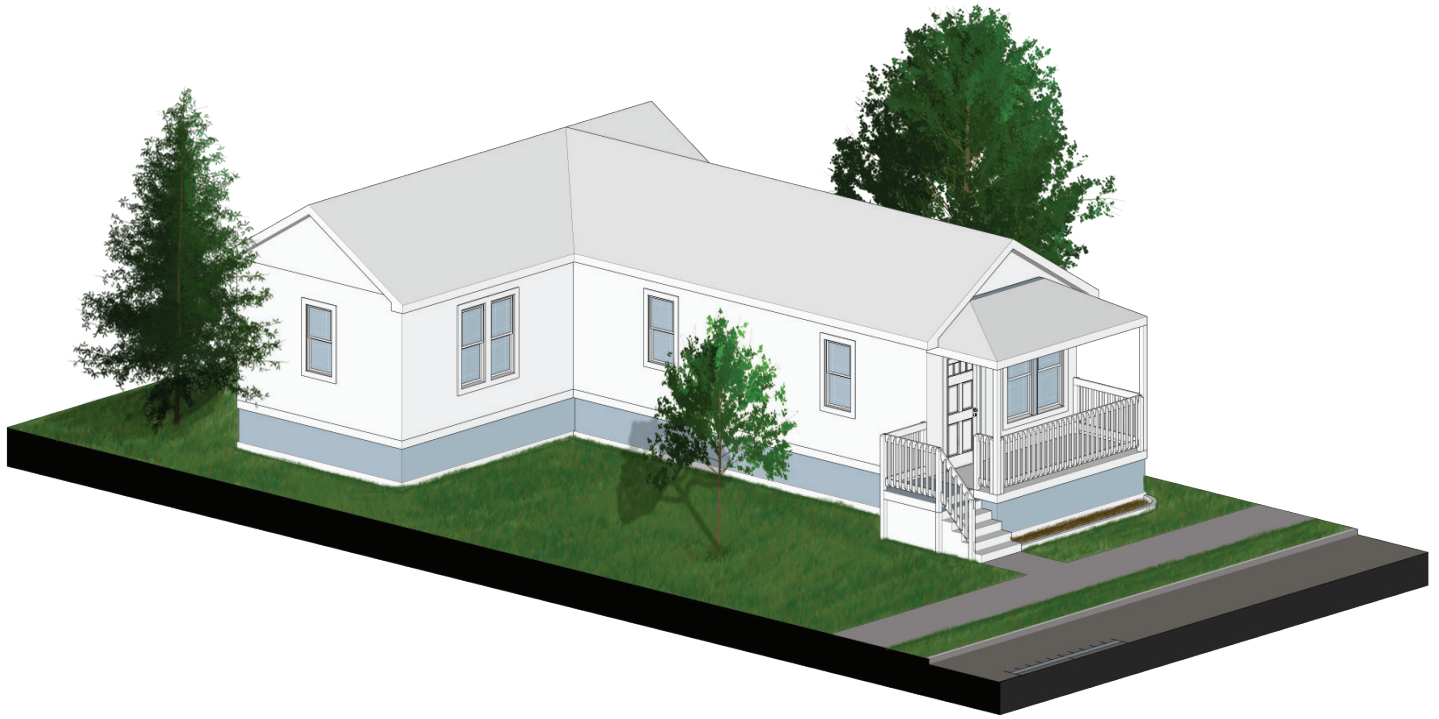
**Figure 8.3.** Side-by-side MH variation installed on a typical 70' by 30' parcel.

Source: Nagaraj, Rakshanda; Wilcox, Joshua, "Manufactured Housing Variations" (University at Buffalo, 2020).

A one-half + one-half "side-by-side" MH unit configuration would consist of two similar 20' by 14' units, fastened together using heavy-duty steel bolt plates, bolts, and washers. When combined, this configuration would measure 20' by 28', not including a front porch. This front porch, measuring 6' by 28', will be built after delivery and installation of the unit.

For a "side-by-side" unit configuration, any appropriate lot (excluding a corner parcel) should have a minimum street-facing width of 35'. Similar to the previous configurations discussed above, a 37.5 yd<sup>3</sup>, 12" thick concrete foundation will be required to comply with HUD requirements that necessitate a MH unit be anchored. This requirement is designed to prevent shifting of the structure during the seasonal freeze-thaw cycles or adverse weather conditions found in Buffalo. Both units in this configuration would utilize a single tractor-trailer delivery method for transportation to a selected site. Figure 8.3. showcases this side-by-side MH variation installed on a typical 70' by 30' parcel.

