

The Intersection of Energy Efficiency and Affordable Housing: The Challenge
of Achieving Both in an Upstate New York Community

A Thesis

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By

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ABSTRACT

The study researched inclusions and limitations of zoning ordinances for energy efficient, affordable housing in upstate New York. A survey tested the acceptance level of the public toward mandates for affordable housing and energy efficient housing as discrete programs for residential development.

Data was collected using interviews of key stakeholders and policy implementers in Tompkins County, New York. The Cornell Institute for Social and Economic Research conducted the survey as part of the annual Empire State Poll. There were three hypotheses, the first being that requiring energy efficient, affordable housing is an unpopular concept in New York State. The second hypothesis was that local land use regulations limit affordable, energy efficient development. The third hypothesis was that housing development that is both energy efficient and affordable is not a high priority concept for community planners.

The results from the survey reveal that the residents of New York State supports housing development that is affordable and that is energy efficient. Data collected from interviews of planners, lenders and developers in Tompkins County, New York indicate local land use regulations have an impact on residential development in a variety of ways, but that affordable, energy efficient housing is a high priority in the county. This research brings forth possible solutions for changes to zoning ordinances that may encourage developers to build housing units that are affordable to a broad range of socioeconomic levels and meet the needs of a diverse community such as Tompkins County, New York.

BIOGRAPHICAL SKETCH

Rachel Fives' experience in the construction industry began when she became a demolition laborer as she finished her undergraduate course work. She completed her undergraduate degree at the State University of New York College at Brockport, where she graduated with a Bachelor of Science in Liberal Studies in 1995. After college, she took an entry-level position as an estimator at the Pike Company in Rochester, New York and subsequently worked as a project coordinator and project manager in Chicago, Illinois and Kansas City, Missouri before returning home to New York State. Rachel Fives has been a project manager in central facilities at Cornell University since June 2007. She completed her course work in the Department of Environmental Analysis for the Masters of Science in Human/Environment Relations through the Employee Degree Program, while working full-time.

Dedicated to my family, whether by blood, choice or circumstance, for their love and unwavering support.

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CHAPTER 1

1.1 Introduction

This research investigated residential development for housing in a progressive municipality in Upstate New York. The study researched inclusions and limitations of zoning ordinances for affordable housing and energy efficient housing by conducting interviews of developers, lenders and planners in Ithaca, New York. Additionally, a survey tested the acceptance level of the public toward mandates for affordable housing and energy efficient housing as discrete programs for residential development.

1.2 Purpose

In 2016, Tompkins County collaborated with the Danter Company to analyze the current housing stock and anticipate future demand for housing in the community over the next 10 years. While the Tompkins County Comprehensive Plan states that “Tompkins County should be a place where housing is affordable, safe, energy efficient, and appealing.”, and quantifies a substantial housing deficiency of over 7,000 housing units across a broad range of demographics, it offers no solutions for either affordable or energy efficiency mandates for development within the county boundaries. (Tompkins County Housing Needs Assessment, 2016)

Progressive planners know that sustainability and equity are good and necessary to incorporate in comprehensive community planning (Campbell, 2016). Although there are many tools to encourage and enforce the sustainability goals, such as mandated compliance with energy codes and rating programs such as Energy Star, there are few such goals to

simultaneously increase housing equity. The definition of sustainable development is the balance of the environment, equity, and economy (Jepson, Jr. & Haines, 2014). However, achieving this balance remains elusive, despite developers who are “increasingly looking to achieve the highest possible ratings from certifications such as Energy Star and LEED (Leadership in Energy and Environmental Design) because they believe it makes their properties more marketable.” (Szibbo, 2016)

Marketability and profit do not address the broader issue at hand, that there has been an absence of adequate affordable housing in the U.S. for nearly two generations (Kushner, 2011). Positioning properties for marketability based on energy performance was beneficial when homebuyers could afford sustainably built housing units, but since energy conservation benefits everyone, it is a moral responsibility to make it available across all income levels (Kushner, 2011). Consideration of this issue is the driver for this research, and to investigate how a progressive community might simultaneously incorporate economic growth, equity planning, and social justice.

1.3 Research Goals and Objectives

The primary goals of this research were to determine the reasons for the gap in development of housing units in Tompkins County, New York that comply with both affordability and energy efficiency parameters. The research objectives were:

1. To test the acceptance level of the public for support of affordable and energy efficient housing.
2. To investigate whether zoning, building code and land use regulations inhibit

development of housing that serves low-income households and is also energy efficient.

3. To understand the priorities of local lenders, planners and developers in their strategies when considering how to solve gaps in housing products for different demographics in Tompkins County.

1.4 Research Hypotheses

Through a survey and in-person interviews, this research sought to determine the presence of public acceptance of affordable and energy efficient housing development. Through in-person interviews, the study sought to understand the underlying causes behind the lack of housing that is both affordable and energy efficient in an Upstate, New York region. The research hypotheses were:

1. Requiring affordable, energy efficient housing in New York State communities is an unpopular concept and the attitude of “NIMBY” (Not In My Backyard) of the general public in New York State would not support policies mandating affordable, energy efficient housing.
2. Local land use regulations limit affordable, energy efficient development.
3. Housing development that is both affordable and energy efficient is not a high priority concept for community planners in Ithaca, New York.

1.5 Anticipated Outcomes

The anticipated outcomes of the research findings are as follows:

1. The survey findings are expected to inform policy makers in the Ithaca, New York area about public attitude toward affordable and energy efficient housing in Tompkins

County, so development can be targeted to infill current gaps.

2. The interview findings are expected to identify shortcomings in existing Ithaca, New York housing funding, lending and development that promote or inhibit either affordable or energy efficient housing development, or both.
3. The data will inform suggestions for policy revision in Ithaca, New York in order to spur housing development to augment the existing housing stock in Tompkins County to better serve the community.

CHAPTER 2

LITERATURE REVIEW

The research used literature from the fields of social housing justice, sustainable development and economic equity. The basis for this research is rooted in a foundation equally balanced between these three conflicting goals.

The research utilized Google Scholar database electronically to identify documents published between 1995 and 2017. Documents used were those with free access granted by the publisher. A search was conducted that included all articles in the English language with the following keywords in their titles:

- Affordable, green housing
- Affordable, long-term housing
- Exclusionary zoning
- Gentrification
- Green building
- Inclusionary zoning
- Low-income, green housing
- Progressive community planning
- Sustainable communities
- Social housing justice
- Urban planning

There is a wealth of information available regarding the separate topics of affordable housing and sustainable building practices, regarding low-income housing policies, successes and failures. Those studies were excluded, as this review is focused on the intersection of affordable housing and energy efficiency, as energy efficiency is a contributing factor to affordability. The following table provides an overview of the scope of this literature review:

Table 1 Inclusion and Exclusion Criteria

Inclusion	Yes	No
Publication Date	January 1, 1995 to December 31, 2017	Before January 1, 1995
Location or Context	Data based upon the United States demographic and physical information	All other countries
Survey Demographic	Developers, municipalities, community planners	Market rate development
Outcomes	Diverse outcomes, analyzing the reasons for success and failure	Any other measured outcomes
Study Design	Observational With/without control group Case study Reviews of research (only if information on the following areas are included: search strategies, review period, database selection and key search terms)	Reviews that do not satisfy the requirements as indicated in (a) Any other publications (e.g.: Commentary)

2.1 Zoning

Several articles discussed zoning as a critical component for achieving low-cost, high-performance housing. Zoning was studied in the reviewed articles in two ways: inclusionary and exclusionary. Historically, in the United States, zoning policies have been exclusionary in that they require minimum lot sizes, minimum road frontage, minimum setbacks and height limitations for building housing units.

Kushner (2011) describes phases in the search for affordable housing over the last 50 years, focusing on regulations such as exclusionary zoning, where ordinances require detached, single-family houses on sizeable lots. The author then goes on to develop a framework of obstacles that prevent the development of an adequate supply of affordable housing and strategies to overcome those obstacles. Kushner brings forth the argument that before sustainability can be addressed, the cost of development must be addressed, by such strategies as a higher density of units per acre, constructing smaller living spaces and centralizing parking facilities in lieu of individual garages. One such strategy is Transit-Oriented Development, which would require zoning ordinances that prevent the construction of large spaces and automobile infrastructure, in favor of higher density and public transportation systems.

Levy, Comey & Padilla (2006) present several case studies of community efforts to reduce the effects of gentrification-driven displacement of minorities. The study introduces strategies toward neighborhood revitalization while retaining minority and low-income community residents. Gentrification, they point out, has a devastating impact on the availability of affordable housing, especially for low-income households, 46 percent of which spent 50 percent or more of their household income on housing in 2001. The authors offer three methods by which affordable housing can be encouraged: Housing Trust Funds, inclusionary zoning ordinances, and the federal Low-Income Housing Tax Credit.

Inclusionary zoning requires developers to build a minimum number of affordable housing units and allows for smaller lot sizes and more floor space per area of land to increase residential density. Inclusionary zoning ordinances have been adopted in Burlington, Vermont,

Seattle, and Washington. To research the impact of these zoning ordinances, Jepson, Jr. and Haines (2014) developed 9 sustainability principles with 53 regulatory items for municipalities to use in zoning ordinances, including several for affordable housing. An assessment was then conducted of zoning policies in 32 U.S. cities for the inclusion of the identified items. The researchers found that only 11 of the 53 regulatory items were found in all 32 cities and that the older the zoning ordinances, the fewer sustainability principles were found.

Exclusionary zoning is municipal code written with “(1) exclusionary effects, resulting from the use of zoning to exclude minorities from white areas, first with explicitly discriminatory, and then with economic barriers to geographic mobility; and (2) intensive and expulsive effects, resulting from zoning’s inadequate protection or outright targeting of minority residential neighborhoods for intensive commercial and industrial development” (Whittemore, 2016). Exclusionary practices have not limited to zoning ordinances, though. Until the Fair Housing Act of 1968, real estate transactions and rental agreements could be refused to minorities in white neighborhoods (Massey, 2005). The Equal Credit Opportunity Act of 1974 put an end to racially discriminatory lending for financial institutions (Massey and Denton, 1993). Allegedly, exclusionary zoning regulations are implemented in order to maintain property values in high-income development areas (Whittemore, 2016). However, most exclusionary policies are enacted to reduce the possibility of non-white families encroaching into white neighborhoods, stated here: “Municipalities thus use zoning to “screen” out anything they perceive to be a “quality-detracting user” and the perception of who or what is detracting may well be informed by prejudice” (Fennell 2009). Whittemore goes on to explain that “Exclusionary zoning measures, specifically those involving minimal provision for multifamily

construction, large minimum lot sizes, and so on, grew immensely in popularity after Shelley v. Kramer (1948), which denied the enforceability of racial covenants”.

Land-use zoning is a framework of regulations within a municipality dictating type of use by area. For example, Zoning in the City of Ithaca is by use type:

- Adult Use Zone
- Business Zones
- Central Business District
- Collegetown
- Court House Special Use
- Gorge Protections
- Historic
- Industrial
- Mobile Home
- Park
- Residential
- Southwest
- University
- Waterfront
- West End Development

(City of Ithaca)

The Business and Residential Zones are further broken down into subcategories. Each

use district has specific, “permitted primary uses”, off-street parking requirements, off-street loading requirements, minimum lot sizes and maximum building heights and percentages of lot coverage by building, with yard dimensions. The City of Ithaca website has links to the City of Ithaca Official Zoning Map so a developer can determine the zoned use of a property. These tools appear to show, based on a property location, what are the allowable types of projects for development there, based on the permitted primary uses.

Form-based zoning differs dramatically from land-use zoning in that development guidelines are set forth around exterior building and infrastructure components. Talen (2009) explains, “Common features of modern form-based codes include requiring buildings to meet the street in a uniform manner to frame public areas; eliminating blank walls along pedestrian thoroughfares through the inclusion of transparent windows and doors; screening parking and moving it to the rear of structures; and establishing height and width requirements for buildings and roads to improve walkability”. Form-based codes offer a method by which mixed-use neighborhood development and infill development can be achieved to maximize land use. Hughen and Read (2017) go into further detail, “most form-based codes include five common components including a regulating plan illustrating the desired location for different types of buildings and public areas; urban regulations governing size, massing and in-building use standards; street regulations controlling the width and location of thoroughfares and sidewalks; and in some instances landscaping and architectural controls imposing significant restrictions on the design of both structures and open spaces”.

Mintz-Roth (2008) explored strategies and compares policies in cities of considerable,

sustained growth for building affordable housing with programs that will not expire, as do current mandates. The strategies include affordable housing, inclusionary zoning, and land use regulation. The author found that these and other planning mechanisms for diversity and inclusion do not replace the need for federal subsidies in the housing market. The author also found that inclusionary zoning is most effective in markets with high turnover rates and rapid housing value appreciation, and other strategies such as shared equity programs and deed restrictions are more effective in slower markets.

