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Just Big Enough: Imagining the future of "small home" residential design with a master plan at the nexus of affordability and sustainability

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Just Big Enough

Imagining the future of “small home” residential design with a master plan at the nexus of affordability and sustainability.

Maggie Kraus  |  Committee: Michael DiPasquale & Mike Davidsohn  |  Spring 2018
Big Enough: Imagining the future of “small home” residential design with a master plan at the nexus of affordability and sustainability

A Master’s Project by Maggie Kraus
Master of Landscape Architecture
Spring 2018

Approved as to style and content by:

______________________________
Michael DiPasquale (Chair)

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Mike Davidsohn (Committee Member)
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There is no way to properly thank my family for supporting me through a lifetime of creative and academic pursuits. Their enthusiasm is one of my greatest gifts and I could not have done any of this without them.
To move this society to a sane use of its technology
is a task of liberation obviously beyond the scope of any particular profession.
It will take the accumulated consciousness of a multitude of us,
acting on the belief that the end of our oppression
must come from our everyday actions,
from our refusal to participate
in the insane destruction waged in our name,
and from the change in cultural values
we can promote through the work we know best.

As people concerned about the creation of a better environment,
we must see ourselves committed to a moment of radical political change
which will be the condition for the existence of this environment.

- Robert Goodman, 1971

So now we’re dancing through the garden,
and what a garden I have made!

- The Tallest Man on Earth
Communities everywhere are experiencing significant and unpredictable shifts in the social and physical infrastructure of their landscapes. In the midst of a cultural, political, and ecological moment which has no precedent, it seems as though many of our contemporary crises have one thing in common: they will either be alleviated or drastically exacerbated by the alliance of professions working to improve the built environment. Now more than ever, the world is in need of designers, planners, and policy-makers who are willing to use this moment of great change as momentum to imagine a new era of community development, one which prioritizes creative and systemic solutions. One sector that continues to be in great need of systemic solutions is housing. As rental rates soar and class-based equity gaps widen, many people are losing what few housing options they had. For many, the dream of homeownership has been replaced by a struggle to afford monthly rent as a tenant. This Master’s Project seeks to expand upon the work of Pioneer Valley Habitat for Humanity (PVHH) as they gain traction in a robust community initiative to build smaller, sustainable and affordable homes for low-income families in Western Massachusetts. The work that follows was developed in response to PVHH’s efforts and their recent acquisition of 1 Garfield Avenue, a residential parcel in the village of Florence, Massachusetts. This research and design work aims to contextualize this region’s housing affordability crisis within the broader scale of a national, historical timeline of housing inequity for the poor. It will identify opportunities for meaningful, affordable and sustainable landscape design solutions that can enhance the experience of first-time homeownership for low-income families. It will offer resources and information to these families so that they might be more equipped to identify their property’s opportunities and constraints, and be more informed as they implement landscape design projects in the future. This project will culminate with a conceptual Master Plan for the parcel and some recommendations moving forward.
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Introduction

Beginning in 2016, Pioneer Valley Habitat for Humanity (PVHH) launched a pilot program called *Big Enough* which sought to acknowledge the housing affordability crisis in western Massachusetts and identify some of the factors that perpetuate the modern-day inaccessibility of the single-family house. Their research revealed that exclusionary zoning, income inequality, construction costs, and social stigmas all presented significant barriers between prospective homeowners and the dream of homeownership. Their goal was to determine if building smaller homes (between 500 and 900 square feet) could provide low-income families with a path to homeownership and the middle class.\(^1\) This work deviated significantly from PVHH’s traditional model, however the need to respond to the reality of a national housing affordability crisis far outweighed the organization’s desire to stick to the status quo. The question became, was a smaller home still economically and culturally valuable? Answers flooded in during a period of surveys and interviews with low-income individuals in Hampshire and Franklin Counties, all of whom were asked to share their insight on their pursuit to become (or resume status as) a homeowner. Although there was some resistance to certain features implicit in smaller homes (less privacy, fewer storage options, shared walls)\(^2\), the majority of individuals were intrigued - if not inspired by - the idea of building smaller. Following the surveys, PVHH hosted a day-long event called the Solutions Lab which brought together architects, planners, and residents to brainstorm about how to make small homes a reality.

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\(^1\) “Pioneering the Small Home Revolution in Western Mass”. PVHH (Dec. 2017)

\(^2\) “Executive Summary and Data Report”. PVHH (Sept. 2017)
In late 2017, PVHH began to solicit architectural proposals and site plans for a small residential parcel they acquired in the village of Florence, MA. Situated at the end of a quiet residential street, 1 Garfield Avenue is a small plot with a tremendous potential. The parcel is relatively close to downtown and abuts conservation land, providing unrestricted visual and physical access to lush green space and village amenities. Although PVHH has successfully contracted architects and landscape architects to make this home a reality, they continue to rely on volunteers for much of the labor needed to make these homes - and the landscapes around them - a reality. This project seeks to build upon the mission-driven work that PVHH is taking on and provide a toolbox of resources for the individual or family chosen to purchase 1 Garfield Avenue. The intent of this Master’s Project is to inspire homeowners to take on residential design projects of their own, using this research as a guide for selecting plants and making decisions. While this toolbox is geared towards the property on Garfield Avenue, it should be viewed as a starting point for other residential design projects which may have different characteristics, opportunities and constraints.
Definitions

It is important to make a distinction between what is implied by “tiny house” versus what is implied by “small home”. In her 2016 article “Tiny Houses: Niche or Noteworthy?”, Anne Wyatt attempts to address the various social, cultural, structural, and planning issues implicit in what some are calling the “tiny house movement” 3. This relatively recent housing trend promotes the design and construction of homes that stray from traditional models of single-family structures in multiple ways, most notably in their dependence on a footprint of less than 500 square feet 4. In many ways “tiny houses” are becoming increasingly mainstream, in the sense that people are choosing to build and inhabit the dwellings and consumers are watching television shows and documentaries about them. Acknowledging the popularity of the trend, Wyatt cites ten different benefits associated with the transition from the average American home size (recorded in the 2010 U.S. census as 2,392 square feet) to these “tiny houses”. “Tiny house” is hereby defined as a mobile dwelling unit which does not exceed 500 square feet, built either from raw materials by the homeowner or designed and constructed for a fee by a private manufacturing company. The aesthetics of a “tiny house” most often reflect the traditional qualities of detached, single-family houses as well as the design choices of the homeowner. They are often heavily detailed, customized and constructed to accommodate the needs and lifestyles of those who eventually occupy them. The term “small home”, on the contrary, speaks more to the dimensions and materials of a detached dwelling unit with a permanent foundation, which does not exceed 500 square feet. There is less emphasis on customization, and very few aesthetic details which suggest a boutique or novelty construction company.

With regard to “sustainability” and “energy efficiency”, these terms suggest a mindful sourcing of materials and utilities which ensure the homes can be constructed and maintained over time in a way that mitigates wasteful consumption of resources.