## MANUFACTURED HOUSING VARIATION - #4



**Figure 8.4.** Configuration on a typical 70' by 30' parcel.

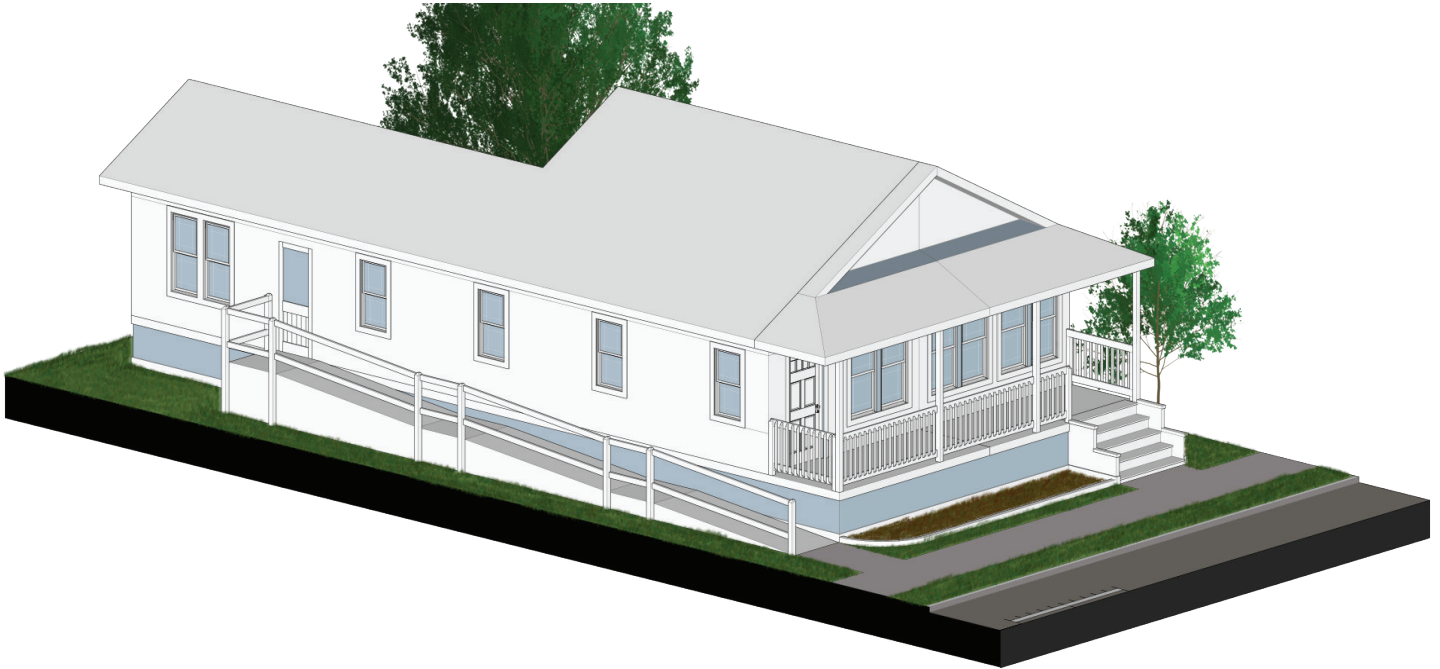
Source: Nagaraj, Rakshanda; Wilcox, Joshua, "Manufactured Housing Variations" (University at Buffalo, 2020).

The one-half + one-half "L unit" configuration is designed to provide an abundance of side-yard space. While maintaining the street continuity of an existing urban neighborhood, this model consists of two 30' by 14' units that join together in the shape of an "L". When combined with a front porch, this configuration will measure out to be 44' by 30'. This front porch would measure 6' by 14', and be anchored to the portion of the MH unit that is closest to the street.

To accommodate this "L-shaped" unit, an appropriate lot (excluding a corner parcel) should have a minimum street-facing dimension of 35' in width. Similar to the model shown in 8.2, this configuration will require a 35.5 yd<sup>3</sup>, of 12" thick reinforced insulated concrete foundation. In regards to delivery, both MH units in this model can be transported atop a single 60' long tractor-trailer bed, where they would be positioned upon being received. Figure 8.4 illustrates this configuration on a typical 70' by 30' parcel.



## MANUFACTURED HOUSING VARIATION - #5



**Figure 8.5.** *Larger MH configuration on a typical 70' by 30' parcel.*

Source: Nagaraj, Rakshanda; Wilcox, Joshua, "Manufactured Housing Variations" (University at Buffalo, 2020).

Finally, our last proposed configuration will be designed to accommodate 1,260 square feet of interior living space. Consisting of a 60' by 14' and a 30' by 14' unit, there is space for a 6' by 28' front porch to be installed after delivery and installation of both units. To meet Green Code requirements, a 35' wide parcel will be required for this configuration, while corner lots would not be feasible. The required foundation of this model will be 46.7 yd<sup>3</sup> and 12" thick, to meet HUD specific requirements. Finally, delivery of these units will require multiple tractor-trailers, where they will be conjoined together upon placement at the site. Figure 8.5 portrays this larger MH configuration on a typical 70' by 30' parcel.

## Parcel Size Requirement

To accommodate a single-wide 840 square foot MH unit in the development patterns discussed in Chapter 6 of this report, a non-corner parcel or lot must be at least 25' wide and 77' in depth per the 2016 Green Code.<sup>119</sup> This would equate to 1,925 square feet, which certainly exceeds the minimum lot requirements set forth in the Green Code. Further property line requirements specific to our single-wide MH unit include:

- Structure is greater than 5' from street
- Structure is at least 5' from side property line if 25' lot width, or at least 6' from side property line if 30' lot width
- Structure is at least 12' from rear property line if 77' lot depth

To accommodate a single-wide and one half or double-wide MH unit configuration, a non-corner parcel or lot must be at least 77' in depth and 85' wide for right-of-way, per 2016 City of Buffalo.<sup>120</sup> A 77' by 38' lot equates to 2,926 square feet, again exceeding the minimum lot requirements set forth in the Green Code. Further property line requirements specific to either configurations of MH unit include:

- Structure is greater than 5' from street
- Structure is at least 7.6' from side property line if 38' lot width, or at least 8' from side property line if 40' lot width
- Structure is at least 12' from rear property line if 77' lot depth

All Manufactured Housing units must have a finished ground floor level up to a maximum of 4 feet. Given the requirement for a MH unit to be fastened to a foundation, all units will have a finished ground floor level set at 3.5 feet.