2.2 Energy Efficiency

LEED ND (Neighborhood Development) is one of many tools, which help municipalities set goals for energy efficiency, but it does not emphasize affordable housing. (Szibbo, 2016) In addition to this disconnect between energy efficiency, sustainability and affordability, there is a gap between setting these types of goals for sustainable development and planning implementation tools in the form of zoning ordinances. (Jepson, Jr. & Haines, 2014) The American Planning Association (APA) addresses the parameters of sustainable development practice in a variety of methods; including their sustainability policy guide (American Planning Association, 2010).

In their 2005 report, *Costs and Benefits of Green Affordable Housing*, Bradshaw, Connelly, Cook, Goldstein and Pauly point out that “Since 1992, over 80 municipal and state green rating programs have been developed, and while there is a great deal of variation in the structure and administration of these programs, most of them focus on residential buildings, usually single-family homes. In addition, the U.S. Environmental Protection Agency and

Department of Energy's Energy Star Homes and the National Association of Homebuilders have both developed national standards by which greenness can be measured and compared".

(Bradshaw, et. al. 2005) While these standards are an excellent contribution to the residential housing stock in the United States overall, they were not found to be inclusive of the affordable housing market. Bradshaw, et al., sought to better understand this gap.

Bradshaw, Connelly, Cook, Goldstein and Pauly evaluated the costs and benefits of sixteen energy efficient building projects in the affordable housing sector and reported their findings in *Costs and Benefits of Green Affordable Housing* (2005). The authors refer to energy efficient building techniques as "green". They offer, "Green building has emerged over the past decade as a robust movement to create high-performance, energy-efficient structures that improve occupant comfort and well-being while minimizing environmental impacts. Supported by organizations such as the U.S. Green Building Council and its Leadership in Energy and Environmental Design (LEED) standards, both public and private entities are increasingly pursuing green buildings in the institutional, commercial, and residential sectors. While this progress is impressive, for a number of reasons it has not included significant numbers of affordable housing projects. These reasons, several of which are unique to affordable housing, including: an almost exclusive focus on "first costs," the existence of per unit cost caps, regulatory rigidity that limits green innovation, and a finance system that fails to recognize the long-term value of green investments".(Bradshaw, et. al. 2005)

Bradshaw, Connelly, Cook, Goldstein and Pauly found that the "system to assess financial viability of green affordable housing, focused on initial capital costs, is deeply flawed.

Life-cycle costing in which both capital and operating costs are considered over the expected life of a building provides a better understanding of project economics”. (Bradshaw, et. al. 2005)

Their findings showed when analyzing energy efficient affordable housing based on life-cycle costs, it is more cost-effective than affordable housing built by conventional methods.

(Bradshaw, et. al. 2005)

In their 2005 report, Bradshaw, Connelly, Cook, Goldstein and Pauly also found that, “The existing financing system for affordable housing is complex and rigid, and typically does not recognize the long-term value of green investments. This serves as an impediment to widespread development of green affordable housing”. (Bradshaw, et. al. 2005) In addition, they found different stakeholders involved in energy efficient affordable housing. They report, “Developers, owners and residents experience different life-cycle costs and benefits of green affordable housing. For example the costs to developers range from about \$9,700 more per unit to \$34,800 less per unit in net present value (NPV) terms than the non-green alternative”, but that, “For residents of affordable housing units, the life-cycle financial outcome is almost always positive, ranging from a NPV of -\$140 to \$59,861 per unit”. (Bradshaw, et. al. 2005)

Design initiatives such as New Urbanism (NU) have been in the marketplace since the early 1990s, with the goal of bringing “people of diverse ages, races and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.” (Trudeau & Kaplan, 2015) Sustainability is linked to diversity in the long term in several ways, one of which is that diversity contributes to a city’s creativity, innovation, and economic vitality. (Florida, 2002) The second way is that, experiencing social diversity in everyday life enables

individuals to confront and reconcile difference and work toward unity in a pluralist democratic society. (Amin, 2002) Another effect still is that diversity is thought to help foster more sustainable and resilient communities. (Beatley & Manning, 1997) (Hester, Jr., 2010) Finally, social diversity is also linked with promoting social equity. (Trudeau & Kaplan, 2015)

2.3 Equity

Five dimensions of ideal, sustainable community development include increasing local economic diversity, self-reliance, reduction in the use of energy, careful stewardship of natural resources and social justice. (Bridger & Luloff, 1999) Promoting these five dimensions, economic equity will be more possible and citizens will be empowered to participate in policy decision-making at a local level. “More ambitious community sustainability efforts require additional political and economic incentives, especially in areas such as job provision, affordable housing and transit.” (Mapes & Wolch, 2011) Community sustainability requires all actors in the housing market to participate and be invested in sustainable goals. Equity cannot be achieved when some parties engage in “greenwashing”, which is when real estate entities mislead customers to believe properties are more sustainable than they actually are. (Mapes & Wolch, 2011)

Equity is a difficult goal to reach when different contributing entities disagree on achievement measures, such as the argument that there is inherent conflict in the goal of placing affordable housing units in sustainable neighborhoods. (Talen & Koschinsky, 2011) This argument against equitable housing states that, due to prime locations close to transportation and amenities being more expensive, it is not possible to place affordable housing units within. The

possibility is hampered by legacy zoning policies and regulations, which have historically prevented multi-family dwellings in suburban areas by use of low density zoning practices and the use of expensive parking fees to limit affordable housing in exclusive neighborhoods. (Kushner, 2011) From this perspective, the issue is not whether it's possible to provide sufficient subsidies to make sustainable, affordable housing availability a success, but that there is an underlying resistance to racial integration in our society preventing that success. (Talen & Koschinsky, 2011)

2.4 Social Justice in Housing

Resolution of economic and environmental conflict is imperative to achieving social housing justice (Campbell, 1996). Equity planning lies at the heart of the conflict between social justice and economic development. Economic development depends upon property but needs policy to regulate development. “The contradictory tendency is for a capitalist, democratic society to define property (such as housing or land) as a private commodity, but at the same time to rely on government intervention (e.g., zoning or public housing for the working class) to ensure the beneficial social aspects of the same property...” (Campbell, 1996) “Sustainable communities provide for the housing and living needs of all residents, and they do so without the kind of class and race-based spatial separation of households and neighborhoods that is typical of many localities.” (Bridger & Luloff, 1999)

Literature suggests residents in energy efficient housing may benefit from lower utility bills and proximity to transportation. Three published case studies; one in Santa Monica, California, Bronx, New York and San Francisco, California support this claim. All three are

different from one another in housing type; Santa Monica is a building with 44 single room occupancy units, while the houses in Bronx, New York are multi-family dwellings designed for moderate-income families and include rental units in order to offset the families' mortgage costs. In San Francisco, the project built seven apartments for single mothers with AIDS and their children, adjacent to health care facilities. There are multiple benefits to developers and owners, including "low-income housing tax credits and grants, earning rebates and other financial incentives, including increased desirability for their projects." (Levin, 2013)

Additional support for the claim that energy efficiency contributes to housing affordability comes from a 2015 report prepared by Optimal Energy for the Natural Resources Defense Council confirms energy efficiency as a contributing factor to affordable housing. The report cites findings from a study conducted on the multifamily affordable housing sector, analyzing "the savings that could be realized from implementing all cost-effective efficiency measures for electricity, natural gas, and fuel oil in the entire existing affordable multifamily housing stock in each of nine states for the 20-year period from 2015-2034"(Optimal Energy, 2015). The study included nine states, including New York State and considered several energy efficiency initiatives including:

- Wi-Fi Thermostats
- Efficient Windows
- Air Sealing
- High efficiency furnaces and boilers

New York State reportedly had the highest potential for energy efficiency savings by

implementing the above-listed initiatives. The projected achievable costs and benefits for New York State was \$3,114,000,000 for the “Base Case” scenario, which “considers only the benefits associated with energy, water, and operations and maintenance savings” (Optimal Energy, 2015). Adding other benefits such as increased property values, higher comfort levels and customer service calls results in cost savings twice that value (Optimal Energy, 2015).

2.5 Other Contributing Factors

Not all reviewed sources supported the hypothesis that local land use regulations limit sustainable, affordable development. Recently, the State of the Nation’s Housing 2017 report stated another contributing factor to affordable housing as the decline in construction since 1990, citing labor shortages, regulatory requirements, supply of land and stricter financing mandates. The report offers the following statistic: “According to the Housing Vacancy Survey, the rental vacancy rate fell for the seventh straight year in 2016, dipping to 6.9 percent its lowest level in more than three decades” (Joint Center for Housing Studies of Harvard University, 2017). The following diagram illustrates the high demand and low supply of housing:

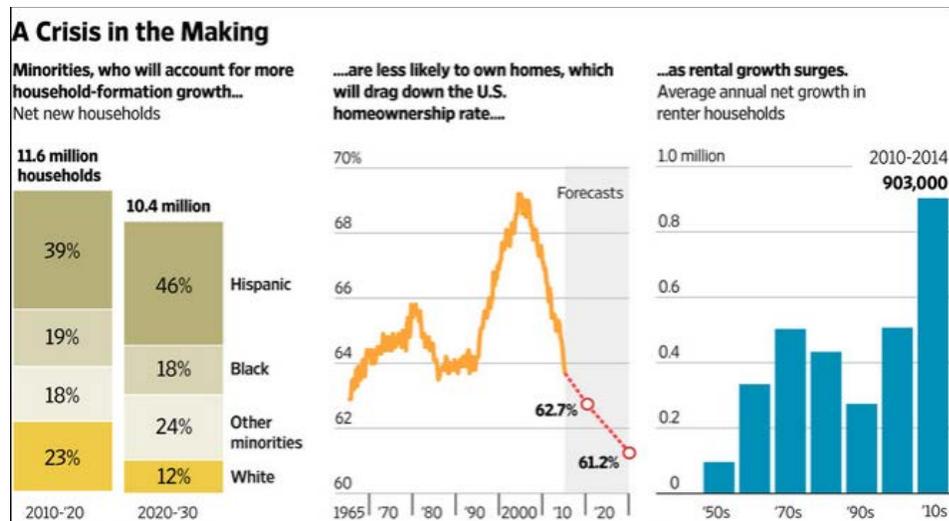


Figure 1 A Crisis in the Making (Shedlock, 2015)

The national housing shortage is projected to get worse, as well. According to the same study, “demand for owner-occupied housing could rebound sharply even as demand for rentals remains strong. Assuming that the homeownership rate stabilizes near its current level, the number of homeowner households could grow by 8.9 million in 2015–2025 while the number of renter households could increase by about 4.7 million. Moreover, even if the downtrend in homeownership continues for another five years, owner household growth would still total 4.9 million by 2025. In that case, renter household growth would hold near its recent annual pace, lifting the total increase in 2015–2025 to 8.7 million” (Joint Center for Housing Studies of Harvard University, 2017).

At a local level, the Tompkins County 2016 Housing Needs Assessment reported a housing gap around 7,000 units. The gap number illustrates the number of housing units necessary to house every family working in Tompkins County within county boundaries.

Housing units, including single-family homes and condominiums are needed in the price range of \$150,000-\$199,000. The report asserts there is a need for housing to be located within walking distance to shopping, employment, recreation, schools and easy access to public transportation. Currently, new housing is built in rural areas with access to no public transportation. The report states rental vacancy rates are 4.8% across the market, with varying rates depending on the type and location of unit, with a “net unmet need for 1,644 non-student apartments, with the net deficits existing in one-and two-bedroom apartments” (Tompkins County Housing Needs Assessment, 2016). There is a reported net oversupply in larger apartments. Student housing puts pressure on the rental market, as the report states, “Between 2005 and 2015, enrollment at our higher education institutions increased by over 2,700 students. As of 2015, less than half of college and university students lived in on-campus or purpose-built student housing, which is off-campus housing intended for student occupation and rented by the bed. While Northern and Midwestern schools typically house between 20%-35% of students in off-campus purpose-built housing, in Tompkins County only 6% of students live in such units, meaning that competition between student and non-student households for housing has grown in the last ten years. Unfortunately, this competition could significantly worsen between 2015 and 2025. Current projections indicate that there will be approximately 3,300 more students in 2025” (Tompkins County Housing Needs Assessment, 2016). Students surveyed for the study expressed the same desires for housing proximity to the same amenities as non-students (Tompkins County Housing Needs Assessment, 2016).

Another factor brought forth in the Tompkins County 2016 Housing Needs Assessment is the “Not in My Back Yard” (NIMBY) attitude of some community members. The report alleges

that, “Several projects that could have provided housing opportunities for those who need it most have floundered in the face of such opposition. Even for projects that are approved and built, high construction costs, high land costs, lengthy and often-contentious review processes, the high cost of developing in downtown Ithaca, and/or the lack of construction at a scale that allows for efficiencies, make new housing less affordable”(Tompkins County Housing Needs Assessment, 2016).