The goal of this Master’s Project is to create a conceptual Master Plan for the small, affordable and energy efficient home Pioneer Valley Habitat for Humanity is preparing to build at 1 Garfield Avenue in Florence, MA.

The objectives of this project include:

- Evaluating “Big Enough” project survey data to inform recommendations for landscape-based solutions.
- Developing user-friendly guidance to help volunteers and homeowners conduct site analysis.
- Generating a “tool box” of design resources for low-income homeowners who wish to create meaningful, beautiful landscapes of their own.
In his article *The Effects of Homeownership on Civic Participation among Immigrant Farmworkers in Washington State*, Gilbert Mireles examines the impact of homeownership as a tool for social integration among immigrant farmworkers in rural communities. Mireles explains “homeownership is generally considered to have positive benefits for families and communities. However, the collapse of the housing market in 2009 led to questions about this assumption, especially for low-skilled workers whose employment is volatile” (2017). He relies on the notion of “community efficacy” in determining whether status as a homeowner can make immigrant farmworkers feel as though they have more of an impact on municipal issues such as local politics, schools, and crime (Mireles, 2017). His findings suggest that “that homeownership does in fact influence the social integration of farmworkers in Washington State along the dimensions of community efficacy, civic engagement, and motivations for participation in community affairs” (Mireles, 2017). This supports the notion that homeownership allows people to feel a greater sense of efficacy within their community, and strengthens their perception of the impact they have in local matters. It also speaks to the experience of those community members who may be low-income, English isolated, or without consistent or predictable earnings. This idea of “social integration” is depicted within a community of homes in relatively close proximity to one another spaced. An application of this idea in the context of PVHH’s project will likely need to consider a model where homes are more sparsely distributed, as they often are in the rural communities in Hampshire and Franklin Counties.

Despite the research that suggests homeownership offers people a heightened sense of worth and efficacy in their communities, there are still significant cultural and fiscal barriers preventing certain people from achieving homeownership. In his article *Bursting Whose Bubble? The Racial Nexus Between Social Disaster, Housing Wealth, and Public Policy*, Kasey Henricks explores these barriers as they relate to race. Henricks explains “When possessed and utilized effectively, home equity represents a special source of capital that can perform work, produce income, and help accumulate even more of itself” (Conley, 1999; Oliver and Shapiro [1995] 2006; Shapiro, 2004). He defends the inter-generational impact of accumulating wealth by way of home equity, stating “Through inter-generational transmissions, the possession of wealth represents a long-term indicator of securing future advantage (Conley, 1999; Oliver and Shapiro [1995] 2006; Shapiro, 2004). His research ultimately “confirms that race is an organizing principle for who can claim long-term benefits of homeownership” (Henricks, 2017). This research demonstrates that despite a national rhetoric which identifies homeownership as an attainable and desirable goal, there are significant institutionalized barriers which prevent certain non-white community members from achieving it. This suggests that perhaps homeownership (as well as the financial processes involved in attaining it) needs to be reimagined to better serve those who have been discriminated against. In this case small homes might provide a way to avoid a mortgage entirely, or otherwise alleviate some of the financial stresses involved in acquiring a loan to purchase a home.

The issues of race, income and community efficacy are further examined as they relate to one another in an article published by Lindblad, Manturuk and Quercia in 2013. There is a critical distinction found in this research which is absent from Mireles’ work, and it seeks to tie the concept of collective efficacy into the concept of “individual effi-

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cacy” (Lindblad et al.). Their work seeks to examine “demographic and neighborhood characteristics as well as ratings of individual efficacy”, (Lindblad et al), introducing the notion that any attempt to evaluate collective efficacy would be informed (if not enhanced) by evaluating individual efficacy. In this article, a major component of individual efficacy is determined by an individual’s decision to rent or own their home (Lindblad et al). This distinction is identified by the authors as a critical component of the discussion; one which, historically, has been left out of determining the degree to which a community displays traits of collective efficacy. The authors state “the Sampson et al. (1997) study has been widely cited and inspired further research, but to our knowledge, studies of collective efficacy have not addressed the respondent’s choice of whether to own or rent and only one subsequent analysis has focused on lower-income households (Brisson and Altschul 2011).” (Lindblat et al)

Interrogating the homeownership status of residents is important for a variety of reasons, most notably because it is not possible to treat individuals who rent the same way as those who own their homes. The point that Lindblad et al seek to defend is that one of the primary differences between those who rent and those who own their homes pertains to finances and economic resources. The authors claim:

“in the wake of the housing downturn and foreclosure crisis, this key distinction between mortgage lending and homeownership itself has been muddled by not only the media and general public, but also by many scholars. If the future of housing finance is one of large down payment requirements and constrained mortgage lending, then the coming decade is likely to be characterized by fewer homeownership opportunities in which lower income households delay their first home purchase or opt to rent permanently. As lower income households remain renters for longer periods, will they feel a stronger sense of community within their neighborhoods?” (Lindblat et al)

This research demonstrates the potential for a study which considers the complexities and nuances of the residents being evaluated for collective efficacy, especially those which focus on homeownership.

Narrowing the focus of social nuance and resources even further, M.E. Jane and W.G. Philip address the issues of homeownership as they relate to people with disabilities. As this research proposal seeks to address low-income individuals and families, some of whom are people with disabilities, it seems logical and appropriate to draw upon existing research that pays special attention to those who may have a harder time accessing resources needed to acquire a mortgage or simply keep up with the maintenance required of homeowners because of physical, mental, and developmental disabilities. The authors contribute to the pool of research which supports the notion that homeownership historically brings with it a handful of social benefits, however what these benefits are and how they can be accessed is not state explicitly. The abstract begins:

“Advocates of homeownership for individuals with disabilities and low-incomes zealously claim that multiple benefits are associated with homeownership versus renting. Among these claims are increased frequency and degree of community presence and participation, increased opportunities for choice making, enhanced control over one’s environment, stability in living arrangements, enhanced community status, and improved finances” (Jane & Philip, 2000).

While there are gaps in the claims which introduce and support the research question, there is specific attention paid to what these benefits might be. Through a focus group and survey questions, the authors were able to gather concrete examples of certain pieces of collective efficacy that were witnessed by community members in response to homeownership. One has to do with social networks. The authors state “results of the pre-focus group survey revealed that participants could name almost

twice as many neighbors in the neighborhoods where they owned their homes than they could in the neighborhoods where they lived as renters.” (Jane & Philip, 2000) This research presents an excellent example of the ways in which surveys and community forums can be used to gather information and encourage dialogues among the communities that the research intends to serve. Making the connections available only to researchers is sure to stunt any growth that might be encouraged by the study, which is a pitfall that PVHH seems to have avoided by making the results of their surveys available in a relatively accessible format, both in their Executive Summary and Final Report for the Big Enough project.