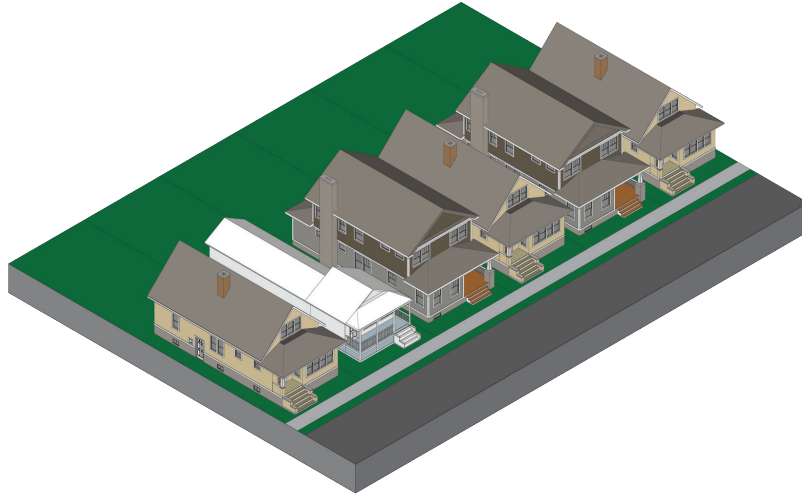
## Configurations & Development Patterns

As discussed in Chapter 6 of this report, development patterns for MH can fall into three categories:

- Infill: units scattered among single non-contiguous lots, likely situated between two existing homes, but within a section of a neighborhood providing some economies of scale for construction and installation.
- Cluster: 5 - 8 contiguous units, with several clusters in proximity to each other for economies of scale for construction and installation.
- Community Block: at least 9 units on contiguous lots, with some facing each other across a street.

Upon further investigation, we discourage the infill pattern of development until further studies can be conducted. This is due to the fact that transportation of a single-wide unit – or any unit exceeding 40 feet in length – would require a lane width of 45' where no obstructions within the planting strips, sidewalks, driveways, or front yard green areas are present. Maneuvering a unit over 40' in length also appears to be technically difficult, as the turning radius required for placement of MH between existing structures is large. To this end, we determined that the configurations above are not feasible for the infill pattern of Manufactured Housing without a higher level of technical route planning. The difficulty of this endeavor is demonstrated in Figure 8.6. Nonetheless, if infill is the preferred development pattern for a city, we recommend the use of multiple smaller units with a maximum dimension of 30' by 14'.

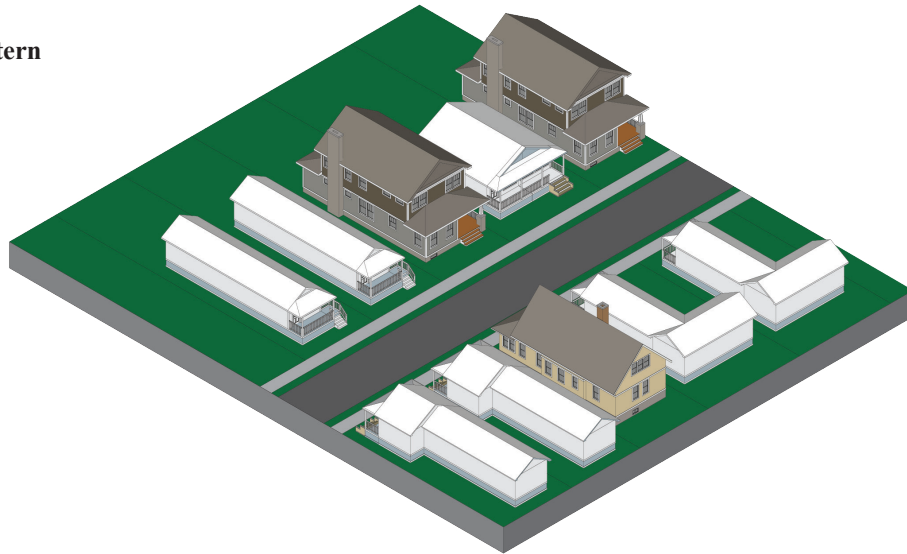
## Infill Development Pattern



**Figure 8.6.** *Infill development pattern with MH configuration.*

Source: Nagaraj, Rakshanda; Wilcox, Joshua, “Manufactured Housing Variations” (University at Buffalo, 2020).

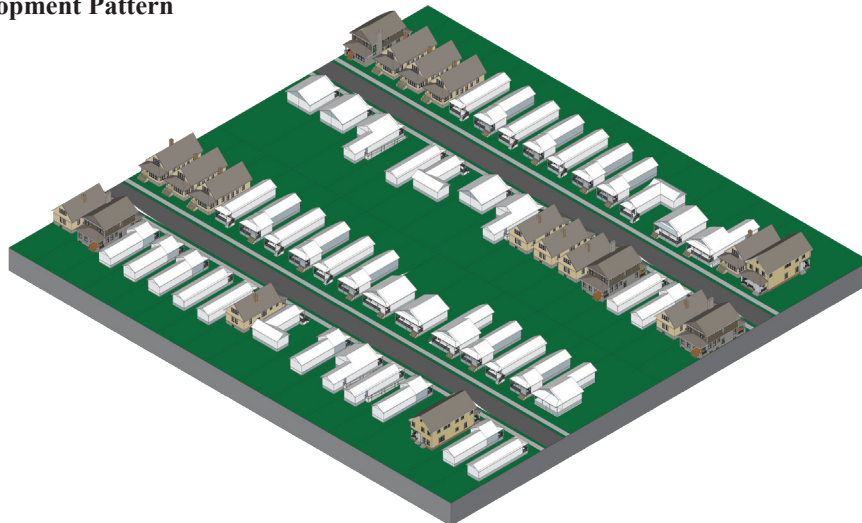
## Cluster Development Pattern



**Figure 8.7.** *Cluster development pattern with MH configurations.*

Source: Nagaraj, Rakshanda; Wilcox, Joshua, “Manufactured Housing Variations” (University at Buffalo, 2020).