Several of the sources cited equally important obstacles, such as the balance of economy and environment with social justice in the housing market. Campbell (1996) presented a triangulated relationship between the economy, the environment and equity as competing and interrelated goals for sustainable planning. Campbell argues planners must balance these three competing interests when considering community growth, since the three triangle points each lead to conflict. The trick, according to the author, is for the planners to orient themselves within an area of the middle of the triangle and to work as a conflict negotiator between the three corners.

Levin (2013), like Campbell (1996), presents the concept of affordable housing development as part of sustainable community development, as opposed to limiting sustainability to housing exclusively, using the triangulated relationships of the economy, environment, and equity. Levin argues that building green communities benefits all parties, in limiting use of non-renewable resources, lowering operating costs for property owners and tenants, and reducing environmental impacts for society. The article cites several barriers for achieving goals for sustainable, affordable communities, such as labor costs, which is higher for projects funded with

public money, and inconsistencies between goals and regulations, such as building codes that disallow renewable materials in favor of traditional materials. Levin presents several case studies to support the perspectives presented in this article.

Talen (2013) conducted a survey of 39 developers from 19 states in the U.S. in November and December 2010, gathering input about affordable housing in neighborhoods that promote exercise, community engagement and safety through walkability, and are socioeconomically diverse. Moreover, walkable neighborhoods make jobs, services, and amenities available to low-income families lacking transportation to get to more remote locations to fulfill these needs. The researcher found that the goal of constructing such housing is increasingly difficult, due to expensive land and that, if the property is available in a location that has amenities, affordable development does not fit the developers' economic goals. Respondents to the survey stated multiple modes for achieving affordable housing goals in walkable neighborhoods, including smaller unit size, mixing low-income housing with market rate housing and staying away from "cookie cutter" houses to increase the diversity of housing stock. This article does not support my hypothesis that zoning regulations are the main reason for reduced development of affordable housing, rather offers response data for multiple reasons.

Other than zoning, one reason raised was the location in relation to available services in a given neighborhood, which would support the needs of low-income families (Talen & Kochinsky, 2011). Talen & Koschinsky (2011) hypothesize that affordable housing would be located in neighborhoods with fewer amenities, lower density and less diversity, the authors of this article used housing market data in the city of Chicago, IL to map subsidized housing and

community-based resources. The authors argue that affordable sustainability is not exclusively about lowering land cost, higher density, construction expense and energy use, but increasing access to services and that different incentive programs are more successful than others in meeting both goals. Specifically, they investigated the success of subsidized housing projects for low-income occupants versus voucher programs. The research results showed that subsidized housing was located in more sustainable neighborhoods, with better access to amenities and community-based programs than were the locations where occupants utilized housing vouchers.

CHAPTER 3

METHODS

Research for the investigation into the issues raised by the three hypotheses incorporated both quantitative and qualitative methods. An integrated approach was necessary due to the multiple components inherent when considering both affordable and energy efficient housing. Although housing justice is present in economic, environmental and societal realms, there is an overlap of the three and one cannot be addressed in the absence of the others.

3.1 Empire State Poll

The first hypothesis is that requiring sustainable affordable housing in communities is an unpopular concept and the attitude of “NIMBY” (Not In My Backyard) of the general public in New York State inhibits progress toward increasing affordable, sustainable housing stock. To test this hypothesis, the researcher submitted two questions for inclusion in the 2017 Empire State Poll.

The Empire State Poll is an annual, general survey, by the Cornell University Survey Research Institute (CISER), of adult New York State residents, age 18 and over. The Empire State Poll is a combination of an annual core of workplace, community, governmental, economic, media measures, omnibus modules, and special topical issue questions (CISER). The 2017 Empire State Poll (ESP 2017) was the fifteenth such survey conducted by the Survey Research Institute at Cornell University (SRI). The survey sample consisted of a dual-frame random digit-dialing sample, covering both cellular and landline exchanges for New York State,

purchased from Marketing Systems Group. Once a household was sampled, every adult had an equal chance to be included in the poll. With 800 respondents (400 upstate and 400 downstate), in no more than one time in twenty should chance variations in the sample cause the overall ESP 2017 results to vary by more than 3.5 percentage points from the results that would be obtained if all New York state residents were interviewed. The sampling frame was split between upstate and downstate residents, allowing comparisons between the whole state and these geographic regions with a one in twenty chance of sampling error greater than 4.9 percentage points (Survey Research Institute, 2017).

The random sampling frame used within the ESP 2017 allowed the poll results to be generalized to the entire state. Using the provided weight may have made such generalizations variable, though all results reported herein are based on un-weighted data.

Telephone data collection for the full study began on February 2, 2017 and ended on April 8, 2017. Interviews were conducted in English and Spanish using a Computer Assisted Telephone Interviewing (CATI) software system. The average interview length was 25 minutes.

Table 2 Survey Overview

Project initiated	November 1, 2016
Data delivered	April 17, 2017
Data collection started	February 2, 2017
Data collection completed	April 8, 2017
Mode of data collection	Computer assisted telephone
Average interview length	25 minutes
Total interviews completed	800

CISER, 2017

Table 3 Response Outcomes

Complete	800
Language barrier	98
Age ineligible (<18 cell phone)	72
Too ill to respond	10
Not in New York	202
Bad number	3679
Not a household	181
Refused	468
Inactive (called 6+ times)	1256
Total	6766

CISER, 2017

In order to develop the questions for the ESP 17, the researcher worked in coordination with the thesis advisement committee and fine-tuned the survey questions in collaboration with the Operations Manager of CISER. Since CISER has conducted Empire State Poll for many years, there is historic information regarding the formatting of questions to best elicit informed responses from the participants.

Application for approval by the Cornell University Internal Review Board for Human Participants (IRB) was submitted by CISER as continuation of existing approval for Protocol #0908000764. Approval was granted February 1, 2017 and expired January 31, 2018.

Empire State Poll 2017 Questions:

1. How much would you support or oppose regulations requiring future housing development in your community to comply with energy efficient housing standards? Requirements could include reduced parking to encourage people to walk or use public

transportation, high efficiency furnaces to conserve fuel usage, and double pane windows for improved insulation.

Response Options:

- <1> Strongly oppose
- <2> Somewhat oppose
- <3> Neither support nor oppose
- <4> Somewhat support
- <5> Strongly support
- <d> Do not know
- <r> Refused

2. To what extent would you support income-based affordable housing in your community? This housing would be built by developers to be purchased by buyers whose household income does not exceed 60% of the average household income in your county.

Response Options:

- <1> Strongly oppose
- <2> Somewhat oppose
- <3> Neither support nor oppose
- <4> Somewhat support
- <5> Strongly support
- <d> Do not know
- <r> Refused

In addition to these questions and those submitted by other researchers, there was a core of demographic information collected as part of the survey, either provided by Marketing Systems Group (MSG) or solicited from the respondents by the interviewers. Demographic information collected included the following markers:

- Area Code (provided by MSG)
- City (provided by MSG)

- MSC Code (provided by MSG)
- Metropolitan Statistical Area (MSA)
- Core Based Statistical Area MSA (CBSAMSA)
- New York State Region (upstate/downstate)
- New York State Economy – Past Year (reported by respondent)
- New York State Economy – Next Year (reported by respondent)
- Social Ideology
- Political Affiliation
- Education Level
- Church Attendance
- Religious affiliation
- Household Income
- Country of Birth
- Marital Status
- Race (reported by the respondent)
- Gender

Of the markers listed above, all except Country of Birth, City, Metropolitan Statistical Area and Core Based Statistical Area MSA emerged as statistically significant.

3.2 Interviews

The second hypothesis is that local land use regulations limit sustainable, affordable development, while the third hypothesis presented is that sustainable planning which includes

benchmarks for affordability is not a high priority concept for community planners. In order to gather data regarding current practices in local planning and housing development, interviews of planners, developers and lenders in the Town of Ithaca and City of Ithaca were conducted.

The researcher chose planners, developers and lenders as significant stakeholders because of the magnitude of impact each has on energy efficiency and affordability in the housing market. Planners at the county, city and town level in the Ithaca are integral in the development and enforcement of policies and influencing development. Local developers are involved in not only housing construction but contribute to community planning meetings and policy development. Lenders can influence home buyers by offering loan products geared toward low-income buyers or that reward buyers of energy efficient properties with low interest rates or grants.

Interviewing planners, developers and lenders in Greater Ithaca allowed gathering of information regarding implications of current policy. Community planners have an obligation to meet the needs of a diverse community to support economic growth while meeting the needs for necessary housing. Information was gathered by interviewing city and county planners as well as lenders, in order to develop a comprehensive picture regarding whether and how those individuals and their contemporaries have planned to incorporate affordable, high performance housing into the long-term plans of the cities. Historic information about previous successful or failed policies was sought.

The researcher developed interview questions with oversight by the thesis advisement committee. Separate sets of questions were developed for each of the three types of interviewees;

planners, developers and lenders. Each set of questions was limited to three or four questions, in order to limit the interview time. It was the goal of the researcher to conduct interviews that took between one half hour and one hour.

The researcher submitted application for approval for exemption by the Cornell University Internal Review Board for Human Participants (IRB) on June 19, 2017. Exemption was sought as the research focused on policies, not on the individuals from whom data was collected. Approval by the IRB for the interviews, listed as Protocol #1706007260 was granted on June 26, 2017.

Interview participants were selected based upon the researcher's contacts in their academic and professional network. The researcher managed nearly one hundred projects on the Cornell University campus between June 2007 and August 2016 and interacted with numerous municipal representatives during plan review and New York State Code inspections. One of the first interview subjects was the professor in a course taken by the researcher in Fall 2016. Additional interview subjects were recommended to the researcher during the first several interviews. Several suggested interview subject were not appropriate for this study, as their professional profile did not align with any of the three professions identified by the researcher and approved by the IRB. In total, fifteen interviews were solicited. Interviews were successfully conducted with the following subjects:

Lenders: 2

Planners: 3

Developers: 2

One developer represents a local not-for-profit firm, which also provides lending services to its clients. That interview subject responded to questions for both developers and planners.

Interview Questions:

Planning & Zoning – these questions focus on how zoning policies affect energy efficient and affordable zoning policies in Ithaca, Newy York:

1. Has inclusionary zoning ever emerged as a policy proposal in (the Town/City) of Ithaca?
2. What types of responses did the decision makers have when the policy was introduced?
3. Were there fears that inclusionary zoning would inhibit development in this area?
4. Have existing zoning laws prevented the approval of projects that would have otherwise added affordable and energy efficient units in the housing stock in Ithaca?

Lenders – these questions focus on the impact of lending as a contributing factor to energy efficiency in the housing market:

1. What role does energy efficiency play in your residential lending products?
2. What lending programs does your financial institution have that supports both affordable and energy efficient housing purchase?
3. Do you have outreach programs (matched savings, learning seminars) to enable the low-income (60% of median family income in Tompkins County) population to purchase energy-efficient residential units? If so, how successful have these programs been?

Developers – these questions focus on the level of interest developers have in energy efficiency

as it contributes to affordability:

1. What is the value added for pursuing projects that yield affordable, energy efficient housing units?
2. Have they encountered additional costs or time delays on projects with such goals?
3. What processes and reviews imposed by localities have enabled or hindered such projects?

CHAPTER 4

FINDINGS

4.1 Survey Results

4.1.1 ESP17 RFQ1 – Support of Energy Efficiency Regulations

The first question asked was “How much would you support or oppose regulations requiring future housing development in your community to comply with energy efficient housing standards? Requirements could include reduced parking to encourage people to walk or use public transportation, high efficiency furnaces to conserve fuel usage, and double pane windows for improved insulation.” Overall, 73.9% of respondents replied they would either “somewhat support” or “strongly support” energy efficient regulations. Conversely, only 14.3% of respondents indicated they would either “somewhat oppose” or “strongly oppose” energy efficient requirements. The full results are as follows:

Table 4 Respondent Data ESP17 RFQ1

% Valid	% All	N Value	Label
7.3	7.3	58	1-Strongly Oppose
7.0	7.0	56	2-Somewhat Oppose
11.8	11.8	94	3-Neither Support Nor Oppose
30.7	30.6	245	4-Somewhat Support
43.3	13.3	346	5-Strongly Support
	0.1	1	2 - Do Not Know
	0.0	0	1 - Refused

100.0	100.0	800 Cases	
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Within the data, multiple correlations were evident. In response to this question, support for energy efficiency regulations is positively correlated with the participants' beliefs that the New York State economy has gotten better, $r(790) = .13, p < .001$. Respondent data indicated support for energy efficiency regulations is negatively associated with the degree to which one identifies as conservative in social ideology, $r(793) = -.23, p < .001$. Support for energy efficiency regulations is negatively associated with the degree to which one identifies as Republican (vs. Democrat), $r(793) = -.23, p < .001$. Data indicates support for energy efficient regulations is positively associated with participants' education level, $r(793) = .13, p < .001$. Finally, respondent data indicates support for energy efficiency regulations is negatively associated with the frequency that participants attend church, $r(796) = -.12, p < .001$.

