The Frolic Model: Transforming Single-Family Homes into Urban Cohousing

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MASTER IN CITY PLANNING
MASTER OF SCIENCE IN REAL ESTATE DEVELOPMENT

at the
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
June, 2019

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Abstract

We founded the development firm Frolic to respond to the following questions: Can we introduce the benefits of density to urban America without displacing the people who live there? Can we bring the comfort of permanence and planting roots to the non-wealthy? Can we build places that make daily life easier, more affordable, and more enjoyable?

This thesis articulates the Frolic Model developed through the DesignX incubator at MIT with input from over 40 developers and city staff working in major cities across the U.S. "Frolic" is an Amish term referring to shared labor and common vision, used to describe joyous festivals in which over 100 families would come together and raise a barn in one week. In our research, we found that there are several potential mutual gains lost in the current housing development paradigm - between property owners, investors, developers, community members, and future residents. By restructuring the development process around mutual gains, the Frolic Model brings the benefits of homeownership to a broader population, while allowing smaller, more intimate development projects to become viable.

The three principles of the Frolic Model are cooperative financing, co-development, and cohousing. The cooperative financing structure enables crowd-investing and a decoupling of share ownership and tenancy. This allows residents to act as long-term tenants of a project without requiring a large down payment or a personal mortgage. It also allows others in the neighborhood to buy shares in the project and invest in a tangible, low-risk, low-return community asset. Over time, low wealth residents can purchase more shares and build additional equity in their home. Partnering with land owners to co-develop their property, we allow them to avoid displacement and financially benefit from redevelopment. Through elements of cohousing, we create infrastructure for community and improve affordability through shared amenities.

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Key Words: Cooperative financing, crowdfunding, co-develop, cohousing, affordable housing, age-in-place, age-in-community, transparency.

frolic

A Model for Transforming Single-Family Homes Into Urban Cohousing

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Joshua I.H. Morrison
May 2019

MIT DESIGN X

Acknowledgements

We would like to acknowledge all of the thoughtfully-designed spaces that inspired us to embark on this adventure of ours. We would also like to thank all of the people and communities that taught us how to never stop questioning. Thank you DUSP for surpassing our incredibly high expectations of you.

We truly could not have made it here without the kind individuals who continue to support us in their own special ways. We would specifically like to thank:

Cecilie Hjorth Morrison
Mattias Hjorth-Morrison
Nora Sullivan
Dennis Frenchman

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Introduction

In January 2018, through the DesignX accelerator at MIT, we founded a development firm named Frolic. We spent the last year and a half conducting over 80 interviews with people throughout the real estate ecosystem. Our goal was to combine the collective knowledge of our networks to craft a development model centered around mutual gains. This document will take you through the research we conducted, share with you our main findings, and walk you through our development model. It is broken into the following chapters:

Context
This chapter provides a description of two trends we see happening in U.S. cities that threaten to push out who we consider the life-force of cities. The first is an upzoning of residential neighborhoods leaving homeowners vulnerable. And the second is a housing market that excludes non-wealthy residents from the benefits of homeownership.

Research
This chapter details the process we have undergone in developing the Frolic Model. It includes an overview of over 80 interviews conducted and 20 site visits during the last 18 months as well as key findings from this research.

Model
In this chapter, we describe the model we have developed in response to the questions posed in our research. The model has three pillars: co-development, co-housing, and co-financing. Each of these pillars are outlined in relation to the pilot project we are planning in Shoreline, a small municipality within the Seattle region.