## Community Block Development Pattern



**Figure 8.8.** *Community Block development pattern with MH configurations.*

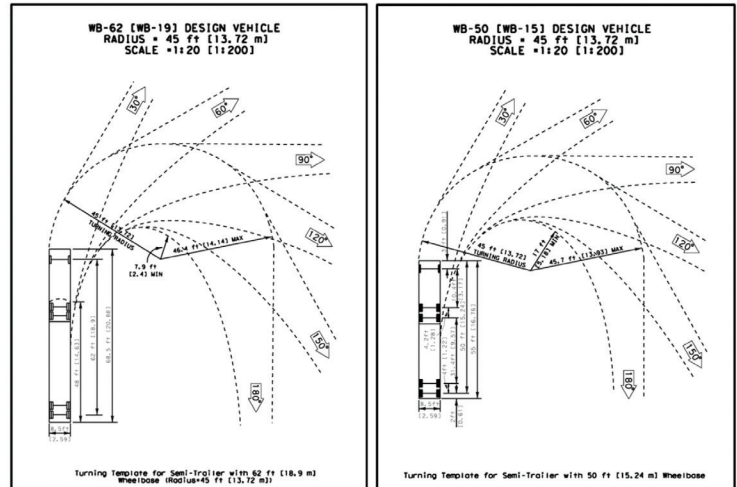
Source: Nagaraj, Rakshanda; Wilcox, Joshua, “Manufactured Housing Variations” (University at Buffalo, 2020).

## Road and Turning Radius Aspects

The cluster strategy for the deployment of Manufactured Homes favors the delivery and installation of 5 to 8 units located in close proximity to one another. This pattern should not require the subdivision of parcels if they are appropriately located adjacent to one another, so long that they meet the required site dimensions for each variation of MH discussed above. We have found that there are a number of locations in Buffalo where such contiguous properties can be found.

The community block pattern of neighborhood development serves as the most creative approach to the reinforcement and establishment of new neighborhoods through Manufactured Housing development. Prioritizing areas with vacant lots largely contiguous with each other is advantageous for large MH implementation, as any obstructions to the turning radius in these areas could likely be avoided. Allowing for 9 to up to as many as 100 MH units at a time, this strategy can also apply multiple building orientation and variation options, while conforming to existing neighborhood characteristics. Since these large swaths of land are more likely to be found in areas where there has been great community distress, the new community block developments would have to involve many units, so as to enhance neighborhood identity and spur demand.

### Road and Turning Radius Aspects



**Figure 8.9.** Challenges to Transportation and Installation of 60ft long units.

Source: Camille Thomason, P.E., "Minimum Designs for Trucks and Bus Turns," *Roadway Design Manual*, April, 26, 2018, [http://onlinemanuals.txdot.gov/txdotmanuals/rdw/minimum\\_designs\\_truck\\_bus\\_turns.htm](http://onlinemanuals.txdot.gov/txdotmanuals/rdw/minimum_designs_truck_bus_turns.htm).

Note: In order for a 55' semi-trailer with a 50' wheelbase to make a 90-degree turn, a minimum turning radius of 32' and maximum of 45' is required. In order for a 68.5' semi-trailer with a 62' wheelbase to make a 90-degree turn, a minimum turning radius of 75' and maximum of 46.4' (for at least 45') is required.



# CONCLUSION AND RECOMMENDATIONS

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After reflecting upon the research conducted in our practicum, we conclude that Manufactured Housing (MH) is a feasible option for affordable housing in post-industrial cities, since these are cities that often have large amounts of vacant land. We have provided evidence that highlights the diminishing quality and quantity of housing in Buffalo, coinciding with very high percentages of households that are cost-burdened. Then, we examined existing federal and state programs for affordable housing construction, and while they are certainly helpful, they are ultimately insufficient in meeting the immense housing demand present. Regulatory constraints at the state and local level were also explored, to better understand any potential obstacles that would need to be overcome in the design and placement of MH. Various tenure models for Manufactured Housing were reviewed, and potential sites examined in the city of Buffalo that would provide infill, cluster, or community block development opportunities. Finally, we established prototypes and assigned overall costs to MH so as to illustrate the look and feel of these units in existing neighborhoods.

Keeping in mind the regulations mandated by the New York State Residential Code, NYS Home and Community Renewal Design Guidelines, and Buffalo Green Code, we believe that MH can certainly be achieved in the City of Buffalo. Our 840 square foot proposed prototype follows these regulations, all at a cost that is substantially less than that of conventional site-built construction or rehabilitation of existing structures. To this end, with an estimated expense of almost \$101,000, we believe MH can be implemented at a half, if not a third, of the cost of this site-built construction method, that often totals more than \$300,000 for a single-family residence. This cost savings allows for a municipality to provide affordable housing for a greater number of residents under the same amount of funding available.

By implementing MH in areas with substantial vacancy, opportunities exist to revitalize the surrounding neighborhood while respecting the current community character. Variations in design and size are also possible, providing flexibility for atypical lot sizes that may be found. Structural characteristics common to more traditional housing are also attainable with MH, including porches, peaked roofs, added windows, and expansion with the growth of family.

From our semester of research, we offer the following recommendations:

## **UNDERTAKE NYS INITIATIVE TO DEFINE MH PROTOTYPES AND OBTAIN COST ESTIMATES**

To understand and define Manufactured Housing, we suggest state and local housing authorities further investigate this form of housing. The agencies should specify prototypes that meet state expectations for quality, safety, durability, and accessibility. By communicating the prototype with MH manufacturers, a better cost estimation can be had, especially if multiple units are purchased at once. We recommend the convening of a task group or committee, with representatives that include individuals with Manufactured Housing experience to help design the prototypes.