Analysis of variation calculation (ANOVA) analyses identified statistically significant difference in support for efficiency regulations by type of religion, $F(6, 790) = 2.89, p < .01$. Specifically, those who indicated "no religion/atheist/agnostic" were more likely to support regulations than those who identified as "Orthodox Christian" and as "Protestant".

4.1.2 ESP17 RFQ2 – Support of Affordable Housing Regulations

The second question asked was; "To what extent would you support income-based affordable housing in your community? This housing would be built by developers to be purchase by buyers whose household income does not exceed 60% of the average household income in your county." Overall, 68.3% of respondents replied they either "somewhat support"

or “strongly support” affordable housing in their neighborhood. Conversely, 16.9% of respondents would either “somewhat oppose” or “strongly oppose” affordable housing in their neighborhood. The full results are as follows:

Table 5 Respondent Data ESP14 RFQ2

% Valid	% All	N Value	Label
9.5	9.5	76	1-Strongly Oppose
7.4	7.4	59	2-Somewhat Oppose
14.8	14.8	118	3-Neither Support Nor Oppose
26.4	26.4	211	4-Somewhat Support
41.9	41.8	334	5-Strongly Support
	0.3	2	-2 Do Not Know
	0.0	0	-1 Refused
100.0	100.0	800 Cases	

Within the data collected in the survey, multiple correlations were evident. In response to this survey question, respondents indicated support for affordable housing is negatively correlated with the degree to which one identifies as conservative in social ideology, $r(793) = -.23, p < .001$. Respondent data indicates support for affordable housing is negatively associated with the degree to which one identifies as Republican (vs. Democrat), $r(793) = -.28, p < .001$. Support for affordable housing is negatively associated with the frequency that participants attended church, $r(796) = -.09, p < .05$. Finally, support for affordable housing is negatively correlated with household income using the survey coded income assessment, $r(774) = -.10, p < .01$.

ANOVA analyses identified statistically significant difference in support for affordability

regulations by Metropolitan Statistics Code (MSC), $F(4, 793) = 4.63, p < .001$. Specifically, those who indicated “In the Center City of a Metropolitan Statistical Area (MSA)” were more likely to support affordable housing than those who identified as “Outside Center City (but Inside County)” and as “In an MSC that has no MSA”.

ANOVA analyses identified statistically significant difference in support for affordability regulations by MetSTATUSCODE (CBSAMSA), $F(3, 794) = 5.40, p < .001$. Specifically, those who indicated “In the Center City of an MSA” were more likely to support affordable housing than those who identified as “Outside Center City (but Inside County)”.

“Downstate” participants were more likely to support affordable housing than were “upstate” participants, $t(791) = 3.16, p < .01$.

ANOVA analyses identified statistically significant difference in support for efficiency regulations by country of birth, $F(2, 796) = 4.34, p < .05$. Specifically, those who were born outside of the US (not to an American) were more likely to support affordable housing than those who were born in the US.

ANOVA analyses identified statistically significant difference in support for efficiency regulations by marital status, $F(5, 788) = 4.88, p < .001$. Specifically, those with “separated” marital status were more likely to support affordable housing than those who were “married”. White participants were more likely than non-White participants to support affordable housing, $t(790) = 4.92, p < .001$.

Black participants were more likely than non-Black participants to support affordable housing, $t(790) = 4.65, p < .001$.

ANOVA analyses identified statistically significant difference in support for affordable housing by religion, $F(6, 790) = 4.90, p < .001$. Specifically, those who indicated “no religion/atheist/agnostic” were more likely to support regulations than those who identified as “Orthodox Christians” and as “Catholic”. Moreover, those indicating “Orthodox Christian” were less likely to support affordable housing than were those indicating “Other non-Christian religion”.

Women were more likely than were men to support affordable housing, $t(791) = -2.10, p < .05$.

Analyses of participants’ response to both questions indicates support for efficiency regulations was positively associated with support for affordable housing, $r = .38, p < .001$.

4.2 Interview Results

4.2.1 Interview Responses by Respondent Type

Planners

The following tables summarize respondents’ answers to questions asked during interviews:

Table 6 Planners - Question #1

	Has Inclusionary Zoning ever emerged as a policy proposal in your municipality?
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Planner 1	Has been discussed among committees has not gone before the board and there has never been a vote. There is no concrete proposal.
Planner 2	Yes. The planning office brought forward a proposal in April of 2016. The proposal was drafted as inclusionary zoning requirement with incentivized, voluntary up-zoning for increased density. It wasn't an action item, rather a discussion item.
Planner 3	Respondent was part of a public process to review form-based zoning for several development projects in the Ithaca area.

Table 7 Planners - Question #2

	What types of responses did the decision makers have when the policy was introduced?
Planner 1	There is interest in requiring developers to include a certain percentage of affordable units within a development. There are questions about what is the definition of affordability and how to maintain affordability after the initial purchase of a housing unit.
Planner 2	Responses were varied. One committee member was very critical of additional layers of bureaucracy associated with developing and implementing an inclusionary zoning program for the number of units expected to be built.
Planner 3	Positive responses at 3-day Town Hall community event.

Table 8 Planners - Question #3

	Were there fears that inclusionary zoning would inhibit development in this area?
Planner 1	No, but the planning committee has been considering both inclusionary and form-based zoning to replace existing zoning regulations. Respondent report both are thought to be friendlier than existing “floating zones” and would give potential developers a better idea of what is allowed in different areas of the Ithaca region.
Planner 2	Yes – inclusionary development is seen as a tax on development, to add affordable units. The proposed inclusionary zoning required affordability at 60% of the area median income. Another fear was that the overall supply of housing wasn't going to be increased enough, and that developers would go outside the City of Ithaca to avoid complying.
Planner 3	Respondent reported existing zoning to be more detrimental than inclusionary or form based zoning would be.

Table 9 Planners - Question#4

	Have existing zoning laws prevented the approval of project that would have otherwise added affordable + energy efficient units to the housing stock in Ithaca?
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Planner 1	The current zoning regulations were described as old-fashioned, with large lots requirements and mostly single-family houses. Respondent considered existing zoning to be an impediment to affordable housing and energy efficient housing.
Planner 2	Respondent did not know of any individual projects that actually got to the point of being turned down formally by the Planning Board. Respondent stated, “The reputation [of the process in Ithaca] precedes us in some regards”.
Planner 3	Yes, because developers and the general public are not aware of the complexities associated with navigating the existing process. Respondent commented that “There’s a handful of people that seem to be able to kind of dictate what development looks like and how it will be done.”

Lenders

Table 10 Lenders - Question #1

	What role does energy efficiency play in your residential lending products?
Lender 1	Respondent stated it does not play a role.
Lender 2	Respondent reported the bank they represent has a “wide range of home equity products to improve energy efficiency in peoples’ primary residence”.
Lender 3	Respondent reported the entity they represent manages the Tompkins County Homeownership program, which provides a grant to eligible applicants of up to \$5,000 for energy upgrades to a house purchase.

Table 11 Lenders - Question #2

	What lending programs does your bank have that supports both affordable and energy efficient housing?
Lender 1	Respondent stated the bank has none specifically, but writes loans using SONYMA resources.
Lender 2	None of the reported mortgage programs support both affordable and energy efficient housing.
Lender 3	The respondent works for a not-for-profit entity that supports both affordable and energy efficient housing because they include monthly housing costs when considering the buyer’s ability to afford the purchase of the house.

Table 12 Lenders - Question #3

	Do you have outreach programs (matched savings, learning seminars) to enable the low-income (60% of area median income in Tompkins County) population to purchase energy-efficient residential units? If so, how successful have these programs been?
Lender 1	Respondent stated there are no such programs at the bank they represent.

Lender 2	The bank represented by the respondent has outreach programs, participates in homebuyer education and offers financial counselors and independent development accounts with two types of matched savings programs.
Lender 3	Respondent reported there are outreach programs for affordability and educational programs for energy efficiency.

Developers

Table 13 Developers - Question #1

	What is the value added for pursuing projects that yield affordable, energy efficient housing units?
Developer 1	There is a balance between the energy efficiency added to building a house and meeting budget parameters. The value added is on behalf of the buyer, who can afford a higher quality house, as the monthly operating costs will be lower than a house without the energy efficiency upgrades. There is benefit to the community, with increased economic diversity within the homeowner demographic.
Developer 2	The respondent reported there is no value added from a strictly developer standpoint. Regarding energy efficiency, the respondent stated, “But it does cost, you know, extra insulation on the exterior & ceiling. But I think that has a return, you know, lower lifecycle operating costs, for everybody”.

Table 14 Developers - Question #2

	Has the developer encountered additional costs or time delays on projects with such goals?
Developer 1	The additional costs have been associated with LEED certification and the additional time and administration required achieving the certification. Respondent reported there is additional value in the LEED certification, in that all of their projects depend on outside funding, which is usually a competitive application process. The developer gets points for the LEED certification on their application.
Developer 2	Yes, on a local project, the developer was interested in building middle-income, senior housing. Respondent reported wanting to fulfill a market demand for retirement housing in a walkable neighborhood. The review process, including the Ithaca Landmark Preservation Commission, was lengthy and the community was emotional about the prospect of a large construction project in their area.

Table 15 Developers - Question #3

	What processes and reviews imposed by localities have enabled or hindered such projects?
Developer 1	Respondent reports no hindrances in the City or Town of Ithaca.
Developer 2	The planning process in Ithaca is very politicized, reported the respondent. [At]“City Center there is a developer there came in from out of town and they saw the zoning of the zone to CDD 150, 100% lot coverage and that...implies that you can build a building of a certain volume and height and so on, and you base the land price on that and you base your returns on... well I'm going to build but zoning tells me I can build. But then when the city council says "oh well, we didn't really mean it." There were reportedly unexpected delays for planning board reviews and approvals. The respondent explained the planning board has architectural input, which is inappropriate.

4.2.2 Responses by Hypothesis

4.2.2.1 Hypothesis 1

The first hypothesis is that requiring affordable, energy efficient housing in communities is an unpopular concept and the attitude of “NIMBY” (Not In My Backyard) of the general public in New York State would not support policies mandating affordable, energy efficient housing. Only one respondent, a planner, responded that affordable housing is an unpopular concept, and specified that was not necessarily the case in the downtown Ithaca area. Rather, the respondent explained the community of Trumansburg, a suburb of Ithaca, has encountered “NIMBY” resistance to a new development by Ithaca Neighborhood Housing Services (INHS) in that location.

Subsequent to the interview, information regarding the project was located in the Ithaca Voice, “an online-only news and information site serving the Ithaca area and Tompkins County” (www.ithacavoice.com). The development was in its early stages and called Hamilton Square. The Hamilton Square project, according to the Ithaca Voice; “The current concept for Hamilton

Square calls for 77 units of mixed-income and ownership, a decrease from about 90 units shown in three proposals at an open house earlier this month. Up to 15 units would be developed and sold by property owner Claudia Brenner at market rate. Another 15 units would be developed by project partner INHS and sold to lower-middle families as part of their Community Housing Trust for affordable owner-occupied housing. The remaining 47 would be affordable rentals owned and managed by INHS” (Ithaca Voice, May 19, 2017).

The planner reported there were “a variety of reasons” for the opposition about which they did not elaborate, but went on to say, “Generally, once of the problems with the major program for affordable housing...is you have to do it on a scale of 40 – 60 units per project. Which, in a small town [such as Trumansburg] can be viewed as out of scale.” The Ithaca Voice reported a community member stating, “it was "very problematic" that Section 8-qualified tenants might move into the village” (Ithaca Voice, May 19, 2017). A petition published in the Ithaca Voice on July 3, 2017 and signed by 80 Trumansburg community members opposes the proposed development at Hamilton Square with a “NIMBY” message. The petition explains the community feels the development is too dense as compared to other neighborhoods in Trumansburg and the traffic created by the increase in residents and supporting services does not align with the Village of Trumansburg’s “quiet, rural character” and should be more “thoughtfully integrated with the surrounding neighborhood context” (Ithaca Voice, July 3, 2017).

Less than two weeks later, the Ithaca Voice reported about a Trumansburg community meeting attended by approximately 150 residents, most of whom loudly opposed the new

Hamilton Square project. There was reportedly much “NIMBY” opposition, with residents expressing “concerns about how a transient population would impact the quality of the housing project and the surrounding area” (Ithaca Voice, July 14, 2017). Reportedly, less than “half a dozen people spoke in favor of the housing” (Ithaca Voice, July 14, 2017).