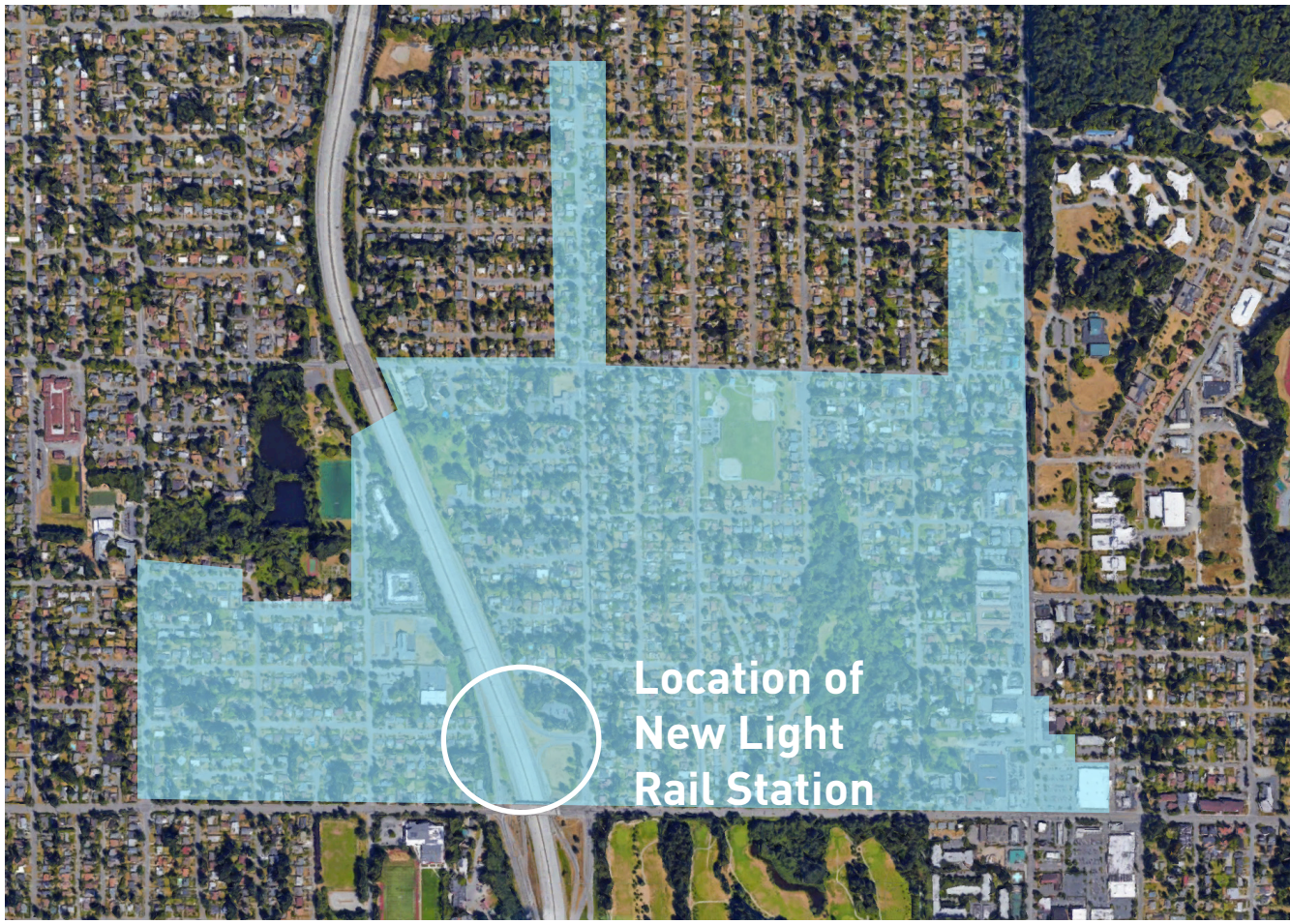
Frolic: The Business
In closing, we describe the basic business model for Frolic, and how the model can be scaled into a profitable social enterprise.

1 Context

The Upzone

Seattle is one of the fastest growing major cities in the U.S., with over 1,000 residents moving to the city every week.[1] Like many major U.S. cities, the majority of the housing stock in Seattle is made up of primarily single-family homes (75% of all land available for housing is occupied by single family homes).[2] Facing a rapid influx of residents, Seattle has undergone a major effort to change zoning to allow increased density, with the hope of alleviating its housing crisis. This zoning shift of increasing density is often referred to as upzoning.