## **DEVELOP DESIGN MANUAL FOR AFFORDABLE MH**

New York State's Homes and Community Renewal has long had design guidelines for affordable housing that are currently being updated. We recommend the creation of a design manual that is specific to the affordable construction of Manufactured Housing. While we have come across minimal regulations or codes that would constrain MH, we also recognize that it is not a conventional form of housing, and therefore may be difficult to implement when regulations are not explicitly stated. This proposed design manual should incorporate interior space planning, energy-efficiency, accessibility, material specification, and possibilities for fitting community character, while also paying attention to manufacturability that keeps costs low.

## **INVESTIGATE STATE AND FEDERAL AFFORDABLE HOUSING OPTIONS FOR FINANCING OF MH**

While this report does not go into great detail on the state and federal funding sources available for MH, we do recommend that the topic be researched in greater depth. A large number of programs now exist in support of affordable housing. If cities such as Buffalo are to go in the MH direction, they would greatly benefit from a resource that identifies the applicability of existing funding programs.

## **REFINE NEIGHBORHOOD SELECTION CRITERIA**

Using the site selection criteria outlined in Chapter 6 of this report as a guide, we suggest that the City of Buffalo select neighborhoods in which MH development would best serve the needs of those burdened by unaffordable housing. However, members of the neighborhoods deserve a say in the process. As neighborhood residents do so, they should get the chance to see what MH units actually look like, inside and out (See the next recommendation below). City agencies should pursue the data analysis and organize informed participation in decisions about MH housing.

## **CREATE DEMONSTRATION AND PUBLIC EDUCATION PROJECT**

In light of the stigma surrounding Manufactured Housing, we suggest cities interested in MH implementation partake in the creation of a demonstration project aimed at showcasing the possible variations in design and style. Different configurations can be presented so that the public can have the opportunity to express their concerns and interests, after which these units on display may be sold. Participatory meetings should also be held to counter the prevailing beliefs on who MH is designed for, while highlighting the benefits of the city partaking in this approach to affordable housing compared to conventional site construction. We suggest a demonstration program of 3-4 units located on adjoining lots in an easily accessible part of Buffalo

## **CONSIDER TENURE VARIATIONS**

If a demonstration project proves successful, we recommend that considerations be made regarding the forms of tenure to be implemented in the MH development. More specifically, we suggest (1) that private ownership of MH be considered as it is a relatively simple and straightforward process, allowing for faster implementation. Also (2) lease-purchase, another model discussed, is advisable as it allows for the opportunity of MH unit ownership after a period of tenancy. Lastly, (3) a community land trust would be able to manage the development of multiple units while ensuring long-term affordability. Since there are few precedents to go by in New York State, we propose that state and city officials try at least two of these approaches, perhaps with 40-50 units each, and track outcome and performance.

## **IDENTIFY SUITABLE DEVELOPMENT PATTERN UNIQUE TO CITY**

Because the placement of MH may ultimately determine its success, we suggest the patterns of development outlined in this report be considered and adapted to the character of cities, such as Buffalo, NY, and the variety of neighborhoods within it. Because of constraints in installing units onto single lots in narrow streets, we believe single-unit infill may be unrealistic at this time, until delivery methods are explored. In the case of Buffalo, we consider the cluster and community block development patterns to be appropriate and feasible.

## **INVESTIGATE FEASIBILITY OF DEVELOPING MH MANUFACTURING FACILITY**

If a sizable demand exists for Manufactured Housing in Western New York, the feasibility of developing a local MH manufacturing facility should be explored. This economic development opportunity would help the local economy, providing jobs and training opportunities all while minimizing the cost of transportation for MH units from distant manufacturers. While this recommendation is specific to the greater Buffalo or upstate New York, it is also applicable to other post-industrial cities that are not located near a MH manufacturer.



## INITIATE MH AFFORDABLE HOUSING PILOT PROJECTS BY 2022

Finally, after having considered the previous suggestions and contents of this report, we believe that the actual initiation of an MH affordable housing pilot project is feasible in the city of Buffalo by 2022. We foresee a series of steps leading toward it: state study of prototypes, costs, and design guidelines; examination of state and federal affordable housing funding programs; public participation in neighborhood selection; a demonstration project, followed by Requests for Proposals to developers to actually undertake pilot projects.





# NOTES

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# APPENDICES

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**Appendix A**

Chapter 4, Specifications that MHs can successfully meet: Table 4.1

<b>Table 4.1: Specifications that MHs CAN successfully meet</b>
<p><b>Section 4.03 - 4.03.01 - Req. (1)</b>  <i>“Building design, material selection and details must promote the following:</i></p> <ol style="list-style-type: none"> <li>1. <i>Compatibility with and enhancement of the neighborhood context and natural environment.</i></li> <li>2. <i>Maximization of energy efficiency, and minimization of negative environmental impacts</i></li> <li>3. <i>Material and details shall be selected for maximum durability and the minimization of ongoing maintenance”</i></li> </ol>
<p><b>Section 4.03 - 4.03.01 - Req. (2)</b>  <i>“Building facades that face the street, or have a prominent exposure to other public areas, must include design measures that increase the building’s aesthetic appeal and enhance and reinforce existing design qualities found in the neighborhood. Examples of such measures include:</i></p> <ol style="list-style-type: none"> <li>1. <i>Articulation of the building façade using forms such as porches, terraces, bay windows, dormers, pilasters or other building setbacks</i></li> <li>2. <i>Architectural details such as brackets, banding, railings, chimneys, entry columns or shutters which must be designed to be compatible with the quality architectural aesthetic of the predominant buildings in the neighborhood.</i></li> <li>3. <i>Roof shapes for sloped roofs, such as hips, gables, or cupolas that are visually appealing and compatible with the better buildings in the neighborhood context. For buildings with flat roofs, provide a parapet with coping and cornice</i></li> </ol>