The value of making connections between low-income communities and the researchers that seek to evaluate them cannot be overstated. Understanding the feedback loops that can facilitate further discussion among community members is at the center of my desire to take on this research topic. Another facet of research is understanding the dynamics of low-income homeownership as they relate to the policies originally created to support it. In the article *Constructing Homeownership Policy: Social Constructions and the Design of the Low-Income Homeownership Policy Objective*, author R.B. Drew attempts to unearth the reasoning behind the many federally funded low-income homeownership programs that emerged in the 1990’s. Drew’s objective was to better understand how social norms informed policy-making. He explains “the benefits associated with homeownership, based on long-standing norms around success, stability, and the American Dream, justified government interventions to increase access to private mortgage markets for low-income households” (R.B. Drew, 2013). This work possesses a critical connection to my objectives in that it argues “that the social constructions of homeownership, low-income households, and the private mortgage industry were instrumental in the development of policies to increase low-income homeownership. This policy stance, however, did nothing to assist households with maintaining homeownership for the long term” (R.B. Drew, 2013). While Drew is thorough in his analysis of policy and the impacts of its implementation, he fails to fully explore the “long-standing norms around success, stability, and the American Dream” (R.B. Drew, 2013). It is these norms in particular that this projects intends to more accurately and intentionally define.

While this Master’s Project intends to look at the social context that housing exists within, it seems important to note that in many ways, housing is a social context in itself. Although housing (specifically the policies and regulations that govern it) seems like a very tangible and indisputable component of who we are and where we live, there has been a tremendous amount of intellectualizing of the house and home-space. Writers, bloggers, activists, and artists of varied backgrounds have utilized the concept of the house as a means to explore society, cultural practices, political economies, economics, equity, injustice, and public policy. One of the groups who have sought to highlight the multifaceted realm of housing is an organizing group called prolet.ai. Their now-seminal book *Abolish Restaurants* incorporates a radical class and culture analysis of capitalism and food systems. They take a similar approach in their graphic novel *The Housing Monster*, which seeks to shed a similar light on the systems and power dynamics at work in the construction of a house. The foreword asserts the author collective’s intentions:

“*The Housing Monster* takes one seemingly simple everyday thing – a house – and looks at the social relations that surround and determine it. Starting with the construction site and the physical building of houses, the book slowly builds and links more and more issues togeth-

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er: from gentrification and city politics to gender roles and identity politics; from subcontracting and speculation to union contracts and negotiation; from intensely personal thoughts and interactions to large-scale political and economic forces” (2012).

It is this multi-dimensional analytical approach which seems most appropriate for the topic of housing, particularly when thinking about low-income and permanently affordable housing. Employing an interdisciplinary framework which acknowledges and accounts for each facet of the planning, construction, and implementation of affordable housing projects of all scales is critical.

Understanding the wide variety of programs, subsidies, and initiatives that seek to address the current housing affordability crisis is important within the context of any housing-related research objective. That being said, there need to be distinctions between programs which seek to provide relief for renters versus those that create opportunities for homeownership. One affordable housing program that promotes and supports homeownership opportunities specifically is the Community Land Trust model (CLT). Authors J.F. Curtin and L. Bocarsly explore this model in their article *CLT: A Growing Trend in Affordable Homeownership*. The authors reiterate the benefits often associated with homeownership, claiming, “not only does owning one’s own home provide a family with an asset that will appreciate in value over the long term, but homeownership also provides a family with a stable base from which to participate and engage in its broader community” (Curtin & Bocarsly, n.d.).

Circling back to the ideas of collective efficacy, the authors explore the ways in which families who own their own homes might be more able - or perhaps feel more entitled and welcome - to participate effectively and collaboratively within their community. While this research is thorough in its analysis of the CLT model, it presents an implicit bias. The CLT model is historically associated with grassroots organizing and community groups. The absence of federal monetary support (and thus regulations and compliance issues) changes the dynamics at work within this model. It is important to recognize the ways in which collective efficacy might be enhanced by the community that elects to establish and maintain a CLT, which could be easily mistaken for homeownership itself. For example, a CLT in a community with poor collective efficacy is a difficult thing to imagine. Acknowledging the existing conditions of any community and the social and cultural benefits they may have is an important step in the process of evaluating how homeownership alters these conditions.

Separate from, but related to, the social and cultural implications of affordable homeownership is the need for collaborative solutions to address what is a crisis gaining rapid momentum in recent years. As explored in the book *Land Use in America* compiled by Henry Diamond and Patrick Noonan, affordable homeownership is a problem which does not have a simple or singular solution. The authors state, “Most experts agree that public sector initiatives alone cannot solve the housing dilemma. Instead, a vigorous public-private partnership offers the most promising solution” (Diamond & Noonan, 1996). The reasons for this are many, however one of the most significant is the multi-faceted nature of the social and economic reasons that are fueling the income gap. The authors write, “still poorly understood by the general public is the significant influence of growth patterns over the last 25 years on the widening social divisions between inner cities and suburbs, and on the weakening physical quality and integrity of communities” (Diamond & Noonan, 1996). Understanding these growth patterns is essential to addressing solutions for determining how public and private partnerships

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can emerge to address the affordable housing crisis.

In her book, *The Perfect $100,000 House: a trip across America and back in pursuit of a place to call home*, author Karrie Jacobs explores the trends of American homeownership as they relate to aesthetics and affordability. Within the first few pages she brings to light an observation which returns time and again throughout the book: that the determining factor of a house’s economic value is more often impacted by how it looks than by how it functions. She claims “commercial homebuilders – the companies that routinely bulldozed open desert and plopped down there a brand new subdivision of Spanish or Colonial or Tudor homes – knew how to build cheap” (5). She argues that the materials, land, and labor required to build a house are not what determines its price, and that “there was no challenge in building an aesthetically perfect palace if you could spend a million dollars on it. The trick was getting results for a tenth of that price” (6). Jacobs’ observations are astute, well-supported, and inextricably linked to the conversation of how and where, and when, and for whom to build affordable homes. If a major determinant of building inexpensively is stripping the building of aesthetics and customized details, it seems likely that these inexpensive structures will lack something that other homes embody. This “trade-off” seems to be at the center of understanding the social implications of small homes, and whether or not the value of a small, inornate home is capable of instilling in the owner the same (or at least comparable) social capital and status granted to more traditional homeowners.

Aside from the social implications of homeownership are the financial benefits and legal rights implicit in it. It is impossible to disregard the privileges which homeownership has afforded Americans throughout history, most notably at the inception of the country as it is currently recognized. In his book *Crabgrass Frontier*, author Kenneth T. Jackson unveils the historic and legal framework of homeownership as it relates to the settling of the United States. Jackson explains:

“the idea that land ownership was a mark of status, as well as a kind of sublime insurance against ill fortune, was brought to the New World as part of the baggage of the European settlers. They established a society on the basis of the private ownership or property, and every attempt to organize settlements along other lines ultimately failed. The principle of fee-simple tenure enabled families to buy, sell, rent and bequeath land with great ease and a minimum of interference by Government” (53).