In March of 2019, the city council voted unanimously to approve a dramatic upzone in 27 of the cities neighborhoods.[3] Adjacent towns within the Seattle metropolitan region are also implementing upzones. Shoreline, a small municipality within the Seattle Metropolitan Region, has dramatically upzoned two of its residential neighborhoods, Ridgecrest and North City. Within these two neighborhoods



Map of upzone in Shoreline, WA. Blue area shows single family lots rezoned at 35' - 70' mixed use. When the light rail opens in 2023 residents will be able to commute to downtown Seattle in 20 minutes, with trains running every 6 minutes.

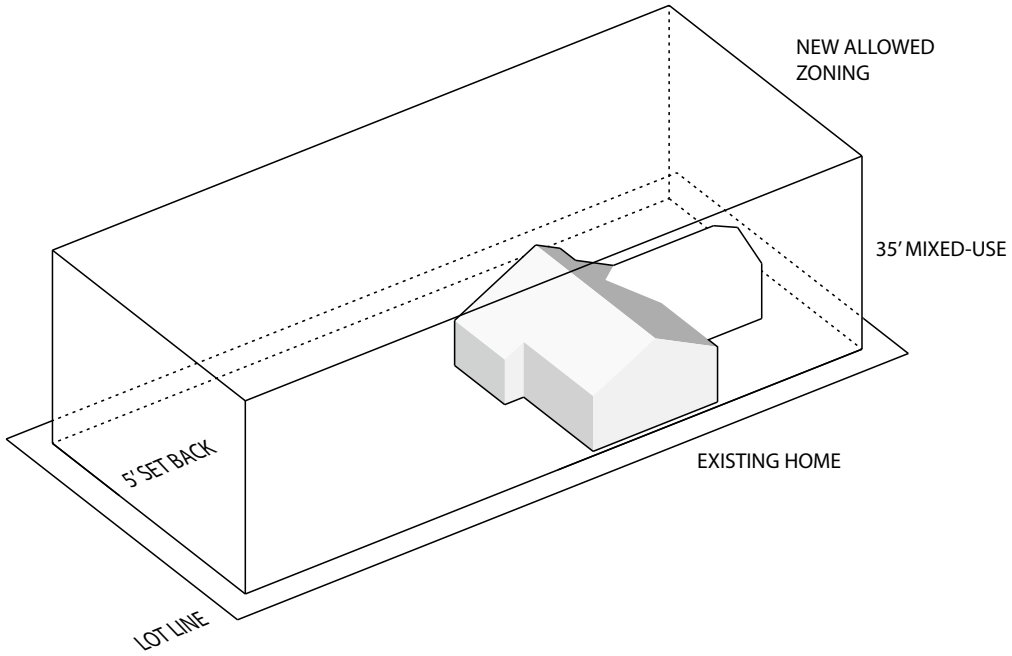
1. Guy, Gene Balk / FYI. 2018. "114,000 More People: Seattle Now Decade's Fastest-Growing Big City in All of U.S." The Seattle Times. May 24, 2018. https://www.seattletimes.com/seattle-news/data/114000-more-people-seattle-now-this-decades-fastest-growing-big-city-in-all-of-united-states/.

2. "Seattle's Housing Crunch Could Be Eased by Changes to Single-Family Zoning, City Report Says." 2018. The Seattle Times. December 3, 2018. https://www.seattletimes.com/business/real-estate/city-report-widespread-single-family-zoning-is-damaging-seattle-and-needs-changing/.

3) Daniel Beekman. 2019. "Seattle Upzones 27 Neighborhood Hubs, Passes Affordable-Housing Requirements." The Seattle Times. March 18, 2019. https://www.seattletimes.com/seattle-news/politics/seattle-upzones-27-neighborhood-hubs-passes-affordable-housing-requirements/.

> "Planning for growth means sharing space to make room for everyone who wants to find their place in Seattle,"
>
> (Council member Rob Johnson, who shepherded the changes through the council)[1]

alone, over 1,200 lots with single family homes have been rezoned for 35' - 70' mixed-use development, with the ability to build within 5' of the lot line. This figure illustrates what is now allowable to build on these single-family lots.



New zoning rules for single family lots in Mixed Use Residential 35' in Shoreline, WA.