**Appendix B**

Chapter 4, HCR Design Specification that might pose challenges: Table 4.2

<b>Table 4.2: HCR Design specification that might pose some challenges to MH</b>	
<b>Handbook Specification</b>	<b>Comments</b>
<p><b>Section 4.03 - 4.03.01 - Req. (3)</b>  <i>“Buildings with lengthy corridors should be avoided, especially in non-urban settings”</i></p>	<p>In a conventional 14ft and 60ft model (suggested basic prototype), there are significant restrictions to interior space planning, one of which would be a long corridor connecting all the different spaces inside the MH unit.</p>
<p><b>Section 4.03 - 4.03.01 - Req. (5)</b>  <i>“Provide landscaping that enhances the building, including indigenous shrubs, berms, decorative fencing, special lighting and signage. For senior projects shade trees must be provided.”</i></p>	<p>While not difficult to achieve, specifications such as this would increase the overall cost of MH.</p>
<p><b>Section 4.03 - 4.03.03 - (E) Bathrooms</b>  <i>“Bathrooms must be accessed from within the dwelling unit and without traveling through the kitchen, living room, or dining room.”</i></p>	<p>With a single long corridor leading into all the rooms (as discussed before), it might be challenging to create a floor plan that allows access to the bathrooms without traveling through other spaces.</p>