Contextualizing affordable housing within the complicated task of maintaining compliance within federal, state, and local regulations and guidelines makes it impossible to compare it directly to the open housing market. The “great ease” Jackson observes in these housing transactions – as well as all of the privileges and insurance they made possible - is rendered meaningless in the realm of affordable housing. This distinction is a necessary one when thinking about the obstacles and benefits implicit in building homes which deviate from the financial, structural, and cultural norms often associated with America’s earliest economies.

Conducting research on the social implications of homeownership is inevitably informed by the regulations which govern what can be built. The task of incorporating these regulations into this research proposal is two-fold. First, it is important to understand the zoning bylaws and building codes of the communities that participate in this study. Second, it seems beneficial to survey these communities regarding their knowledge or comprehension of these bylaws and building codes. Oliver Gilham, an architect and planner

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in Cambridge, MA, discusses the importance of these regulations as they relate to the built environment in his book *The Limitless City: A primer on the urban sprawl debate*. More specifically, Gilham examines sprawl as a social, psychological, and legal phenomenon that has transformed not only the landscapes we occupy but our perceptions of those landscapes and of ourselves within them. In a chapter entitled “The Origins of Sprawl”, Gilham addresses the impacts of Franklin D. Roosevelt’s implementation of the National Housing Act as well as the creation of the Federal Housing Administration (FHA). Gilham recalls that the FHA set “minimum standards for new housing construction… these minimum requirements included lot size, setbacks, and the overall width of the house” (37). It is here that the tangible impacts of these regulations are made clear. The FHA’s interest in delineating “homogenous residential subdivisions of houses that stood apart from one another on standard streets of standard widths” (37) can still be seen in suburban neighborhoods across the country. The builder’s compliance with these standards also impacted potential buyers. Gilham explains that “the FHA went even further, dictating the architectural styles of what went into the subdivisions whose financing the agency guaranteed” (37). Understanding the history of these and other housing construction regulations will help inform how this country and its varied but interconnected suburban landscapes arrived at this moment in time. It will help frame the dialogue about how to deviate from these regulatory norms, and what the cost (both financially and socially) is of doing so.

An analysis of the economic value of homeownership is a relatively straightforward task. Researchers can utilize qualitative data such as interest rates, demographics, median area income and tax codes to determine whether or not the investment of homeownership is likely to generate wealth for certain groups of people. Analyzing the cultural value of homeownership, however, is a much more elusive task. The work of PVHH has been to do just this, and their staff has relied on surveys and in-person interviews to get a better understanding of why people want to buy their own homes in the first place. This literature review has acted as an important starting point in understanding the policies, biases and programs that predate PVHH’s mission to build more affordable homeownership opportunities in Hampshire and Franklin Counties. It is important to acknowledge the need to blend scholarly research with more qualitative data to get a more complete picture of how to approach a task as multifaceted and complex as the one PVHH seeks to complete. Their ability to gather a wide range of data has strengthened the project and given much needed nuance to the conversation about affordable housing in this region. The next section of the project will shed light on the specific ways that PVHH went about collecting and analyzing data, and how their findings supported the work at later stages in the Big Enough project.

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Methodology

As a researcher with PVHH during the summer of 2017, I helped design and distribute a survey which sought to gauge the social and cultural benefits associated with homeownership, as well as general reactions prompted by the “tiny homes” movement. More specifically, the survey sought to determine whether or not the participants believed it was feasible and/or desirable to inhabit a small, affordable home. The survey was one of PVHH’s first steps in understanding the needs and perspectives of the communities that the Big Enough project intended to serve. The survey results were compiled and analyzed in order to identify patterns and themes. The results were organized into an Executive Summary report and published online by PVHH in the fall of 2017. An excerpt from the report is included on the next page, highlighting the intent of the research project, the parameters of its sample size, and the outcome of the survey period.

Excerpt from PVHH’s Executive Summary report, outlining the major findings of the Big Enough survey project (graphics generated by Maggie Kraus)
The research was designed to capture information from individuals and families in western Massachusetts who earn between $16,000 and $52,000 annually and have a household size which does not exceed four people. Of fifty-seven participants, forty-two surveys were completed in full by people who met this criteria. The survey was intended to gather both numerical data and long-answer responses confidentially. The survey began with a brief summary of demographic and personal information, followed by an overview of each participant’s housing history. Participants were given a brief summary of Pioneer Valley Habitat for Humanity’s “Big Enough” Small Homes project, including the $50,000 building cost goal as well as the type of research that had been going into the project thus far.

Participants identified age, how often participants had moved, what town they lived in, and what type of housing they currently occupied. Participants were given an opportunity to voice some opinions on what was a benefit about the home, what was acceptable about the home, and what was unacceptable about the home. Among the most commonly cited benefits were: simple and easy to maintain; aesthetically appealing; new construction; and energy efficient.

When asked whether or not they would buy this house if the monthly payments were affordable (no more than 30% of their income), 40% said no, 45% said yes, and 25% remained undecided. For the most part, these trends were evident in each income bracket. There was, however, a noticeable deviation from this trend among participants who earn between $40,000 and $52,000 annually. These participants were generally much less likely to find the value in the small Brattleboro home. Of those participants in other income brackets who reported that they would not buy the house, a majority justified their answer by stating that the house was too small for their needs.”

13 Pioneer Valley Habitat for Humanity Executive Summary and Data Report for Big Enough Small Homes project survey results (9/1/2017)
Vermod
Wilder, Vermont
Affordable, sustainable, adaptable New England homes

Summary: After much of Vermont was severely impacted by Hurricane Irene in 2011, it became clear that mobile homeowners were much more vulnerable than others. Since launching in 2013, Vermod has helped build and replace a wide range of mobile homes across the state. Built with energy efficiency and New England’s cold winters in mind, Vermod is changing the number of options available to low- and moderate-income homeowners in Vermont. Vermod works alongside a number of partners statewide to respond to the need for sustainable and durable housing, utilizing many of the benefits associated with prefabricated homes.

Footprint: 900 - 1100 sq. ft.

Cost: $69,000 - $130,000

Builder: Pil-Maraham Architects, Vermod Factory Crew

Partners: Efficiency Vermont Zero Energy Modular (ZEM)

Funding Source: Homeowners are required to finance their homes, however state funds are available in the form of subsidies if eligible for Vermont’s ZEM incentive program.

Awards & Recognition:
Vermont’s Going Green award (2016); “Climate Innovator” by Vermont Council on Rural Development (2016)

“If you’re struggling to make ends meet... you may not have the luxury of thinking long-term about your housing. We really hope that this home will help to end that cycle of poverty for our lower-income homeowners”
- Pete Schneider, Senior Consultant with VT Energy Investment Corporation

Illustrative rendering of a Vermod housing model (photo courtesy of vermodhomes.com)
SAAHC and UTSA collaboration homes (photo by Brantley Hightower)

Zero net energy Vermod home exterior and floorplan (images courtesy of vermodhomes.com)
**ecoMOD South**

University of Virginia | School of Architecture

*Low-impact residential units focused on affordability*

**Summary:** The ecoMOD building project is a collaboration by the University of Virginia’s Architecture and Engineering departments to design and build sustainable, affordable residential units.