Responding lenders indicated the banking industry does not consider affordable housing or energy efficient housing in terms of popularity. Rather, banks analyze housing purchases based upon the risk associated with lending to an individual and the value of the collateral for the loan. According to both lenders interviewed, banks lend to individuals at differing rates depending on current interest rates and a person’s credit score. Higher credit scores are eligible for lower interest rates, while lower credit scores borrow at higher interest rates.

Lenders reported the main consideration for loan collateral is the value of the house for purchase. Interview respondents stated that bank appraisers evaluate, and then appraise, a house structural and interior condition based on its comparison to other similar houses in the area. As long as the appraisal for the house indicates it is worth as much as the requested loan, the bank will consider lending against it. The respondent lenders both indicated the energy efficiency does not affect the value of the house as part of the appraisal. One banker stated, “You certainly won’t get a better interest rate or better terms because there’s good insulation. You also won’t generally get, on most mortgage products, a better rate or terms simply because it has solar [power] or geothermal [heating].” Interview results showed houses with energy efficient attributes may even be less desirable as loan collateral, as one lender suggested, “Let’s say an off-grid straw bale home that you know everything’s electric and on solar and completely,

completely off-grid with composting toilets...no lender is going to want that because they can't foreclose on it and sell it quickly."

Banks are limited in the degree to which they can oversee lending based on house characteristics, as well. Bankers use appraisals to assess property values and will not lend without one. However, according to one lender respondent, banks are not able to mandate structural and condition inspections to evaluate energy efficiency as part of the overall cost to own and operate the house. The respondent said, "It's outside the standard of practice." One respondent summed up their response as, "So what role does energy efficiency play [in lending]? I think the shortest answer I could give is – it doesn't play a role."

One banker pointed out that Ithaca Neighborhood Housing Services (INHS), as part of their affordability initiative, does consider energy efficiency as a contributing factor to housing cost. INHS requires energy audits of houses for which they are providing financing. Specifically, a respondent reported that INHS "manages a program called Tompkins County Homeownership Program which uses funds from the Community Development Block Grant Program to provide...down payment and closing cost assistance loans. But energy efficiency was an important part of it so... they added this component, in addition to the... about \$25,000 down payment closing cost assistance loan. [The buyer] will be eligible for another \$5,000 to do energy upgrades. Therefore, in the program, INHS requires everybody to get an energy audit. Once they get the energy audit, INHS treats that as an educational opportunity. The buyer gets to understand what their house is like and what they can do to improve it. And if they want to take the next step INHS gives them a \$5,000 grant to do that."

Another lender contributed that the State of New York Mortgage Agency (SONYMA), offers a down payment assistance loan toward homes labeled as Energy Star compliant. According to the SONYMA website, “New York ENERGY STAR® labeled homes are typically 20% to 30% more energy efficient than a standard home and can save homeowners hundreds of dollars annually.” (New York State Homes and Community Renewal) SONYMA states the features of the down payment assistance loan are as follows:

- 0% interest rate;
- Requires no monthly payments and is forgiven after 10 years;
- Minimum loan is \$1,000;
- Maximum loan is the higher of:
 - \$3,000; or
 - 3% of the home purchase price (up to a maximum of \$15,000).

(New York State Homes and Community Renewal)

From a purely traditional financial institution perspective, interview respondents reported the lending industry itself does not consider energy efficiency to be an integral component for consideration for housing purchase.

4.2.2.2 Hypothesis 2

The second hypothesis is that local land use regulations limit sustainable, affordable development. Interview data showed that planners and developers consider existing zoning

regulations and review process in the City and Town of Ithaca to be limiting factors for development of market rate and affordable housing units. Problems cited during interviews were minimum lot sizes and setbacks, rigid standards, subjective appeals process and off-street parking requirements as contributing factors. The City of Ithaca categorizes residential units as R-1, R-2, R-3 or R-U and all require minimum lot sizes and all require street frontage of a minimum 50 feet or more plus setbacks for yards surrounding a structure. Additionally, each residential type has height limitations by story and in feet (City of Ithaca). The Town of Ithaca is not as prescriptive regarding land use (Town of Ithaca). Interview data from both planners and developers showed zoning in the City and Town of Ithaca is difficult to navigate.

Even with prescriptive zoning regulations, application of zoning regulations is reported to be ambiguous in the Ithaca area. One planner said, “Well, the fact is that zoning kind of exists as this sort of invisible force on the environment. It’s kind of like gravity – omnipresent but largely unseen, until somebody decides to propose something on a parcel, right?” Another planner reported that lot limitations require many prospective developers to apply for a variance, which leads to an appeals process: “Therefore we set everybody to have to go through the Zoning Board of Appeals which is a process in which your neighbor can...gets to be able to make a case against you and you have to prove why you should be authorized a special right. So it's really setting the bar in a way you have to prove that as a developer you should get the rights to...for the special rules. And that's probably not a good way to encourage development.”

Large lot requirements, setbacks and building size limitations lead to high land cost, interviews revealed. While this is not an exhaustive list of factors driving land cost, large lot

requirements, setbacks and building size limitations are worth mentioning because each planner interviewed in the research raised these three items. Every planner interviewed responded that zoning requirements for minimum lot sizes results in higher cost to purchase property. One planner went as far as saying “Minimum lot sizes were probably, in terms of the history of zoning the most effective deterrents to keeping out people who are low income or need affordable housing.”

Each planner reported that higher property costs limit developers’ ability to include affordable units in housing developments. One planner reported in Ithaca, “It is kind of our old fashioned zoning, you know, with larger lots, I think it’s an impediment to affordable housing.” An interview with another planner resulted in the following observation: “We've seen properties appreciate quite rapidly in College Town and downtown in their values and a lot of it is due to the - in my mind - the zoning has allowed some higher density. The city's investment in the Commons and in making the downtown area an attractive place to live or to go. But meanwhile when a developer comes to town and wants to buy a property downtown they have to pay the high price to buy that land and that means it's hard for them to do housing that is lower than market rate.”

This same planner suggested revisions to the zoning code – reduction in minimum lot sizes and setbacks - would allow less expensive housing to be built. Reportedly, local municipalities are considering such revisions: “...they want to look at a broader housing strategy which could include inclusionary zoning, incentive zoning. Revising zoning to allow to enhance more accessory units - free that up. New Urban News has a very interesting model for a small

house lot. So you had a double lot... if you had a lot and a half right now in Fall Creek...you have a big side yard, but it's not big enough to build a second home on, their concept is you could create lots that are micro lots but you have to limit the size of the house that would go on it. It would be a way for affordable for-sale housing in theory and in demand neighborhoods where there is you know little parcels that have a little extra land area it'd be one-offs

The planners interviewed unanimously responded that existing zoning regulations limit market rate and affordable development. Moreover, all interviewed planners reported that existing, popular neighborhoods in Ithaca could not be replicated due to zoning regulations. One responding planner lamented, “Fall Creek [an Ithaca neighborhood] is beautiful. It’s a beautiful neighborhood. Walkable. Great. People have a certain vision of what it is. And were it – Fall Creek – to burn down tomorrow, barring any grandfathering, you actually couldn’t end up rebuilding it today. The reason why is that there are a number of requirements in the zoning that make it impossible – literally impossible – to create the same kind of built environment that people actually cherish because of little things, like this is just one example – lot coverage, for instance – all those houses [pointing out window at nearby houses] every property there takes up too much of the lot”. When asked if the planner was referring to compliance with lot sizes, the planner stated; “That’s a whole other piece, this is not even talking about setbacks. This is just lot coverage.”

4.2.2.3 Hypothesis 3

The third research hypothesis is that housing development that is both affordable and energy efficient is not a high priority concept for housing planners in Ithaca, New York.

Interviews with lenders, planners and developers revealed different perspectives regarding affordability and energy efficiency and varying degrees of priority from different stakeholders. Overall, there is interest in energy efficiency as it is required by New York State Code compliance, but energy efficiency is not considered a component of affordability except within specialized sectors of the market. Affordability and energy efficiency are, with little exception, treated as separate constructs.

Interviews with traditional lenders resulted in data showing standard banking practices consider only the market value of collateral when considering loans. All responding lenders expressed personal interest in affordable housing as well as energy efficient housing but explained the industry does not consider energy efficiency as a contributing factor to affordability. One lender reported niche programs to “encourage using a wide range of home equity products to improve energy efficiency in peoples’ primary residence.” However, went on to say, “Someone has to already own the house and have equity in the property in order to borrow with these home equity products but we have special rates for energy efficiency and solar installations”. The lender also noted there are consumer loans with low interest rates, in the event a person does not have equity in their house. “We offer great rates, very low rates for unsecured money, a maximum of \$25,000 which is a [large amount] for unsecured money. We also have a relationship with our local solar installer where they actually will pay the first year of interest”.

All responding planners reported a high prioritization for affordable housing. Each planner interviewed expressed concern with the need for affordable housing in Ithaca. One planner stated their experience with the City of Ithaca Planning Board as “pretty hostile to

initiatives like affordable housing, anything that even smacks of greater density or hints at it".

Another planner expressed the planning committee in his or her municipality has the desire for regulation that requires affordability for housing developers, explaining they are considering "regulation - some requirement of developers for a certain percentage of within a development of a certain number would be affordable. But the issues are you know what does affordable mean? Where are you going with that? How do you maintain it to be affordable like how does the [municipality] have some kind of program? So there's that idea of requiring a certain percentage. But one of the problems one of the reasons for not having affordable, and I guess we can talk about what is affordable too, is the zoning we have in place now... It's kind of an old fashioned zoning where you know single family homes large lots are allowed here".

It became evident when interviewing the planners for this research that they all considered affordability a high priority and that their municipal entities were struggling to incorporate them in a manner beneficial to both developers and the community. A responding planner was very detailed in how affordable housing had been considered in their municipality, sharing that, "the most effective inclusionary zoning ordinances are tied to enough zoning that allows you to upzone and increase density if you include affordable units for the demanded units or provides other incentives such as eliminating or reducing off street parking requirements. In the case of Ithaca we upzoned and reduced off street parking requirements previously in many of the targeted areas for development. So we kind of in one sense giving that away already we didn't link it to the ordinance. So we...and it was driven in part by a sense that the most appropriate area in the county for development is near transit and services where existing. Water, sewer, streets all exist such as downtown and Collegetown so the city went through an upzoning

process under Mayor Myrick and in areas that were deemed to be appropriate we increased the density and eliminated off street parking requirements. But we didn't tie that to affordability. So actually one thought was when we brought up the inclusionary zoning was, should we downzone those areas again to allow them to be upzoned if they include...So we would have some leverage or some financial incentive for them to do for developers to incorporate units into the properties. So one of the issues that came up with that at that time and why we hadn't proceeded with mandatory was a concern that we weren't going to increase the overall supply. Because developers could go outside the [municipality limits], and develop and they are now and it would create greenfield development or pressure for more greenfield development further away for transit more in the open green spaces. And that could be counterproductive. And there was a concern that was one level of concern the second concern was that the way we had structured the mandatory inclusionary units were that we had units that were very low income. So they required a deeper subsidy than if we said you must build a unit include a unit that's affordable to someone you know 100 percent of area mean income. Like let's say fifteen hundred dollars for a two bedroom unit versus eleven hundred dollars. And the sense was that we would see if projects went forward they would be luxury units to support that subsidy”.

As a separate issue, one planner reported high prioritization of energy efficient housing, explaining an initiative under way in the City of Ithaca to adopt an updated energy code. The new energy code, which is under development, would require higher standards for housing and commercial building and renovation in order to achieve the City of Ithaca’s goal to reduce greenhouse gas emissions 80% by 2050 (Request for Proposals: Ithaca Green Building Policy Project. (2016, September 19).

Developer interviews revealed one respondent did not consider affordability a goal for their development projects, stating, “It costs the same to build an affordable unit as it does a market rate unit. The construction cost is the same”. And considers the age of housing units to be a contributing factor to their affordability, offering, “And the more housing you build eventually you'll tip the scales and you don't have to always...Today's luxury housing becomes tomorrows moderately priced housing”, inferring that housing becomes affordable after moderate-income families discard it.

Another responding developer represented a firm that has a specialized stakeholder position as both developer and lender and expressed their firm as having “a mission of helping people achieve housing affordability over the long term. And because of that mission it's always been important to us to try to improve energy efficiency in homes because paying utility bills is obviously a monthly housing cost that you can manage and do something about”. This was the only interview subject that tied energy efficiency to affordability.

CHAPTER 5

DISCUSSION

The primary goals of this research were to determine the reasons for the gap in development of housing units in Tompkins County, New York that comply with both affordability and energy efficiency parameters. The emerging themes were:

Whether New York State residents support affordable housing policies and energy efficient housing policies. This study sought to test the acceptance level of the public for support of affordable and energy efficient housing.

Whether or not existing zoning regulations in Ithaca hamper implementation of affordable, energy efficient housing units. This study investigated whether zoning, building code and land use regulations inhibit development of housing that serves low-income households but is also energy efficient.