# Appendix C

## Chapter 7, Manufactured Home Prototypes

Affordability Model				Accessibility Model				Innovation Model			
Prototype 1 A	Variations	Cost	Prototype 1 B	Variations	Cost	Prototype 1 C	Variations	Cost	Prototype 1 D	Variations	Cost
14x60 ft. 840 sq ft.	Single Wide	Cost of adding an additional room/space to the existing unit	14x60 ft. 840 sq ft.	Single Wide		14x60 ft. 840 sq ft.	Single Wide				
<b>Size of rooms/ spaces</b>	<p>Bedroom 1: 10 ft. x 14 ft. (Area 140 Sq. ft.)</p> <p>Bedroom 2: 10 ft. x 10 ft. (Area 100 Sq. ft.)</p> <p>Living room: 15ft. x 14 ft. (Area 210 Sq. ft.)</p> <p>Kitchen: 14 ft. X 14 ft. (Area 196 Sq. ft.)</p> <p>Number of Storage spaces: 1 8 ft. x 8 ft. (Area 64 Sq. ft.)</p> <p><b>Accessibility requirements</b></p> <ul style="list-style-type: none"> <li>- Provision for Ramp/ stepless entry (not facing front)</li> <li>- Blocking wall: No</li> <li>- Structural Provision for installation of Grab bars where necessary</li> </ul> <p>Garage</p> <p>Half Porch off to a single side</p> <p>Dormer Window</p> <p>Other</p> <p><b>Should structurally support ADA accessibility</b></p> <p>Raised electric plugs</p> <p>Lowered light switches</p> <p>Basic Buffalo characters (must be able to comply with the assembly line)</p> <ul style="list-style-type: none"> <li>- Should structurally support ADA accessibility</li> <li>- Single Utility Hookup</li> <li>- 30"x60" tub unit with a shower head, a sink, a wall 30" tall mirrored medicine cabinet and a toilet.</li> <li>- Nominal shower unit (may be placed)- 33"x63" *</li> <li>- Storage above</li> <li>- Maximum ceiling height- 9ft-0in*</li> <li>- Two persons per bedroom*</li> <li>- Natural light - min 8% of floor area*</li> <li>- Natural ventilation - 4% of floor area*</li> <li>- Must be over 320 square feet**</li> <li>- Must have permanent chassis**</li> <li>- All homes sold after 1976 must have a certification label**</li> <li>- The design of the homes have to meet HUD standards**</li> <li>- Both the factories and the homes themselves are inspected to make sure they meet quality standards**</li> <li>- Factory inspections are done by 15 third party and state agencies**</li> <li>- In 37 states, HUD has entered into agreements with state governments to check mobile home plant records and review customer complaints, while HUD provides that service in the other 13 states</li> </ul> <p><a href="https://www.hud.gov/program_offices/housing/mra/mhs/mfsheet">https://www.hud.gov/program_offices/housing/mra/mhs/mfsheet</a></p>	SS SS	<b>Size of rooms/ spaces</b>	<p>Bedroom 1:</p> <p>Bedroom 2:</p> <p>Bathroom 1:</p> <p>Living room:</p> <p>Kitchen:</p> <p>Number of Storage spaces:</p> <p><b>Accessibility requirements</b></p> <ul style="list-style-type: none"> <li>-Ramp/ stepless entry in street facing front</li> <li>-3 ft. Door Entrances/ Hallways in all rooms</li> <li>-Roll in shower</li> <li>-Blocking wall: No</li> <li>-Lower Electrical plugs</li> <li>-Grab bars where necessary</li> </ul> <p><b>Should structurally support ADA accessibility</b></p> <ul style="list-style-type: none"> <li>- Raised electric plugs</li> <li>- Lowered light switches</li> <li>- Basic Buffalo characters (must be able to comply with the assembly line)</li> </ul>	SS	<b>Size of rooms/ spaces</b>	<p>Bedroom 1:</p> <p>Bedroom 2:</p> <p>Bathroom 1:</p> <p>Bathroom 2:</p> <p>Living room:</p> <p>Kitchen:</p> <p>Number of Storage spaces:</p> <p><b>Accessibility requirements</b></p> <ul style="list-style-type: none"> <li>- Ramp/ Stepless entry:</li> <li>- Rail in shower:</li> <li>- Blocking wall: 1?</li> <li>- Grab bars:</li> <li>- 3ft width of door entrances:</li> <li>- Number of Elevated electrical plugs in total rooms:</li> </ul> <p><b>Should structurally support ADA accessibility</b></p> <ul style="list-style-type: none"> <li>- Raised electric plugs</li> <li>- Lowered light switches</li> <li>- Basic Buffalo characters (must be able to comply with the assembly line)</li> </ul>	SS			
<b>Other Addons (Porches, dormers, etc)</b>	<ul style="list-style-type: none"> <li>- Cost of Garage</li> <li>- Cost of Full Porch</li> <li>- Cost of one Dormer</li> </ul>	SS	<b>Other Addons (Porches, dormers, etc)</b>	<ul style="list-style-type: none"> <li>- Cost of Garage</li> <li>- Cost of Full Porch</li> <li>- Cost of one Dormer</li> </ul>	SS	<b>Other Addons (Porches, dormers, etc)</b>	<ul style="list-style-type: none"> <li>- Cost of Garage</li> <li>- Cost of Full Porch</li> <li>- Cost of one Dormer</li> </ul>	SS	<b>Other Addons (Porches, dormers, etc)</b>	<ul style="list-style-type: none"> <li>- Cost of Garage</li> <li>- Cost of Full Porch</li> <li>- Cost of one Dormer</li> </ul>	SS
<b>Site Prep</b>	<ul style="list-style-type: none"> <li>- Both the factories and the homes themselves are inspected to make sure they meet quality standards**</li> <li>- Factory inspections are done by 15 third party and state agencies**</li> <li>- In 37 states, HUD has entered into agreements with state governments to check mobile home plant records and review customer complaints, while HUD provides that service in the other 13 states</li> </ul>	SS	<b>Site Prep</b>	<ul style="list-style-type: none"> <li>- Should structurally support ADA accessibility</li> <li>- Raised electric plugs</li> <li>- Lowered light switches</li> <li>- Single Utility Hookup</li> </ul>	SS	<b>Site Prep</b>	<ul style="list-style-type: none"> <li>- Should structurally support ADA accessibility</li> <li>- Raised electric plugs</li> <li>- Lowered light switches</li> </ul>	SS	<b>Site Prep</b>	<ul style="list-style-type: none"> <li>- Should structurally support ADA accessibility</li> <li>- Raised electric plugs</li> <li>- Lowered light switches</li> </ul>	SS SS
<b>Car Stuff: Driveway/garage/ carport</b>	<p>Driveway: (Cost with/without)</p>	<ul style="list-style-type: none"> <li>- With Driveway</li> <li>- Without Driveway</li> </ul>	<p>Car Stuff: Driveway/garage/ carport</p>	<p>Driveway: (Cost with/without)</p>	<ul style="list-style-type: none"> <li>- With Driveway</li> <li>- Without Driveway</li> </ul>	<p>Car Stuff: Driveway/garage/ carport</p>	<p>Driveway: (Cost with/without)</p>	<ul style="list-style-type: none"> <li>- With Driveway</li> <li>- Without Driveway</li> </ul>	<p>Car Stuff: Driveway/garage/ carport</p>	<p>Driveway: (Cost with/without)</p>	SS SS
<b>Energy Star Compliance</b>	<ul style="list-style-type: none"> <li>- Energy Star appliances (Dishwasher, Washer, Dryer, etc)</li> <li>- Energy Efficiency windows (if possible)/ price difference between low E/ Argon Gas,</li> <li>- Windows that allow for viewing the exterior when seated.</li> <li>- Cross ventilation of Windows/Doors</li> </ul>	SS SS	<b>Energy Star Compliance</b>	<ul style="list-style-type: none"> <li>- Energy Star appliances (Dishwasher, Washer, Dryer, etc)</li> <li>- Energy Efficiency windows (if possible)</li> </ul>	SS SS	<b>Energy Star Compliance</b>	<ul style="list-style-type: none"> <li>- Energy Star appliances (Dishwasher, Washer, Dryer, etc)</li> <li>- Energy Efficiency windows</li> </ul>	SS SS	<b>Energy Star Compliance</b>	<ul style="list-style-type: none"> <li>- Energy Star appliances (Dishwasher, Washer, Dryer, etc)</li> <li>- Energy Efficiency windows</li> </ul>	SS SS
<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>- Install energy-efficient windows and doors</li> <li>- Insulation to the belly</li> <li>- Make general repairs (caulking, ducts, etc.)</li> <li>- Insulation to walls/ skirting</li> <li>- A belly wrap</li> <li>- Insulation to roof install a roof cap</li> <li>- Inspection cost</li> </ul>	SS	<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>- Regular windows</li> <li>- Energy efficient windows</li> <li>- Range of cost for insulation</li> <li>- Energy Efficiency inspection</li> </ul>	SS	<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>- Regular windows</li> <li>- Energy efficient windows</li> <li>- Range of cost for insulation</li> <li>- Energy Efficiency inspection</li> </ul>	SS	<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>- Regular windows</li> <li>- Energy efficient windows</li> <li>- Range of cost for insulation</li> <li>- Energy Efficiency inspection</li> </ul>	SS
<b>Solar roof Partial/full/ Pitch</b>	<p>No solar Roof</p> <p>Pitch- 6/12 minimum to 12/12 maximum</p>	<ul style="list-style-type: none"> <li>- No solar roof - With solar</li> </ul>	<p>Solar roof Partial/full</p>	<p>No solar Roof</p> <p>Pitch- 6/12 minimum to 12/12 maximum</p>	<ul style="list-style-type: none"> <li>- No solar roof - With solar</li> </ul>	<p>Solar roof Partial/full</p>	<p>No solar Roof</p> <p>Pitch- 6/12 minimum to 12/12 maximum</p>	<ul style="list-style-type: none"> <li>- No solar roof - With solar</li> </ul>	<p>Solar roof Partial/full</p>	<p>No solar Roof</p> <p>Pitch- 6/12 minimum to 12/12 maximum</p>	SS SS
<b>LEED Standards</b>	<p>If yes (cost)</p> <p>If no (cost)</p>	<ul style="list-style-type: none"> <li>- If yes</li> <li>- If no</li> </ul>	<p>LEED Standards</p>	<p>If yes (cost)</p> <p>If no (cost)</p>	<ul style="list-style-type: none"> <li>- If yes</li> <li>- If no</li> </ul>	<p>LEED Standards</p>	<p>If yes (cost)</p> <p>If no (cost)</p>	<ul style="list-style-type: none"> <li>- If yes</li> <li>- If no</li> </ul>	<p>LEED Standards</p>	<p>Yes</p>	SS SS
Affordability Model (Double)				Accessibility Model (Double)				Innovation Model (Double)			