Owner's Predicament

With this upzone, all of the single family homes in these neighborhoods are worth significantly more on the market than they were previously. This increase exacerbates already rising home prices from the housing shortage. (The medium home price in Ridgecrest has more than doubled in the last 7 years).[2] People owning single-family lots that have been upzoned face the following choice:

A) Pay money to stay in their neighborhood

The upzone makes their land more valuable because more units can be built on it. The increased property value then causes property taxes to rise. This puts pressure on the affordability for these residents to stay in their home. For reference, property taxes across Seattle have increased more than 56 percent since 2013, with the median household now paying $5,708 a year in property taxes.[3] If these homeowners stay in their home, not only do they not financially benefit from the increase in land value due to the upzoning, but they have to pay dramatically higher real estate taxes.

B) Make money, but need to leave their neighborhood

If these people sell their home, they will make a considerable amount of money

1) Daniel Beekman. 2019. "Seattle Upzones 27 Neighborhood Hubs, Passes Affordable-Housing Requirements." The Seattle Times. March 18, 2019. https://www.seattletimes.com/seattle-news/politics/seattle-upzones-27-neighborhood-hubs-passes-affordable-housing-requirements/.

2) Inc, Zillow. n.d. "Ridgecrest Shoreline WA Home Prices & Home Values." Zillow. Accessed May 2, 2019. https://www.zillow.com:443/ridgecrest-shoreline-wa/home-values/.

3) Cohen, Josh. n.d. "'Where Are the Black People?' Central District Residents Get Creative to Fight Displacement." Accessed May 10, 2019. https://crosscut.com/2019/01/where-are-black-people-central-district-residents-get-creative-fight-displacement.

Ruby Holland is a lifelong resident of Central Seattle, and is now organizing members of her neighborhood to fight displacement due to the increases in property taxes.[1]

from the dramatic increase in land value. However, they will then join the ranks of people trying to buy a house that meets their specific needs in an extremely competitive market. They will also be likely unable to afford anything in their own neighborhood (due to the upzone).

The result of this predicament is that long time residents who are asset rich but cash poor are often "priced out" of their neighborhood. This particularly affects older residents who are no longer working. These residents are forced to move to the further fringes of the city, away from their friends, community and workplaces. They lose their ability to age-in-place and therefore, age-in-community. They also become exposed to the worsening traffic facing people living at the outskirts of the city.

By pricing these people out of their homes, these neighborhoods also lose out. The complex web of social ties, community events, and relationships that make a neighborhood interesting is torn apart. What remains are luxury condos and McMansions that are insensitive to the delicate fabric of the neighborhood and purchased as investments. Or, rental units that are inhabited by residents unable to trust permanence in the neighborhood and, therefore, unlikely to invest their time, money, and effort into improving their homes and investing in their community.

At the same time, density can bring with it the benefits of urban living - the ability to walk to the grocery store, cafes, restaurants; the freedom to not depend on a car; and opportunities to experience public life and activity on streets. This led us to a guiding question for our work:

Can we allow these neighborhoods experiencing extreme development pressure to transition gracefully to greater density without losing their character or displacing the residents who live there?

1. Cohen, Josh. n.d. "'Where Are the Black People?' Central District Residents Get Creative to Fight Displacement." Accessed May 10, 2019. https://crosscut.com/2019/01/where-are-black-people-central-district-residents-get-creative-fight-displacement.

The Housing Gap

In many major US cities, there is a portion of the population that is not being served by the housing market, neither through the rental nor ownership market. This forces many residents, like teachers, firefighters, social workers, health care workers -- who are the life-force of cities -- to either move out of the city or be rent-burdened.

Seattle, in particular, is facing a housing crisis as its population increases. As housing demand grows and prices skyrocket, the security of homeownership or affordable rents is disappearing for a growing population. Rents in Seattle grew by 57% in the last 6 years and there are limited affordable homeownership programs. A recent Mckinsey Report describes a trend taking place in Seattle and every major city on the West and East coast: "when economic growth is strong, housing developers tend to build more profitable, expensive homes."[1] As a result, increasing costs of living are only worsened by which buildings

Teacher's are unable to live in Seattle without being rent-burdened. An average salary for a teacher in a Seattle Elementary School is $63,399.[2] Photo credit: The New York Times[3]

1. "The Economics of Homelessness in Seattle and King County | McKinsey." n.d. Accessed May 2, 2019. https://www.mckinsey.com/featured-insights/future-of-cities/the-economics-of-homelessness-in-seattle-and-king-county.