Whether or not community planners consider energy efficiency a component of affordability and include it as a high priority. This study sought to understand the priorities of local lenders, planners and developers in their strategies when considering how to solve gaps in housing products for different demographics in Tompkins County.

5.1 Public Support

5.1.1 Survey Respondents-General

The first research hypothesis is that requiring affordable, energy efficient housing in New York State communities is an unpopular concept and the attitude of “NIMBY” (Not In My Backyard) of the general public in New York State would not support policies mandating affordable, energy efficient housing. Testing of this hypothesis was conducted using the CISER Empire Poll survey, showing overall results contradictory to the hypothesis. Overall, 73.9% of survey respondents replied they would either “somewhat support” or “strongly support” energy efficient regulations. Overall, 68.3% of survey respondents replied they either “somewhat support” or “strongly support” affordable housing in their neighborhood. Finally, interview data was not supportive of the first hypothesis. Survey and interview data revealed considerable support for affordable and energy efficient housing development.

When examining the survey results by demographic, results varied. Support for energy efficient housing regulations was positively correlated with the following:

- Respondent’s belief that the New York State economy has gotten better over the past year
- Participant’s education level
- Degree to which the participant identifies as non-religious

Support for both affordable housing and energy efficient housing regulations were negatively correlated with the following:

- Degree to which respondent identifies as conservative in social ideology
- Degree to which respondent identifies as Republican

- Frequency with which the respondent attends church

The survey results also showed women were more likely than men to support affordable housing.

The 2015 census data for Ithaca shows equal percentages of men and women (Census Reporter). In the 2016 election, within Tompkins County, 24% of participating voters voted for the Republican candidate, while 76% voted for either the Democratic or other candidate. In 2010, Tompkins County data showed 77.2% of residents adhered to no religion. In 2015, 69.9% of Ithaca residents reported education attainment of higher education beyond high school (City-Data):

- Associate Degree – 6.1%
- Bachelor’s Degree – 28%
- Master’s Degree – 24.6%
- Doctorate Degree – 11.2%

Tompkins County and specifically, Ithaca, New York, shares demographic attributes that align with the survey respondents throughout New York State which indicate those residents may also be supportive of affordable and energy efficient housing.

The overlap of demographic makeup of supportive survey respondents across New York State and residents in the Ithaca area indicates the residents of Ithaca would be supportive of these policies as well. This is significant, because Ithaca is environmentally progressive, with a countywide goal to reduce greenhouse gas emissions 80% by 2050 (Tompkins County Planning

Department, 2016). The 2015 Tompkins County Comprehensive Plan (TCCP) includes a section regarding current housing condition and need. The leading principle for this section of the plan is, “Tompkins County should be a place where housing is affordable, safe, energy efficient and appealing” (Tompkins County Planning Department, 2015).

Conversely, the TCCP cites housing price increase of nearly 100% in a thirteen-year period, from 2000 through 2013. Rental cost per month reportedly increased from a median of \$529 to \$823 over the same period. However, Tompkins County housing quality is reportedly low, as 50% of the existing housing stock in Tompkins County was built before 1959. Since off-campus housing demand keeps rental cost high, many property owners are reportedly not motivated to make necessary repairs and address maintenance issues. Owners of older housing units may not be able to afford maintenance if the cost of homeownership is competitively high. The result is poor quality housing at a high cost

The TCCP validates the position of this research that energy efficiency is a component of affordable housing in the form of monthly utility bills. Not only do water-saving fixtures, high R-value insulation and high U-value windows contribute to lower utility cost, so do fossil fuel costs affect utility cost. According to the U.S. Energy Information Agency, from 2008 to 2014, propane prices in the Upstate New York region increased 34 percent, and heating oil prices rose 25 percent. However, despite natural gas prices dropping 46 percent during that same period,

between January and June of 2014, natural gas prices increased 63 percent (Tompkins County Planning Department, 2015).

Industry affordability measures indicate housing is affordable if it is not more than 30 percent of household income. Nearly one third of Tompkins County homeowners pay more than 30 percent of their income for housing, and a reported two thirds of rental households do so. In total, 38 percent of Tompkins County households who rent or own homes face affordability problems. (Tompkins County Planning Department, 2015). It is clear there is a need in Tompkins County to address housing affordability. Addressing energy efficiency in the existing housing stock is necessary, as well as increasing energy efficiency in new housing units.

With a clear need, supportive residents and aggressive goals to reduce greenhouse gas emissions by 80% by 2050, it appears Tompkins County is at an ideal position for policies mandating energy efficiency standards for rental units, new residential construction and renovations. The U.S. Energy Information Administration has found that residential buildings built before 1950 are generally 30 to 40 percent less energy-efficient than those built after 2000. The following energy saving measures will reduce community greenhouse gas emissions, and will save occupants money on monthly expenses:

- Maintaining existing energy-efficient features
- Addressing repair issues
- Replacing worn-out appliances with energy-efficient models

- Converting to more efficient and sustainable methods of heating and cooling
- Implementing energy upgrades such as insulation and air sealing

(U.S. Energy Information Administration).

One limitation of the survey is that New York State has several large metropolitan areas: Syracuse, Buffalo, Albany and New York City. Half of the survey respondents are located in one of the five New York City boroughs. It is important to consider the analysis of variations, which identified statistically significant difference in support for efficiency regulations by Metropolitan Statistics Code (MSC), $F(4, 793) = 4.63, p < .001$. Specifically, those who indicated “In the Center City of a Metropolitan Statistical Area (MSA)” were more likely to support affordable housing than those who identified as “Outside Center City (but Inside County)” and as “In an MSC that has no MSA”. Ithaca, New York is one of 11 MSAs in New York State, but the surrounding areas within Tompkins County outside the City of Ithaca and Town of Ithaca are rural. It is possible to consider residents of these rural areas to be less supportive of public policy mandating energy efficiency and affordability in housing.

A local example of a more rural community with more opposition to affordable housing is Trumansburg, New York. Trumansburg is a rural village outside of Ithaca, but within Tompkins County. Interview data from a responding planner revealed Trumansburg residents have strongly resisted affordable housing development. Planner and developer interviews revealed Tompkins County residents can have the “NIMBY” attitude, as is happening now in

Trumansburg, where INHS has proposed an infill project to develop 77 housing units. The Subsequent research exposed the project, Hamilton Square, is opposed by neighbors who signed a petition that claims the project is not representative of the Village of Trumansburg with regard to the balance between rental units and units for sale (Almendarez, 2017).

5.1.2 Lenders

Lenders were limited in their support of affordable, energy efficient housing due to federal lending standards and common practices. Interviewed lenders reported that mortgages are approved based on a property's collateral value, an individual's credit score, credit history and income level. Individual credit score is based on statistical methods used to classify credit applicants into classes of "good" and "bad" risk (Hand and Henley, 1997). Risk was reported by lenders to include damage to the property or loss of income, resulting in late payment or mortgage default. Lending risk also includes the ability of the individual to pay the mortgage payments, taxes and insurances related to the loan. There is no requirement to include operating costs, such as utility expenses or repairs to the home in the evaluation of the cost of the property.

The interview data of lenders showed appraisals are required and based on market conditions in comparison to other similar properties. These respondents stated they were not required to mandate home inspections or energy audits as part of the lending process. Interview data revealed common practice for traditional lending in and around Ithaca allows homebuyers to waive inspections when submitting a purchase offer for a house, unless the buyer has financing

backed by the Federal Housing Administration. According to interviewed lenders, the only program available to the public that incentivizes energy efficiency for low-income buyers is through the SONYMA program for Energy Star Certified houses. Data collected from a private lender included information about that firm's energy audits on houses sought for purchase by low-income homebuyers. The respondent explained those energy audits are used as education opportunities for the buyer to learn more about the house in which they are interested and to apply for a grant to implement the energy remediation listed in the audit.

Interview data collected from bankers did include industry programs targeting low and middle-income housing purchase. Both the State of New York Mortgage Association (SONYMA) and the Federal Housing Administration programs offer below-market interest rates. SONYMA loans target low-income buyers, with household income limits, which differ depending on the number of people in the household, the county of purchase and the specific SONYMA loan program (New York State Homes and Community Renewal, 2017) All interviewed lenders described programs at their financial institution that are available to low-income homebuyers, including down-payment assistance loans.

5.1.3 Support for Change

In order to develop best practices, the advisory committee for development of the Ithaca Green Building policy considered measures for inclusion of energy efficiency as a component of affordability. The Ithaca Green Building policy is in development in order to influence new development and renovations of residential units to comply with new standards, which align with

the Tompkins County goal of reducing greenhouse gas emissions 80% by 2050. In development of this new policy, the advisory committee recognizes the implications of energy efficiency on housing affordability and quantified the percentage by which energy efficiency can reduce the cost of living through six savings measures:

1. Reduction of window-to-wall ratio from 30% to 20%, energy savings ...8%
2. Reduction of building size by 10%, energy savings are...10%
3. Placement of heating/cooling systems inside thermal envelope, energy savings are...9%
4. Reduction of hot water energy use by 20%, energy savings are...8%
5. Reduction of building surface area by 20%, energy savings are...10%
6. Reduction of over-lighting by 25%, energy savings are...8%

The benefits for the energy saving measures will be reduction in energy use, lower construction cost, alignment with high-performance energy standards, such as LEED, et.al. and promotion of a change in attitude about the size of housing units added to Tompkins County. In addition, the savings from energy efficiency will persist over time, to benefit the occupants of the housing units, who are responsible for the utility cost. The reduction in building size, surface area and overlighting will entice developers, who will expend less funding on building cost (Demarest, 2017).

Implementation options for the reduction measures:

1. Require developers to choose a minimum number of affordability improvements. For example, choose three improvements from among the six energy saving measures, to deliver 15-20% savings.
2. If developers prefer not to implement three such improvements, we could consider requiring compliance with a standard that delivers measurable energy savings, such as the

proposed New York State Energy Stretch code, or a custom checklist, or lower HERS score, minimum LEED energy score, etc.

3. To deliver additional savings, such as 40% better than code to reach the efficiency of programs such as Architecture 2030, incentives could be offered (tax breaks, or zoning variances such as an additional story, etc.) (Demarest, 2017).

5.2 – Revising Existing Policy

Research hypothesis two is that zoning and land use regulations inhibit development of housing that is energy efficient as a component of affordability. Interview data supported this hypothesis, but respondents brought forth additional contributing factors during data collection.

Zoning in the City of Ithaca is by use type:

- Adult Use Zone
- Business Zones
- Central Business District
- Collegetown
- Court House Special Use
- Gorge Protections
- Historic
- Industrial
- Mobile Home
- Park
- Residential

- Southwest
- University
- Waterfront
- West End Development

(City of Ithaca)

The Business and Residential Zones are further broken down into subcategories. Each use district has specific, “permitted primary uses”, off-street parking requirements, off-street loading requirements, minimum lot sizes and maximum building heights and percentages of lot coverage by building, with yard dimensions. The City of Ithaca website has links to the City of Ithaca Official Zoning Map so a developer can determine the zoned use of a property. These tools appear to show, based on a property location, what are the allowable types of projects for development there, based on the permitted primary uses.

Existing zoning regulations clearly state required lot sizes, street frontage and setback requirements for development. For example, in the R-U zoning area, a residential designation, the lot size is required to be 16,500 square feet minimum for a maximum of three units. An additional 1,500 square feet is required per unit over three. There is a requirement for 125 feet of street frontage, but a maximum of four stories, no more than a total of 40 feet high. These requirements drive the upfront cost of land procurement for developers up, thereby challenging their ability to provide affordable units to the market. Interview data showed planners are well aware of the complications. One said: we still have standards that...many buildings can't, many

development projects can't be, in terms of the side yard requirement, the front yard requirements, the lot coverage requirements or limitations”.

Several cities in California have adopted form-based codes to simplify development in their municipalities. Hercules, California implemented a form-based code for four districts within the city limits. A 2007 report described the development of the new codes: “design workshops and charrettes involving the community and design professionals resulted in a vision for the city center, culminating in a specific plan called the Central Hercules Plan. (Daugherty, 2007) The simplified code includes eight street types and includes a use table only three pages in length. The dozen pages in the requirements showing architectural details and elevations include sketches and photographs to illustrate desired design features and which to avoid. The new code allows new development to blend with existing residential structures and encourages mixed-use with varying building styles. (Davis, n.d.) The Hercules Regulating Code has been described as “one of the earliest and most comprehensive examples of a form-based code”. (Daugherty, 2007)

The city of Petaluma, California adopted a form-based code in 2003, which, residents and developers reportedly appreciate for its simplicity and clear rules. (Davis, n.d.) Dubbed the “SmartCode”, it strives for compact towns and open rural lands, and reversing some of the damage created by urban sprawl under the previous use-based zoning. (Daugherty, 2007) Developers are particularly enamored with the faster permitting process under the form-based code (Davis, n.d.).