**Footprint:** 1,000 sq. ft.

**Cost:** $105 / sq. ft.

**Builder:** UVA School of Architecture

**Partners:** Piedmont Housing Alliance & Habitat for Humanity

**Funding Source:** $1.2 million from the Virginia Tobacco Commission Indemnification and Community Revitalization Commission

**Awards & Recognition:**

Architect Magazine Research & Development Award (2013)

“Sustainable residential design has long been a luxury reserved for the wealthy,” Quale said. “Our goal since the beginning has been to create low-cost and low-impact homes for affordable housing organizations, who serve the segment of the population that can benefit most from the reduced energy, water and maintenance costs associated with environmentally responsive homes.” — *UVA Today*
ecoMOD South home | South Elevations (drawings courtesy of Michael Britt, UVA M.Arch 2012 | michaelbritt8100.files.wordpress.com)
IVRV House
Los Angeles, CA
*Meant to help residents feel “safe and secure”*

**Summary:** A student designed / faculty led project focused on increasing affordable homeownership options in Los Angeles and prioritizing

**Footprint:** 1185 sq. ft.

**Cost:** $105 / sq. ft.

**Builder:** Darin Johnstone Architects

**Partners:** Habitat for Humanity of Greater Los Angeles, Southern California Institute of Architecture (SCI-Arc)

**Funding Source:** $1.2 million from the Virginia Tobacco Commission Indemnification and Community Revitalization Commission

**Press & Recognition:**
“This partnership provided a tremendous hands-on learning experience for the architectural students, helped broaden community norms around sustainable home design for the West Athens Community, and created an affordable home for the Belhu family.” - *Los Angeles County Supervisor Mark Ridley-Thomas*
SITE & CONTEXT
Regional Context

Not surprisingly, Western Massachusetts sits in the western corner of the commonwealth. It encompasses Franklin, Hampshire, Hampden, Worcester and Berkshire Counties. Western Massachusetts shares a border with Vermont and New Hampshire to the north; New York to the west; and Connecticut to the south. The major vehicular corridor in Western Massachusetts is Route I-91, which runs for the length of the state from north to the south. It cuts through some of the region’s most populous cities such as Springfield, Northampton, and Greenfield. The character of Western Massachusetts is generally recognized as being more rural and less developed than the eastern part of the state, however certain areas have a much more urban quality to them. The topography of Western Massachusetts is defined largely by its geologic history, particularly the influence of the 200-mile long glacial Lake Hitchcock. Glacial activity resulted in the formation of the Holyoke Mountain range as well as many other significant landforms which define the region today.
The Village of Florence

Florence, Massachusetts is one of three villages within the City of Northampton, located in the center of Hampshire County in the western part of the state. At the time of the 2012 census, Northampton’s population was just over 28,000 residents, with 12,000 households, and 5,895 families. The median income for a household in the city was $56,999, and the median income for a family was $80,179. Additionally, 13.5% of the population was below the poverty line. Northampton is home to a number of public elementary, middle and high schools, as well as Smith College, one of the city’s biggest employers. The town is characterized by single-family homes and a small downtown along Main Street, part of State Route 9. Florence also has a significant amount of open space and farmland, including GrowFood Northampton, a large mission-oriented community garden and farm.
The parcel at 1 Garfield Avenue sits at the end of a relatively quiet residential street in the Village of Florence. The neighborhood consists mostly of modest, single-family homes which line adjacent blocks. Verona Street, Straw Avenue, and Garfield Street, all of which are to the south, have a similar character. In 2014, PVHH completed building an affordable home on an abutting parcel to the south, 3 Garfield Avenue. According to the PVHH website, the home was dedicated on Sunday July 27th, 2014 to Kimber-ly Antequera and her four children. As seen in the adjacent map, 1 Garfield Avenue is a relatively small plot - by far the smallest of all neighboring parcels. With just over 25 feet of frontage to Garfield Avenue, the parcel’s total area is 5,155 sq ft (just over .1 acres). When the parcel’s setbacks and wetland buffer are considered, the available building space is reduced to less than half of the parcel size. One of the parcel’s most important assets is its proximity to a parcel of conservation land to the north, designated by the city of Northampton as Municipal Open Space.
Views of 1 Garfield Avenue and adjacent municipal open space (photos by Maggie Kraus)
Existing Conditions Plan
The Berkshire Design Group, Inc.

Local landscape architecture and engineering firm Berkshire Design Group has long been a partner with PVHH. Their survey and site plan of the existing conditions at 1 Garfield Avenue are displayed below, illustrating current topography and a significant amount of debris, boulders and brush. The photo on the facing page further illustrates the parcel’s current conditions.

Illustrative section demonstrating the existing conditions of 1 Garfield Avenue (section by Maggie Kraus)
PVHH has been working alongside local firm Jones Whitsett Architecture for the duration of the Big Enough project. Based in the nearby city of Greenfield, Massachusetts, Jones Whitsett has provided invaluable insight, design development and construction documentation for the home to be built at 1 Garfield Avenue. Architect Dorrie Brooks has been guiding PVHH through the process of designing the small home from start to finish, with construction scheduled for Summer 2018. As a local resident and an featured speaker in PVHH’s 2017 Solutions Lab event, Brooks has brought a wealth of knowledge and commitment to the project. Weaving together structural requirements and community feedback, Brooks has participated in many rounds of design development for the project. Taking into consideration elements such as construction materials, footprint, interior spaces and overall home dimensions, Brooks has been working towards generating a design that both complies with all building codes, zoning laws and structural requirements, as well as addressing the needs of prospective low-income homeowners. The drawings on the facing page represent the most updated version of Brooks’ vision of the home for 1 Garfield Avenue. They aim to provide a comfortable and energy efficient space for an individual or small family that utilizes the assets of the parcel and minimize the constraints. The current drawings propose a one-bedroom home of 610 sq feet that offers residents a kitchen, living room, bathroom and laundry area. Additionally, this home proposes an attached, outdoor storage shed to provide homeowners with additional room.
Site Plan Proposal
The Berkshire Design Group, Inc.