2 "Salary for Teacher Elementary School in Seattle, Washington | Salary.Com." n.d. Accessed May 24, 2019. https://www1.salary.com/WA/Seattle/Teacher-Elementary-School-Salary.html.
3 "Strike by Seattle Teachers Adds to School Turmoil in State - The New York Times." n.d. Accessed May 24, 2019. https://www.nytimes.com/2015/09/09/us/an-uncertain-return-for-a-charter-system-in-washington-state.html.

developers are choosing to build. Since 2011, the proportion of units for wealthy households in Seattle have more than doubled while units for low and middle-income households have almost halved.[1]

There is currently a critical challenge middle-income families face. Government subsidy programs, such as Low-Income Housing Tax Credits (LITCH), provide funding to build low-income housing. If families are lucky enough to access a low-income rental unit, as soon as their income increases beyond the allowed threshold, typically 60-80% area median income (AMI), they are evicted from their homes, even though they are often unable to find other housing. Meanwhile, developers build and rent units at market rate (approximately 120% of median income). This means that there exist no options for lower-middle to middle-income residents.

Gap in Rental Market

The supply of rental housing in Seattle Metropolitan Statistical Area (MSA), which includes Seattle and Shoreline, currently does not support residents earning between $72,250 and $100,400. Seattle average rent is currently $2,510 and is growing rapidly.[2] See table above for a breakdown of average rent by unit size.

With so many residents not being able to afford market prices for housing, the government provides subsidies for developers to build housing for less affluent residents. Two main sources of funds are Low Income Housing Tax Credits (LIHTC) and local Housing Trust Funds. Due to limited funds, these programs tend to cap their audience at 80% Area Median Income (AMI). See table above for the income limits depending on family size for Seattle at 80% AMI and for what is the equivalent affordable monthly rent, depending on unit size. A family is considered rent-burdened when they spend more than 30% of their income on rent.[3]

Income Limits and Affordable Rent

Income Limit at 80% Area Median Income		Affordable Monthly Rent at 80% Area Median Income	
Household size	**Income limit**	**Unit Type**	**Rent**
1 person	$56,200	Studio	$1,405
2 people	$64,200	1 bedroom	$1,505
3 people	$72,250	2 bedroom	$1,806
4 people	$80,250	3 bedroom	$2,086

Notes: In 2018, Income Limits at 80% AMI were equal for Seattle (HUD), King County (HUD) and Washington State (Housing Trust Fund). Rent Limits at 80% AMI were the same for Seattle and Washington State, but slightly higher for King County. Source: Washington State Income & Rent Limits for Housing Trust Fund Projects 2018 King County.[4]

1. "The Economics of Homelessness in Seattle and King County | McKinsey." n.d. Accessed May 2, 2019. https://www.mckinsey.com/featured-insights/future-of-cities/the-economics-of-homelessness-in-seattle-and-king-county.

2 Midpoint of estimated rents for Seattle MSA by Zillow March 2019. Zillow. n.d. "March 2019 Market Overview: Rentals." Accessed May 3, 2019. https://files.zillowstatic.com/research/public/rental/ZRI.Seattle.395078.pdf.

3 In 2018, Income Limits at 80% AMI were equal for Seattle (HUD), King County (HUD) and Washington State (Housing Trust Fund). Rent Limits at 80% AMI were the same for Seattle and Washington State, but slightly higher for King County. City of Shoreline. n.d. "Existing Condition and Population Forecasts: 145th Street Station Subarea Plan." Accessed May 3, 2019.

4. "Hfu-Rent-and-Income-Limits-2018.Xlsx - Final.Xlsx | Powered by Box." n.d. Accessed May 2, 2019. https://deptofcommerce.app.box.com/s/pyowmck7gjcgy9djgk9w64xcfpy1oiob.