However, Petaluma has a different outcome than Hercules with their form-based zoning. In 2006, Michael Moore, Community Development Director for the City of Petaluma, lamented that simply revising zoning code may not be enough to spur community change. Moore commented, “The emphasis of a form-based code on physical relationships between people, buildings, and public spaces (streets, sidewalks, parks, etc.) is an important element missing from traditional zoning regulations. But that emphasis, in our experience, has not always been enough to overcome two forces that often dramatically affect development regardless of the type of zoning in effect: the market and political will.” (Moore, 2006) According to Phil Boyle, Associate Planner for the City of Petaluma, municipalities must take care to heed the following advice:

- Be sure the municipality has enough time to customize the SmartCode to the specific community and fine-tune it to what the community needs and desires.

- Schedule process mock-up, where staff can review a legacy application against the regulations of the new zoning code to become familiar with the new process. Staff should then present their findings to the public, elected and appointed officials, and developers to provide feedback and trouble shoot. (Daugherty, 2007)

Interview data revealed planners and developers in Ithaca are willing to reconsider zoning revisions to the minimum lot sizes, which prohibit replication of neighborhoods like Fall Creek, which are reportedly highly sought-after by Ithaca residents. Planners and developers said

minimum lot sizes also prevent new infill projects or renovations that might increase density in these popular neighborhoods. One respondent reminded the interviewer that minimum lot sizes were historically implemented to keep out people who need affordable housing. The planner lamented that, with maximum heights and minimum lot sizes, land cost goes up, which is passed through to the eventual occupant.

Notwithstanding policy drivers, another contributing factor to property cost is appreciation due to market demand. Planners lamented seeing properties appreciate quite rapidly in College Town and downtown in their values. The City of Ithaca invested considerably in the Commons and in making the downtown area an attractive place to live or to go. However, when a developer sees an opportunity to purchase property in the City or Town of Ithaca, they pay a premium for the land, resulting in housing priced at market rate or even luxury housing.

Consistent with that perspective, FORM Ithaca, a consortium of planners and community members in Ithaca, concluded that existing zoning “includes provisions that negatively affect walkability and character when new development does occur”. They cite setback requirements and minimum lot sizes as problematic when designing new development. These regulations are inappropriate for municipalities such as Ithaca and are contrary to the character and diversity in the existing historic neighborhoods (Steuteville et al. 2015).

In general, the process for development in the City of Ithaca is to go through review of the following process:

1. Pre-application meeting
2. Site plan review application
3. Conservation Advisory Council
4. Posting of site plan review
5. Project Review Committee
6. Planning and Development Board

Interview data shows the process for development is not as transparent as stated above. Developer interview data shows a planning process that is subject to public scrutiny despite allowable uses, setbacks and building heights. Developers and planners responded that planning board members provided design feedback regardless of their professional background, and suggested planning board seats be filled with architects and engineers exclusively. Planners and developers provided information about the planning process in Ithaca being highly politicized and that the community has often protested against projects that were compliant to the existing zoning regulations. One respondent stated a local planning board was “hostile to initiatives like affordable housing, anything that even smacks of greater density or hints at it”.

Developer interviews also revealed frustration with the existing process for development in Ithaca. One developer cited a specific project, where the transparency and prescribed zoning

indeed became politicized and arbitrary. The project team designed the proposed building within the parameters of the zoning ordinance, as described on the City of Ithaca website. However, the project reportedly began the process for initial approvals in June 2016 but did not receive final approval for its site plan until January 24, 2017 due to public opposition to the design (Smith, 2016). The final approval was granted after a seven-month duration, but the developer was still awaiting a decision regarding their application for a variance for the rear portion of the lot, which was smaller than required by existing zoning regulations (Weinstein, 2017).

The duration of the zoning board of approvals process is only one contributing factor to the cost of property in the City and Town of Ithaca. Interview data showed frustration with the public. Residents in areas of proposed development form protest groups or circulate petitions to oppose new development. If the proposed development is in an area zoned as historic, it is subject to review by the Ithaca Landmark Preservation Commission (ILPC). Extensive review adds time to development schedules. Interviews with developers revealed ILPC review could add time and changes to the design, at significant cost to the developer. Time extension results in construction cost escalation and design changes create increased scope for the architectural team. Developers responded that cost increases are passed along to the occupants of the housing units.

New York municipalities, such as Beacon and Saratoga Springs, which have implemented form-based zoning, have reaped benefits including development clarity for residents and developers. Saratoga Springs opted for specific districts adopting form-based zoning and

replaced seven zoning districts with three new districts. Graphic representation of form-based zoning for mixed-use neighborhoods leave little question as to design parameters. Form-based code encouraged development within community-set outlines led by planners, zoning/legal experts and the Saratoga Springs City Code Revision Committee. Saratoga Springs adopted their form-based code districts in 2004 and underwent \$200 million across 1,000,000 square feet within 15 major projects by 2007 (Russell, 2013).

Beacon, New York also created new districts within their existing zoning code boundaries. The two new districts were ripe for redevelopment and the community was not satisfied with the existing code. The city contracted with a firm that drafted the new code and associated graphics, held public meetings and aligned the new form-based code with the community vision. Others involved included the Dutchess County Department of Planning and Development, which compiled concept plans based on preliminary public input from public meetings they organized early in the process. Committees represented each new district, and the city's mayors and city council participated in the code revision. (Boyd, 2012)

The new code in Beacon used graphics and sketches in addition to traditional specifications to establish maximum setbacks, dictated building heights to shape the character of new developments as well as setting new standards for frontage types and streetscapes - such as minimum sidewalk widths and inclusion of bicycle racks. To improve the planning review process, the City of Beacon also added a streamlined review process to their new code. In order

to maintain demographic diversity, the new form-based code includes a requirement that residential development meet existing New York State requirements for affordable workforce housing (Russell, 2013).

In May 2017, Cornell Cooperative Extension Dutchess County chapter held a regional professionals' session titled, "Beacon: Renaissance of a Community Using Code Enforcement". The course description stated the city of Beacon "has undergone an impressive transformation over the past 15-20 years." (Cornell Cooperative Extension, 2017) Acknowledging the growing pains of a community in the throes of rapid population increase, Timothy Dexter, Chief Building Inspector for the City of Beacon calls the transformation a success. Dexter stated the previous process for development approval was heavily founded in the "old boys club" method and needed to be changed. He explained that, with changes in the city's zoning policy and the methods by which development was approved, the 2007 comprehensive plan has had a positive impact on the community. (Simms, 2017)

5.3 – Prioritizing Demographic Diversity

Research hypothesis three states housing development that is both affordable and energy efficient is not a high priority concept for community planners in Ithaca, New York. Interview data revealed responding planners to consider affordable housing and energy efficient housing to be high priorities. Planners reported current zoning policies are under review and explained there

are efforts under way for replacement policies. Reportedly, Ithaca City and Town are analyzing a variety of methods for zoning reform to increase affordability and energy efficiency.

Consideration for zoning reform reportedly includes affordability for middle income as well as low-income households. Planners reported identifying a need for middle-income housing as much as, if not more than, low-income purchase. Planner respondents stated the community has some convoluting factors in that there exists a presumption in the community that Ithaca Neighborhood Housing Services (INHS) is going to step in and provide affordable housing in Ithaca and there is no other development agency involved or interested in pursuing affordable housing. However, INHS develops affordable housing for families with income levels below 80% of average median income. Interview data revealed a component of the population called the “missing middle”.

Responding planners described the missing middle as an issue of housing cost as well as housing type. The strategy Town and City of Ithaca are pursuing is to satisfy the needs of competing demographic confluences. Reportedly, the community is comprised of Millennials, Gen X-ers Baby Boomers all looking for the same housing product. They all want an urban, walkable environment. Market data reportedly reflects this demand, which is reflected in the competitive price per square foot. The market reputedly will remain competitive, as well – one responding planner commented that 10,000 people are turning 65 every day for the next 21

years, and only approximately 15 percent of U.S. communities actually have that type of configuration that allows for an urban, walkable living style.

Interview data highlights the need for middle-income housing; however, the current development market is not producing things below higher income housing with new construction. Through federal, state and local funds, the market is producing a fair number of affordable units, but it is not producing any new construction defined as affordable for people from 80 percent of area median income to 120 percent area median income. Planner respondents reported this current gap and that historically, the level of housing added by new construction tends to be upper income housing and, after 40 years, it becomes affordable to middle income, which some respondents thought may be the nature of the market. Another respondent confirmed this trend, and cited only one project built in the last ten years for middle income in downtown Ithaca at 607 West Seneca Street.

Industry research supports the identified “missing middle” claim, and that Baby Boomers represent a demographic that wants traditional neighborhoods, not retirement homes. Opticos Design has published several papers on this topic, and echoes the Ithaca planner perspective, stating, “The American Association for Retired Persons recently released a new report, “What is Livable? Community Preferences of Older Adults.” The report, which surveyed 4,500 people 50 years and older, showed that increasingly, the nation’s older citizens don’t want to retire in an out-of-the-way community full of golf carts and bingo, rather, they want to stay in the homes and

neighborhoods they've spent their lives in. That desire to "age in place" and have easy access to services and amenities has added to an already growing demand for walkable, urban, transit-oriented development" (Opticos, 2017).

Other literature goes on to describe the physical attributes of the desired community as one built within a walkable urban context, and that buyers and renters of these housing types are willing to forego larger suburban housing for less space, no yard to maintain, and proximity to services and amenities such as restaurants, bars, and transit. Missing Middle housing types exist in most pre-World War II neighborhoods across the country and in newer communities like East Beach in Norfolk, VA, Habersham in Beaufort County, SC, and Daybreak, near Salt Lake City, Utah (Opticos, 2017).

Data collected from developer and planner interviews revealed frustration with existing Ithaca zoning regulations and politics. Planners and developers alike are involved in solving the problem of bridging the gap for middle-income housing. One developer suggested the answer is that the aging housing stock is passed from higher income to lower as it degrades. In a dismissive moment, one developer offered that building more housing would result in a glut of product, which may drive down prices, or that aging luxury housing would eventually become undesirable to the wealthy and thereby become affordable. Instead of this trickle-down housing effect, FORM Ithaca poses zoning reform to allow infill developments such as "two, four, six-unit buildings or clusters"(FORM Ithaca, 2015) which would appeal to smaller developers.

These compact developments would require less land than a large-scale apartment complex and fit in with existing neighborhood character. FORM Ithaca also points out “A growing number of off-the-shelf building plans meet the standards of a form-based code—but also reduce costs and are designed for easier financing. This small-scale density is appropriate for infill sites and also can be incorporated into new villages or neighborhoods” (FORM Ithaca, 2015). Zoning reform for municipalities in the Ithaca area is imperative to address the needs of the diverse community, especially middle-income households.

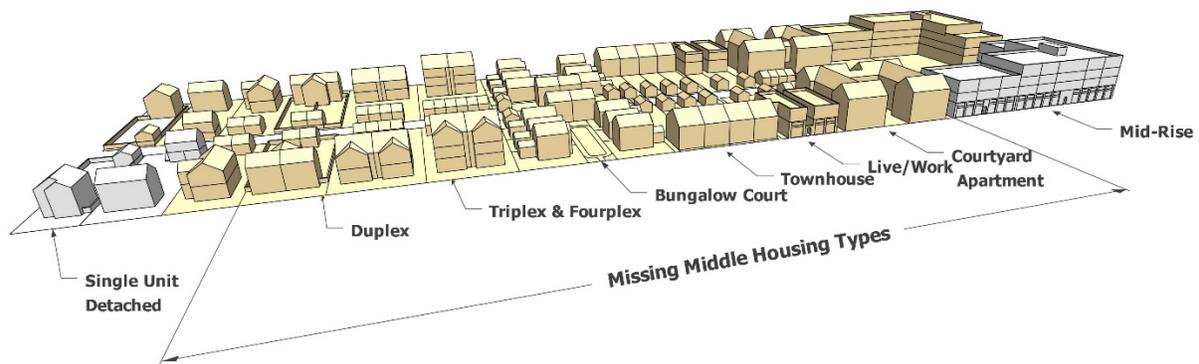


Figure 2 *The Missing Middle* (Opticos, 2017b)

5.4 Additional Policy – Form-Based Zoning

Form-based codes are development regulations that emphasize physical design characteristics instead of land use, as do conventional zoning regulations (Garde, 2017). Interviews with planners and developers revealed both prefer form-based zoning to conventional zoning, saying it provides a more predictable planning process. Responding planners and

developers explained form-based zoning would de-politicize the planning process because communities in and around Ithaca would have thorough input during the development of the form-based zoning policy. The theory is that developers would then have predictability. Form-based zoning is “a far more effective way to protect and promote investment and improvements in a community” (Opticos, 2017).