The landscape architects at Berkshire Design have been working pro bono with PVHH since the parcel at 1 Garfield Avenue was acquired. They have also contributed significant time and resources to other PVHH projects in the past, and have a rich legacy of building sustainable landscape projects in Western Massachusetts and beyond. They bring to this project a wealth of knowledge, not only on designing and building locally, but also on 1 Garfield Avenue specifically. As previous consultants and designers for the site, they are familiar with all aspects of the parcel PVHH hopes to build on this summer. Rachel Loeffler, RLA, ASLA, has been working pro bono with PVHH to create a site plan that responds to current conditions and enhances the potential for 1 Garfield Avenue. She brings to this project over a decade of experience designing and implementing projects in New England. According to the Berkshire Design website, Loeffler has contributed to a wide array of both national and international projects focusing on “brownfield remediation, waterfront parks, public parks, campuses, rooftop gardens, and therapeutic gardens... with extensive professional experience with an integration of systems thinking, conceptual rigor, information graphics, programming, materiality, and sustainability.” (Berkshire Design citation). Of PVHH, and her input has been invaluable.

Grading
The proposed grading plan for 1 Garfield Avenue addresses the topography of the site, as well as the significant amount of debris and boulders situated on the western side of the property. It acknowledges the existing landform in order to minimize unnecessary cut and fill, generally following the current slope towards the existing low point at the southwestern corner of the property. The proposal also recommends that the site be graded to move water away from the house on the northern edge. A slope of approximately 28% is proposed near the property’s northern setback, directing water down and away from the house and into the abutting open space parcel.

Stormwater Management
Perhaps the most significant suggestion for stormwater management at 1 Garfield Avenue is a swale on the southern edge of the property which directs stormwater down gradient along the driveway with an 8.3 - 8.7% slope towards the low point at the southwestern corner. The proposal designates a small rain garden as a way to absorb the flow of water coming down the driveway. This sequence responds accurately to the grading of the site and coincides with best management practices for residential stormwater.

Driveway
The current dimensions of the driveway proposed by Berkshire Design’s site plan are 38’ 10” along the southern edge, 12” at the western edge, and 14” along the parcel’s frontage along the eastern edge. This brings the total surface area of the driveway to approximately 468 sq ft, accommodating at least two vehicles comfortably. The proposal for the driveway also recommends permeable paving options.

Accessibility
Acknowledging the importance of a fully accessible entrance, Berkshire Design’s site plan proposal includes an ADA compliant walkway in addition to a concrete walk with one step. This inclusion of an alternative demonstrates a commitment to accessibility and provides a viable option should PVHH create a requirement for an accessible entrance.

Setbacks
This site plan is in compliance with all building setbacks and wetland buffer regulations.

Planting Plan
Berkshire Design’s planting plan focuses on native plants, as well as plants with an appropriate tolerance for both shade and water. Due to the placement of the site’s rain garden in a particularly shady area, the need for plants that can withstand a lack of sun is critical.
SITE (PLAN) ANALYSIS
As often happens with landscape planning for affordable housing, the proposed treatment of 1 Garfield Avenue involves a simple grading plan and a predominance of a “low-mow” fescue lawn blend. In this site plan, a small rain garden is situated at the low point in the southwest corner of the property and suggests native plantings such as *Juniper horizontalis* - *Andorra* (Andorra Juniper) and *Cornus sericea* ‘Kelseyi’ (Dward Red Osier Dogwood).
This site’s highest elevation is fixed at +273’ in the northeast corner of the parcel. The proposed grading plan directs water away from the house in two major areas: 1.) to the southwest, down the driveway and towards a designated rain garden and 2.) to the north, following a 2.7% slope towards the conservation parcel.
The views to the northeast provide an important design opportunity. The adjacent parcel of conservation land offers uninterrupted visual access to a considerable amount of green space which should be emphasized during master planning. Views to the south and east look into the Garfield Avenue neighborhood, a mid-density residential corridor with relatively infrequent vehicle passage.
The Berkshire Design site plan recommends removal of the existing driveway in order to install permeable pavers and curbs. The site plan has two hardscape options for pedestrian circulation, one which is ADA compliant and one which is not. Both options recommend cast in place concrete.
Master Plan
Defining a vision for 1 Garfield Avenue

- ENTRY & ARRIVAL
- GARDENING
- PUBLIC SPACE
- PRIVATE SPACE
- PLAYING & GATHERING
- STORMWATER MANAGEMENT
Design Toolbox
Elements of interest throughout residential design

THRESHOLDS

VIEWS & CONNECTIVITY

FINISHED FLOOR ELEVATION

PERMEABILITY

SEATING

PLANTS
**Thresholds**

**Making the most of “coming home”**

Landscape architects working on residential design often try to bolster a sense of “entry and arrival”, a phrase that refers to the experience of entering the property in a ceremonious or intentional way. An area focused on “entry and arrival” essentially acts as a cue to visitors that they have successfully transitioned from the street space to the home space and have reached their final destination. For the house at 1 Garfield Avenue, a design project that strengthens entry and arrival should occur along the southeastern edge of the property, as visitors walk towards the house through the driveway.

Entry and arrival for the home can be established through a subtle assortment of design decisions that direct visitors either to the front door or around the house into the backyard, depending on the preferences of the homeowners. If the goal is to make people feel welcome to enter the backyard, there could be a wide entryway lined with plants or framed by a trellis or fence. If homeowners prefer all visitors to enter the front door, this could be signalled by making the pathway to the backyard smaller, or blocked entirely. In the case of 1 Garfield Avenue, the storage shed creates an additional doorway that’s close to the front door, which might make it slightly more confusing for visitors to know with certainty where they should knock when they arrive. One way to designate the front door is to use planters to make it clear that this door is the one people should pay attention to space.

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**Thresholds**

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**Selecting the right materials will allow homeowners to create a design that meets their needs and fits within their budget. Homeowners can define space on the ground by using specific pebbles, gravel or stone dust; in the air by using hanging plant baskets; and in between by using climbing plants or trellising. All of these materials can be found at a local garden store or farm supply.**
Views & Connectivity
Drawing attention to the site’s assets

Similar to the way that a strong threshold can emphasize a space, a strong space can emphasize a view. Without question, one of this site’s greatest assets is its views of the municipal open space parcel to the north. The views provided by the conservation parcel make it feel as though the build site is significantly larger than it is. In addition to offering opportunities for recreation and connecting with native wildlife, this conservation land diminishes the constraints of building on such a small parcel. Additionally, 88% of participants of the 2017 Big Enough Survey project explained that “being close to nature” was high on their wishlist for homeownership. For this reason, enhancing visual and physical connectivity between 1 Garfield Avenue and its neighboring parcel should be prioritized.

In order to remain in compliance with building setbacks and other code requirements, a visual or physical pathway to the conservation parcel will likely be limited to subtle design elements. Views of the open space can be framed by plantings along the northern edge of the front walkway or by strategic placement of seating on the northern edge of the front yard and/or backyard. Directing attention away from the road and towards the conservation land will.

Physical access can be enhanced by simple stone pavers leading towards the property line, either in proximity to a seating or as a continuation of the front walk, just beyond the storage shed.

Enhancing the views on a site can be as easy as strategically creating a space for people to sit. Directing attention away from the road and towards the open space is a small but effective gesture.

The vast majority of survey participants were clear about wanting a place to garden. If a homeowner can anticipate how they will be spending most of their time, they can try to make sure that these activities happen in a space with good views. For example, placing raised garden beds near the northern edge of the property will ensure consistent views.