Imagine a family of three who are searching for a 2 bedroom apartment in Seattle. The father is a teacher and the mother is a firefighter. Depending on their level of income, this family has the following options:

1. If their incomes are below $72,250, they may be able to qualify for subsidized housing. Hopefully they find a unit. At this income level, rent will be $1,806 per month.
2. If their incomes are between $72,250 and $100,400, they will not qualify for subsidized housing and spend a significant portion of their income on rent. The average rent for market rate housing is $2,510.[1] Considering that households are rent burdened if they spend more than 30% of their income on rent, the family would need to earn at least $100,400 to afford an average unit.[2]
3. If their incomes are above $100,400, they may be able to find market rate housing.

In summary, a family of three earning between $72,250 - $100,400 per year is not supported by the housing market. If they earn between those amounts, there is nowhere they can find housing and not be cost burdened.

Gap in For Sale Market

Unlike the rental market, there are very few government subsidies for residents looking to own homes. This means that the gap within the for sale market is even greater. Without a significant savings, often over $100k, households cannot afford to purchase a home in King County. The average sale price of a home in Seattle is $680,000.[3] The median condo costs $470,000 and a typical single-family house costs $757,000.[4] As home prices increase each year, so does the necessary down payment.

In King County, the average down payment has been increasing by $10k each year and now exceeds $100k.[5] With home values increasing, fewer and fewer people can afford to buy a home. This forces people to:

A) Move outside City and buy a home
If they move outside the city to find a home they can afford, the city loses the people who are the life-force of the city.

1. Midpoint of estimated rents by Zillow March 2019 Zillow. n.d. "March 2019 Market Overview: Rentals." Accessed May 3, 2019. https://files.zillowstatic.com/research/public/rental/ZRI.Seattle.395078.pdf.

2. City of Shoreline. n.d. "Existing Condition and Population Forecasts: 145th Street Station Subarea Plan." Accessed May 3, 2019. http://www.shorelinewa.gov/home/showdocument?id=31247.

3. Seattle Planning Commission. 2018. "Neighborhoods For All: Expanding Housing Opportunity in Seattle's Single-Family Zones." http://www.seattle.gov/Documents/Departments/SeattlePlanningCommission/SPCNeighborhoodsForAllFINALdigital2.pdf.

4. "Seattle Housing Market: House Prices & Trends | Redfin." n.d. Accessed May 3, 2019. https://www.redfin.com/city/16163/WA/Seattle/housing-market.

5. Rosenberg, Mike, and Goldenstein-Street, Jake. 2019. "Washington Condo Reform Gains Steam amid Shortage of Affordable Homeownership Options." The Seattle Times. February 25, 2019. https://www.seattletimes.com/business/real-estate/washington-condo-reform-gaining-steam-amid-shortage-of-affordable-homeownership-options/.

"Seattle's median home price in the third quarter of 2018 was over $750,000, making homeownership impossible for those with modest incomes."

(Tim Parham, Chair of Seattle Planning Commission in Letter to the Board in Planning Commission Report)[1]

B) Rent a unit in the city

With limited housing supply in the city, if they chose to stay and rent a unit, they will add to housing demand. This will put increased pressure on the rental market and further drive up rental prices. If their household is earning less than $100k per year, they will likely be rent burdened and pay a significant portion of their income towards rent.

Moderate to high income, but low wealth.

Moderate to high income households are also excluded from the homeownership market if they are low wealth. Without an inheritance, many families are unable to save up the down payment necessary to purchase a home.

While the rental market supports residents earning over $100k per year, the home ownership market does not. There are many households in Seattle making over $100k per year who cannot afford the down payment necessary to purchase a home. These residents may have high earning jobs, but without $100k in savings, they are unable to make the necessary down payment. This could be due to previous rent-burden and its effect on their ability to save.

These trends reinforce the class divide between renters and owners. As property value increases and outpace increases in wages, the prospect of homeownership becomes more and more distant for much of the workforce that drives a city.[2]

The fragility of renting in a hot market like Seatle excludes non-wealthy residents from the comfort of permanence and planting roots in a community. It also detriments the neighborhoods in which residents live, as they lose out on the benefits of long term residents. This led us to a guiding question for our work:

Can we bring the comfort of permanence and planting roots to the non-wealthy?