Planner respondents stated there are initiatives in the Ithaca Town and City municipalities to implement form-based zoning. Interviews revealed there is not a current plan to use form-based zoning throughout their municipality, rather to launch form-based zoning in several select areas. Interview data shows there is a goal for denser mixed-use traditional neighborhood development style and that a committee was currently writing those specifications. Areas of interest for testing form-based zoning are reported to be in East Hill near Cornell, South Hill, south of Ithaca College and on West Hill, near Cayuga Medical Center. Planners

Interview data showed there is currently quasi form-based zoning in Collegetown, as there is currently use-based zoning in that neighborhood as well as form-based requirements. Planners stated the municipality recognizes the benefits of the form-based zoning in Collegetown, one being that the benefit of a well-developed form-based zoning code can give the developer clear direction of what the community will accept during the planning process. Further, planner and developer interviews shared a common theme that they desire a site plan

review process that is predictable and shorter in duration. Both conveyed the belief that form-based coding is one way to achieve that.

Opticos Design is heavily invested in form-based code development and has been creating them for municipalities since 2003 (Opticos Design, 2017). Perez's viewpoint is similar to data collected from municipal planners during this research. Perez states, "Over the past 50 years, the effectiveness of zoning has generally decreased while its presence has increased. The immediate purpose of early zoning laws has faded into a necessity that has become confused about its purpose and its true benefits. Many of the places our society values the most were built prior to the existence of zoning codes. Such towns and neighborhoods were built as economic investments but with a clear understanding that these places were composed of coordinated and arranged physical elements: If these elements were not balanced and arranged carefully, the results might not promote the desired investment" (Opticos 2017).

Form-based zoning, which has been in use since the 1890s, has been mostly land use-based, results in an incomplete assessment of community development. Industry literature compares the result of land use zoning to a human body with a limited set of tools, for use only on "a small percentage of the body's parts or functions" (Opticos, 2017). This is precisely what this research found when interviewing planners in the Ithaca area. Current zoning regulations in Ithaca were reported by local planners to be ineffective for much of the community. Opticos has conducted extensive research which echoes the sentiments of planners interviewed for this

research, which is that, “In the process of applying use-based zoning, areas of town that were still thriving came to be seen as “non-conforming.” The zoning system was forcing existing places—great places—to conform to abstract regulations that were often not aware of the place they were regulating. Amazing but unfortunately true, and not outdated. It’s one thing to choose another way of developing new areas of your community but quite another to render existing neighborhoods and main streets essentially illegal to rebuild. That’s the effect that use-based zoning had and still has in many communities. Typically, everything goes along fine until a community suffers a disaster and discovers that its zoning laws will not allow a really nice neighborhood to be rebuilt” (Opticos, 2017). This is exactly what a responding planner said about the Fall Creek neighborhood in Ithaca.

FORM Ithaca explains form-based code at a local level for Ithaca in their May 2015 report, which is the result of a workshop held in January of 2015 at the Tompkins County Library. The consultant team also conducted field research, held meetings and completed design and planning work in order to bring forth a framework to help guide new regulations. The New York State Energy Research and Development Authority (NYSERTA), the Park Foundation, the City and Town of Ithaca funded the initiative (FORM Ithaca, 2015). Instead of having large swaths of suburban neighborhoods constructed away from the amenities required by occupants, FORM Ithaca sought to develop a new zoning code that will “identify key opportunities to reintegrate amenities and housing choices into appropriate locations with sensitivity to the unique context of each place” (FORM Ithaca, 2015).

The method presented by Opticos Design was the outline of the FORM Ithaca report, to encourage revision of Ithaca's existing zoning. The overall concept is to use physical form, rather than land use, to identify zones in a community. This means instead of having a "residential" zone in Ithaca, there would be a zone with parameters dictating the height, setback and exterior attributes of new development. The objective would be that any allowable use would be permitted to develop and occupy a lot within that zoning if the physical form mandates were met.

Other components of the proposed framework include understanding the basic anatomy of all communities, including "centers or nodes, corridors, neighborhoods and districts" (Opticos, 2017). Opticos points out all communities have these elements. Ithaca has several centers, such as Fall Creek, Community Corners, Belle Sherman and East Hill. Another piece is to consider which type of zoning to apply where, such as automobile-oriented or pedestrian-oriented. FORM Ithaca is proposing methods found in other industry literature, such as Talen (2009) as well as Hughen and Read (2017) whereby form-based codes offer a method by which mixed-use neighborhood development and infill development can be achieved to maximize land use. The planned policy also includes ingredients such as articulation of intended physical character and vision of the physical environment.

The FORM Ithaca initiative uses all of these elements and summarizes the community's desire for change in zoning regulation. It brings forth a framework to achieve when revising the

existing zoning regulations and makes recommendations based on industry-tested methodology. Revisions in Ithaca zoning would address issues expressed in the data collected from interviews of planners and developers as part of this research. Form-based zoning would allow for small, infill development, which makes denser occupancy possible. Denser occupancy is more sustainable by using less land to create housing for more people. Walkable communities require less driving and result in fewer greenhouse gas emissions.

Research data for this project reveals there are many initiatives in Ithaca toward housing affordability and energy efficiency. While considering revision to the zoning code, the City of Ithaca is also investigating methods by which it can develop new green building standards. In October of 2016, the City of Ithaca solicited responses from consultants to provide services for the Ithaca Green Building Policy Project.

In addition to reducing the community's greenhouse gas emissions, the City of Ithaca Request for Proposal acknowledges the connection of energy efficiency with the cost of living. The document specifically recognizes the need for policy to connect the two, stating, "This will hopefully incentivize rental property owners to improve their housing and/or decrease rents. An added bonus is that it will also increase the tax base, which in turn will reduce the onerous tax burden for residents.

But even as development increases, the incentive for owners to build efficiently remains low” (Walker 2017). Reportedly, because the Ithaca rental market has low vacancies and very high rates of rental in both the City of Ithaca (50% rental rate) and Town of Ithaca (70% rental rate) in addition to high cost for construction in the Ithaca market, there is little incentive for developers and property owners to improve existing rental housing stock. Additionally, most developers build only to minimum energy standards as mandated by the New York State Building Code.

The plan for the project is to “examine policy tools to incentivize or mandate green building standards for new construction and major renovations” (Walker, 2017) as part of the City of Ithaca initiative to reduce greenhouse gas emissions by 2050.

CHAPTER 6

CONCLUSION

6.1 Overall Conclusion

The primary goals of this study were to investigate and determine the reasons for the gap in development of housing units housing in Tompkins County, New York that comply with both affordability and energy efficiency parameters and to understand the contributing factors that lead to the housing gap. The research objectives were to test acceptance levels of the public, evaluate zoning regulations and understand priorities of local lenders, planners and developers in their strategies regarding housing development.

Overall, the results of this study show public and industry support for affordable housing and energy efficient housing. Some demographic markers and stakeholder roles showed greater likelihood of support compared to others. The data showed people who support affordable housing are more likely to support energy efficient housing. This study utilized a science-based and human-centered approach to identify public support and highlight discrepancies in local policies and attitudes about affordable housing and energy efficient housing. The study also demonstrates that there is a discrepancy between goals for affordable housing and energy efficient housing. This study supports published research about social justice in housing, and that there is a balance required between economic growth, social equity and environmental sustainability, as shown by the diagram below:



Figure 2- Campbell, 1996

This project also summarizes common issues between industry stakeholders and the community of Tompkins County with regard to zoning policies that inhibit new development and would prevent redevelopment of the types of neighborhoods that are highly desirable. This study would contribute to the fields of urban planning research and design, real estate development and municipal policy.

Research for this study found significant support for policies mandating affordable housing and energy efficient housing in New York State. When comparing demographic data from the study respondents, there are similarities with the groups more inclined to support affordable and energy efficiency mandates. Those demographic markers align with groups equally represented in the Tompkins County area. This study concludes the ESP 2017 results can be applied to Tompkins County and utilized as a basis for implementing new zoning regulations to support affordable development, which includes energy efficiency as a component of

affordability.

Data collected through interviews and review of current policies revealed local zoning regulations limit affordable housing, however zoning regulations do not limit energy efficient housing. The New York State Residential Building Code dictates energy efficiency in residential building and renovation and do not encourage robust, high performance efficiency, a component of housing affordability as well as overall sustainability. Interview data exhibited planners in Tompkins County are dedicated to improving policies to promote affordability and energy efficiency and are currently developing new policies for both.

6.2 Recommendations

The overall findings indicate public support of both affordability and energy efficiency mandates, and that policymakers consider affordability and energy efficiency high priorities. The research supports a recommendation to strengthen Town and City of Ithaca policies to include affordability.

The following recommendations are offered, based on the findings of this study:

- That Ithaca affordable housing policies include energy efficiency as a measure of affordability.
- That Ithaca should broaden the use of form-based codes to include the entire Town and City of Ithaca, in order to encourage development activity and to welcome residents of diverse income levels and economic backgrounds, especially the “missing middle”.

- That Town and City of Ithaca policies influence lenders to include provisions to include lending programs specifically targeting energy efficiency as a measure of affordability.
 - That property inspections include energy audits
 - That lenders be required to consider energy efficiency as a measure of property value
 - That lenders provide loan products rewarding borrowers who purchase properties with high levels of energy efficiency (this could be based on a rating scale, such as Energy Star)

Interviews of lenders revealed disconnects in the banking industry between the mortgage industry and social justice in housing. Energy efficiency is part of housing affordability and therefore should be included when considering the cost of a housing unit and a buyer's ability to cover those costs. Based on data collected in this study supports a change in the mortgage industry to mandate inspections of every house as part of the process of lending. Energy assessments would then be part of those inspections and buyers could better understand the long-term benefits of energy efficiency to the cost of owning and maintaining a housing unit.

Findings of this study could inform policy discussions at multiple levels in development and real estate. These findings should reassure municipal planners about the positive attitude toward affordable and energy efficient housing. According to Harvard University in their State of the Nation's Housing 2017 report, "A decade after the onset of the Great Recession, the national housing market is finally returning to normal. With incomes rising and household growth

strengthening, the housing sector is poised to become an important engine of economic growth. But not all households and not all markets are thriving, and affordability pressures remain near record levels. Addressing the scale and complexity of need requires a renewed national commitment to expand the range of housing options available for an increasingly diverse society” (Joint Center for Housing Studies of Harvard University, 2017).

Closing the housing gap and solving for the “missing middle” is essential to housing equity in Tompkins County. If housing cost remains out of reach for all but those families within higher income brackets, essential amenities such as schools, transportation and walkable neighborhoods may be out of reach for all but the wealthiest.

6.3 Limitations of Study

Although the study provides valuable insights to understand the public attitude about energy efficiency as an integral part of housing affordability, and the popularity of these goals as part of public policy, there are several limitations to the research. First, the outreach to the interview subjects was limited. Due to time and travel constraints as well as funding availability, it was not possible to interview all developers who had completed projects in Tompkins County in the recent past. Telephone interviews were not possible due to the need to use an audio recorder in order to accurately transcribe the interviews. Some developers were hesitant to discuss their business operations with a person outside their firm. Additionally, Ithaca is a very small town, and in order to maintain confidentiality, it was important to avoid revealing

participants' involvement to each other, therefore name-dropping to successfully schedule an interview was not possible.

Another limitation of the study is that the telephone survey targeted the entirety of New York State, instead of targeting the specific area of Tompkins County, requiring demographic comparison for applicability instead of soliciting respondents that reside in Tompkins County. However, available resources did not allow a separate telephone survey to be conducted exclusively for this research.

6.4 Future Research Directions

Developing new policies to spur affordable housing will be an important intervention to increase housing equity in Tompkins County. Much research exists to support the development of new policies, but interviews for this study, specifically with developers, revealed the “NIMBY” attitude might delay progress. Surveying the people who own property in Tompkins County may provide additional insight to the community atmosphere about revising zoning policy to promote a diversity of affordability in the county's housing stock.

When interviewing municipal and private sector planners in the future, questions should ask about many different types of zoning, instead of limiting the scope to just one type. The investigator should ask more open-ended questions allow the answers to cover a broad scope. This research project began with asking planners about Inclusionary Zoning, but the respondents had a much wider variety of experiences and answers to share. Open-ended questions with

follow-up questions might elicit a range of information leading to different conclusions and recommendations for policy.

Changing zoning regulations may require a campaign, of sorts. The success of INHS with regard to homebuyer education and the popularity of the newly built infill project at 210 Hancock Street in downtown Ithaca deserves widespread publication in order to promote similar infill neighborhoods in Tompkins County. The apartments for rent and townhouses for sale are LEED certified, within the Ithaca City School District, near parks and a recreation center. There is a daycare center and a science classroom, “which is part of the Ithaca Branch of the Physics Factory, a non-profit exhibition program that engages children with science” (Crandall, 2017). Neighbors of the development could be specifically targeted for feedback, in order to develop responses to reactions from residents with “NIMBY” attitudes. Residents who respond positively might be invited to town hall meetings, to share their experiences with other residents and promote other opportunities, which would be made more possible by form-based code.

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