Enhancing views can also be done with plant material. Homeowners can focus on the views they are hoping to emphasize and build a “frame” around that view with plants. This would be most impactful with plants that will grow densely, like woody shrubs and bushes, in order to create contrast between the view and the frame.
Finished Floor Elevation
Increasing accessibility, decreasing fill

According to the 2017 “Big Enough” Survey Data, having an accessible home was important to many people. While there are a variety of ways to enhance accessibility, the most significant way to accommodate users in wheelchairs, walkers, or with strollers is to eliminate the need for steps and stairs in all entryways. During the design of a building, architects and landscape architects usually incorporate steps as a response to the finished floor elevation. The finished floor elevation of a building, often referred to as FFE, is a way for contractors and architects to establish how high off the ground the floor will be once the house is built. Currently, the site plan for 1 Garfield Avenue has an FFE of +273.9. After evaluating the grading plan, it seems possible to lower the FFE by an entire foot, to +272.9. By lowering the FFE, a number of improvements would be achieved. First and foremost, there would be no need for a step at the front entrance, eliminating the need for a separate pathway to comply with universal accessibility requirements. This would also undoubtedly save concrete and other building materials. Additionally, keeping the walkway close to the house allows for more uninterrupted space in the front yard. Given the fact that the parcel is relatively small, the placement of a walkway has serious implications. If the construction of an additional, or alternative, path was needed, it would essentially bisect the front yard and make it harder to establish plantings or create room to gather or play.

Lowering the FFE from +273.9 to +272.9 reduces the amount of cut and fill, lowers material costs, and eliminates the need for a step (and the additional pathway which cuts across the front yard).

This site plan demonstrates that keeping the walkway out of the front yard will provide more space for homeowners to gather, rest and plant gardens.
Seating

Find room to rest on a small site

For many survey participants, the most important appeals of homeownership were having room to garden and having a private space to gather with friends and family. 43% of all participants actually stated that they would not buy a house that didn’t have ample room for gardening. While the build site for 1 Garfield Avenue has a limited amount of space to work with, there is ample room for a simple design that creates space for growing plants and coming together. Raised garden beds or planters can be built or acquired at a low cost, and are excellent tools to define outdoor spaces. Homeowners can consider using the front yard or the back yard to establish a joint area for growing and gathering. One way to determine where these activities should occur is to think about how private or public they are. If gathering with friends feels like an intimate, private activity, homeowners might consider creating a small patio with a table and chairs in the back of the house, closer to the northern edge and away from neighbors. Identifying where the sun is and where the views are is a great first step in determining where a gathering space should be located. One way to determine where these activities should occur is to think about how private or public they are. If gathering with friends feels like an intimate, private activity, homeowners might consider creating a small patio with a table and chairs in the back of the house, closer to the northern edge and away from neighbors. Identifying where the sun is and where the views are is a great first step in determining where a gathering space should be located. The size and qualities of any seating area should be determined by its "program", a word used by landscape architects to indicate how many people will be using a place and what activities will be done there. For example, the program of a backyard seating area could include sitting, gathering, eating, and enjoying a bonfire. The diagrams above illustrate some possible sizes for different seating area programs. The first diagram illustrates a 10’ x 10’ patio (100 sq ft) that accommodates a round table with four chairs. The middle diagram illustrates a 12’ x 18’ patio (216 sq ft) that accommodates a rectangular table with six chairs. The last diagram illustrates a 10’ x 20’ patio (200 sq ft) that accommodates several chairs around a bonfire, keeping a safe distance from surrounding vegetation.

Defining an area to sit doesn’t have to cost a fortune. Once the homeowner has determined what size their seating area should be, they can start to look into a variety of materials to build the space. Something as simple as laying down stones or gravel can go a long way. Local farm supplies and stone masons will have plenty of affordable options to choose from. The images above feature 3/4 Trap rock (left), 3/8 Trap Rock, and 3/8 Washed stone (right).
Permeability
Reducing the driveway for more space and sustainable land use

On a small site, it is important to use space as efficiently as possible. The parcel for 1 Garfield Avenue is just over .10 acres, which means site planning must take into consideration every square foot to ensure that no space is being wasted. One area of the current site plan that has significant yet underutilized potential is the driveway. Currently, the site plan has allocated space for a driveway that seems to be much larger than is actually needed. In a house that is looking to house 1-3 people, it seems likely that the household would have one or two cars. With ample free overnight parking all along Garfield Avenue, this site could make better use of its limited space by reducing the square footage of the driveway. This proposed driveway treatment for the Master Plan involves shortening the length by 20’, bringing the total length to 19’ as opposed to almost 39’. This brings the total square footage of the driveway from 468 square feet (which is over half the footprint of the house) to 228 square feet. This adjustment to the current site plan would leave the homeowner with a 5% increase of total permeable surface, as well as more opportunities to plant and establish a stronger sense of connection to the backyard. Additionally, the reduction of impermeable surfaces is widely accepted to be in line with best management practices for design projects of all scales and scopes. In this area in particular, many municipalities have actually placed restrictions on the ratio of permeable to impermeable paving options used by homeowners.

Contrasting the overall impact of impermeable surface in the current proposal (top) with the suggestion to reduce driveway (below)
Plants
Finding the right plant material

The process of finding plant material can be overwhelming, even for small residential projects. While there are plenty of resources to assist a homeowner in their search for appropriate plants, the process can begin with a simple survey of the property. Arguably the three most important factors to consider when choosing plants are sun, soil, and origin. Understanding where the sun is (or isn’t) on a property is crucial to selecting plants that will survive. Taking note of sun and shadows throughout the day (and throughout the seasons) can help a homeowner construct a diagram. Where the sun is will affect the soils. The major distinction between soils is wet soils and dry soils. Of course there are innumerable variations on the soil, but beginning with a simple evaluation of whether it will hold water and stay wet or be exposed to sun and be dry is a good place to begin. Lastly, it is widely accepted by landscape architects and horticulturists that using native plants is a best management practice. Plants are native if they originate in the landscape they are being used in. They generally need less fertilizer, water and outside stimulants to stay alive, and therefore will be more energy and cost efficient over time.