**Key:**

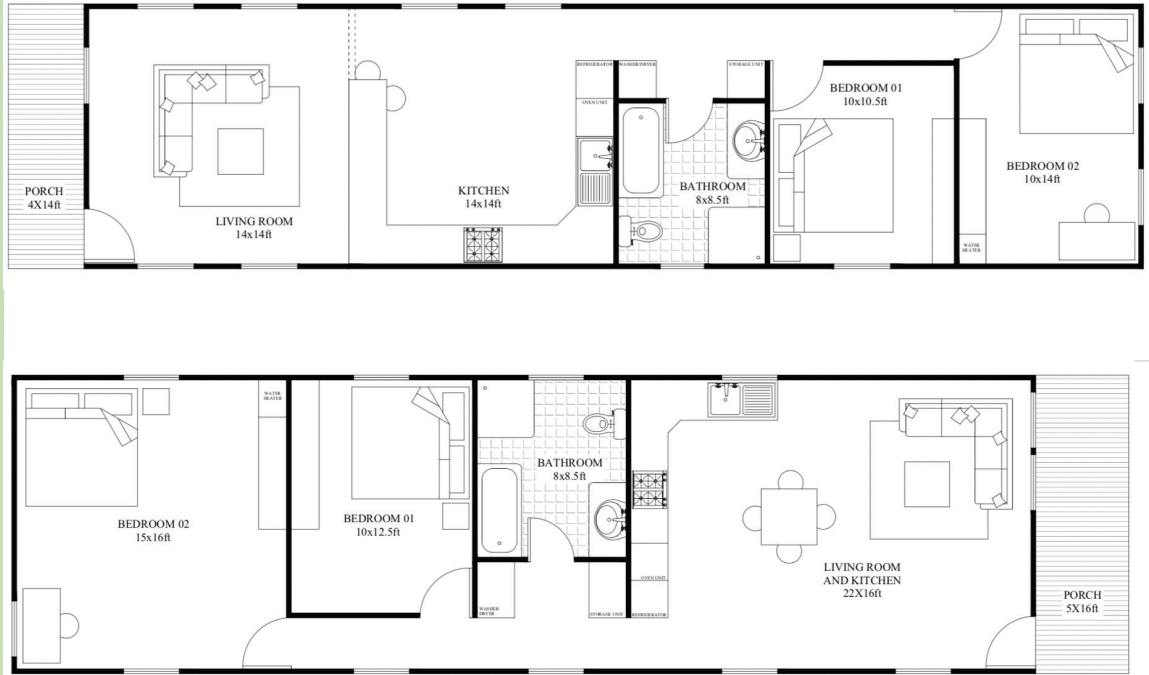
- \* = HCR Standards
- \*\*= HUD Standards
- \*\*\*=ADA

(Would be nice for HCR/HUD requirements, but open for some deviations.)

**Appendix C**  
Chapter 7, Manufactured Home Prototypes

**Prototype 1 A**  
14x60 ft. 840 sq ft.

**Prototype 1 B**  
14x60 ft. 840 sq ft.



**Appendix D**  
Chapter 7, Key Styles in Buffalo

**Key styles in Buffalo** (*A Field Guide to American Houses, McAlester | Foundations in Historic Preservation by Kerry Traynor*)

Characteristic features in general:

<p><b>Stick Style</b></p> <ul style="list-style-type: none"> <li>. Steep pitch</li> <li>. Decorative trusses</li> <li>. Porch-support braces</li> <li>. cross gables</li> <li>. overhanging eaves</li> <li>. horizontal and vertical bands</li> <li>. clapboard siding style</li> </ul>	<p><b>Queen Anne</b></p> <ul style="list-style-type: none"> <li>. Full width porch</li> <li>. Steep pitches</li> <li>. Irregular roof line</li> <li>. Spindle work frieze.</li> <li>. finials</li> <li>. Palladian window</li> <li>. perimeter lights</li> <li>. columns</li> <li>. corner brackets</li> </ul>	<p><b>Workman Cottage</b></p> <ul style="list-style-type: none"> <li>. No front porch</li> <li>. Italianate style windows or Palladian windows</li> <li>. 1.5 story house</li> <li>. Thick Roof trim/brackets</li> </ul> <p>Example: <a href="http://moss-design.com/workman-cottage/">http://moss-design.com/workman-cottage/</a></p>	<p><b>Telescopic Homes</b></p> <ul style="list-style-type: none"> <li>. Front Facing Gable</li> <li>. Full width porch (typical)</li> <li>. Double Hung Windows</li> <li>. 1.5-2 Story primary structure, 1 story additions</li> </ul>	<p><b>Bungalow</b></p> <ul style="list-style-type: none"> <li>. 1 Story</li> <li>. Wood Trim</li> <li>. Decorative Trusses</li> <li>. Full Width/Half Width porches</li> <li>. Tapered Columns</li> <li>. Brick/Wood Shingle Veneers</li> <li>. Regional Variations</li> </ul> <p><a href="http://moss-design.com/bungalows/">http://moss-design.com/bungalows/</a></p>
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