**FULL SHADE**
- Aesculus parviflora - Bottlebrush buckeye
- Amelanchier spp. - Shadbush
- Cercis canadensis - Redbud
- Chionanthus virginicus - Fringetree
- Cornus alternifolia - Alternate leaf dogwood
- Kalmia latifolia - Mountain laurel
- Leucothoe fontanesiana - Drooping leucothoe
- Stewartia ovata - Mountain stewartia
- Viburnum acerifolium - Mapleleaf viburnum
- Viburnum dentatum - Arrowwood

**WET SOILS**
- Lindera benzoin - Spicebush
- Nyssa sylvatica - Tupelo
- Quercus bicolor - Swamp white oak
- Salix discolor - Pussy willow
- Nyssa sylvatica - Tupelo
- Vaccinium corymbosum - Highbush blueberry
- Viburnum dentatum - Arrowwood

**MOIST SOILS**
- Acer rubrum - Red maple
- Aronia spp. - Chokeberry
- Betula alleghaniensis - Yellow birch
- Calycanthus floridus - Carolina allspice
- Hamamelis virginiana - Common witch hazel
- Hydrangea arborescens - Smooth hydrangea
- Hydrangea quercifolia - Oakleaf hydrangea
- Ilex verticillata – Winterberry
- Lindera benzoin - Spicebush
- Liquidambar styraciflua - Sweet gum
- Liriodendron tulipifera - Tulip tree
- Pieris floribunda - Mt. piersis
- Rhododendron maximum - Rosebay rhododendron
- Salix discolor - Pussy willow
- Sambucus canadensis - Elderberry
- Stewartia ovata - Mountain stewartia
- Styx americus - American snowbell

**FULL SUN**
- Arctostaphylos uva-ursi - Bearberry
- Abies concolor - Concolor fir
- Acer saccharum - Sugar maple
- Betula nigra - River birch
- Clethra alnifolia - Sweet pepperbush
- Fothergilla gardenii, F. major - Fothergilla
- Halesia tetraptera - Carolina silverbell
- Hamamelis virginiana - Common witch hazel
- Hydrangea quercifolia - Oakleaf hydrangea
- Ilex opaca - American holly
- Juniperus horizontalis - Creeping juniper
- Magnolia virginiana - Sweetbay magnolia
- Nyssa sylvatica - Tupelo
- Vaccinium corymbosum - Highbush blueberry
- Viburnum dentatum - Arrowwood

The sun is most prominent in the northeast corner of the site and least prominent in the southwest corner of the site. It is not uncommon for the soils to reflect this gradient, meaning the dry soils will be found where the sun is and the wet soils will be found where the shade is. Furthermore, 1 Garfield Avenue has a low point where the shade is, meaning water is especially likely to gather here and keep the soil wet. Creating a simple diagram like the one above will save homeowners time and money in selecting plants.
CONCLUSION
Conclusion

There might always be a need for more affordable, sustainable, energy efficient housing. That being said, there are more resources than ever before to address this need. The research, analysis and design that went into this Master’s Project support the notion that one of the most reliable way to work towards PVHH’s vision is to work together. There seems to be no shortage of knowledge, insight, and support among those who have come together to support the Big Enough project. Planners, professors, contractors, architects, students, residents, and state officials have all participated in invaluable ways to PVHH’s small homes campaign. It is clear that the best way to move forward is to ensure that the wide array of people needed to tackle this project continue to be in conversation with one another. While PVHH has acted as an incredible facilitator of these dialogues, sharing the responsibility with community leaders, interfaith organizations, nonprofits, politicians, and citizens is a critical next step if this project is to be sustained into the future. Another important finding of this project is that landscape architecture can be a major component of creating and enhancing the value of homeownership. Making the process of designing a residential landscaping accessible is no easy task, but it is possible to make future homeowners feel more equipped and empowered in the process. Finally, one of the most important findings from this project is the need to embrace patience during the process of designing and implementing residential landscape designs. So often in the field of landscape architecture, getting a project done quickly is one of the biggest priorities. Hopefully this research can encourage homeowners to take their time, both in the process of conducting site analysis and in the process of solidifying design ideas. If they can get to know their property throughout the seasons and in all kinds of weather events, they are likely to have better success in bringing to life a landscape that truly feels like home.
References


APPENDIX
Architectural Drawings

More detail on the Jones Whitsett Architecture plans (by Dorrie Brooks)
Nurseries and plant material
Locally owned businesses in Western Massachusetts

Buying locally-grown plant material from knowledgeable growers is a relatively easy task in Western Massachusetts. Thanks to the abundance of farm supplies and garden centers in the area, homeowners can find reliable information and guidance without traveling very far. Some nurseries may list an up to date inventory of all the plants they have, in addition to their size and pricing. Others may encourage you to stop by for a consultation. The list below is just a small selection of all the farm and garden resources nearby.

**Amherst Farmers Supply Inc.**
320 South Pleasant Street
Amherst, MA
413-253-3436

**Bigelow Nurseries**
455 West Main Street, P.O. Box 718
Northboro MA 01532
508-845-2143
http://www.bigelownurseries.com/

**Hadley Garden Center**
Route 9, 285 Russell Street
Hadley, MA 01035
413-584-1423
http://www.hadleygardencenter.com/products.html

**Sudbury Nurseries West, LLC.**
81 Ben Hale Rd,
Gill, MA 01354
413-834-4569
http://www.sudburynurserieswest.com

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Sudbury Nurseries West is a locally-owned, woman-owned company. They have an active inventory of their nursery stock for the 2018 growing season available online. (data sourced from http://www.sudburynurserieswest.com/about-us.html)

Hadley Garden Center is located on Route 9 in Hadley, MA and features a wide selection of both indoor and outdoor plant material. Their website can be used by homeowners to get a sense of how to begin a residential design planting project.
Stone, gravel and sand
Locally owned businesses in Western Massachusetts

If a residential design project is focused more on seating, patios and gathering spaces, it is worthwhile to talk to a professional who deals specifically with stone, gravel and sand. These materials often fall under the “hardscape” category and can be purchased in small or large quantities, depending on the needs of the homeowner. There are plenty of affordable, attractive materials that function well in outdoor spaces, and catalogs like the one pictured here can be helpful in creating a budget.

Delta Sand & Gravel
P.O. Box 395
562 Amherst Road
Sunderland, MA 01375
413.665.4051

Byrne Sand & Gravel Co., Inc.
210 Wood Street
Middleboro MA 02346
508-947-0724

Haluch Inc.
1014 Center Street
Ludlow, MA 01056
(413) 583-6020

Jake Enterprises, Inc.
75 Sam West Road
Southwick, MA 01077
(413) 569-5474

Nawrocki Construction, Inc.
107 Slate Road
Chicopee, MA 01020
(413) 592-6577

Palmer Paving Corp
1000 Page Boulevard
Springfield, MA 01104
(413) 737-4020

Hathaway Construction Corp
20 Arthur Street
Holyoke, MA 01040
(413) 527-2324

Westfield Sand & Gravel
403 Paper Mill Road
Westfield, MA 01085
(413) 568-4451
The University of Massachusetts - Amherst has a long and rich history of agriculture and environmental education. There are countless guides, resources and reference materials housed online at the website for the UMass Center for Agriculture, Food and the Environment. This is an invaluable archive of information about native New England plant material, design ideas that conserve water (and save money), as well as best management practices for taking care of landscapes long-term. Homeowners could begin the process of designing a residential landscape by referring to the guides made available by UMass. There is a wealth of information to sift through and make use of, all of which is geared specifically towards the climate and ecosystems found in the region.