1 Seattle Planning Commission. 2018. "Neighborhoods For All: Expanding Housing Opportunity in Seattle's Single-Family Zones." http://www.seattle.gov/Documents/Departments/SeattlePlanningCommission/SPCNeighborhoodsForAllFINALdigital2.pdf.

2. "Seattle's Housing Crunch Could Be Eased by Changes to Single-Family Zoning, City Report Says." 2018. The Seattle Times. December 3, 2018. https://www.seattletimes.com/business/real-estate/city-report-widespread-single-family-zoning-is-damaging-seattle-and-needs-changing/.

2 Research

Methodology

Research Questions

1. Can we introduce the benefits of density to urban America without displacing the people who live there? Can we help neighborhoods improve without destroying the soul of a place?

2. Can we bring the comfort of permanence and planting roots to the non-wealthy?

3. Can we build places that make daily life easier, more affordable, and more enjoyable?

Over the past year and a half, we conducted 88 interviews with people in each sector of the real estate ecosystem. This includes developers, real estate consultants, architects, government staff, city officials, community members, lawyers and bankers. When possible, we spoke with experts with specific experience related to affordable housing, cooperative financing and cohousing. Most of these interviews took place in person, however some were over the phone. Some interviews took place over multiple sessions throughout our research process.

42% of our interviews were with women. This feels significant due to the nature of real estate often being a male-driven industry.

The goal is these interviews was to gather already existing knowledge in the field and, through brainstorming with people, craft a development model that is built on mutual gains and addresses our research questions.

In order to create a model that can scale, it was important for us to receive feedback from people within many different cities. This allowed us to also evaluate which city would be the best place to base our development firm and build our first project. We conducted interviews in Boston, New York, Los Angeles, San Francisco, Oakland, Berkeley, Portland, Seattle, Shoreline, Denmark and Sweden.

In our first set of interviews, we posed our research questions, discussed models we had heard of, and shared early ideas for our own development model as a starting point to explore ideas.

What was key to these interviews was the tone we set. One of brainstorming. With an informal atmosphere, people felt comfortable exploring ideas that were not yet fully formed. Each person brought their particular perspective and experience. In the end, each conversation seemed to come back to

wanting a different real estate product to be possible and a craving to help make that happen.

In January 2019, we hit a moment when we would explain our model and the types of conversations that arose transformed. The questions people asked became more detailed and their entire demeanor changed. It was this moment these conversations switched from brainstorming sessions to vetting sessions. In these meetings, people helped us identify the holes within our model and think though potential obstacles.

Our model is not yet complete, but it is at a point where it is ready to be refined and piloted. We are currently planning our first development project in the Seattle region and talking to potential land owners to partner with.

Research Trips

Funding Sources: William Emerson Research Grant, Ross Silberberg Memorial Fund for Social Justice and Design, DesignX, and MIT Sandbox Innovation Fund.

2018 | 2019

Phase I
Vet Crowdfunding Platform

Los Angeles – February 2018
New York – March 2018

Phase II
Develop Frolic Model & Choose Pilot City

Seattle – March 2018
Denmark, Sweden – June 2018
Los Angeles, Portland – July 2018
Los Angeles, Oakland, Portland, Seattle – August 2018

Phase III
Vet Frolic Model & Identify Partners in Seattle

Los Angeles, San Francisco, Oakland, Berkeley, Portland – January 2019
Seattle – March 2019

Phase I: Vet Crowdfunding Platform

Our first two research trips were to Los Angeles and New York. Here, we met with bankers, lawyers, real estate consultants, developers, and architects. At this time, we had not yet decided to start a development firm. We were focused on the real estate crowdfunding opportunity presented by the Jumpstart Our Business Startup (JOBS) Act in 2012. This Act created an exemption under federal securities law to allow non-accredited investors to purchase securities. We saw this as a tool that could help community members of gentrifying neighborhoods economically benefit from the transformation of their community by allowing them to invest in local real estate projects.

The meetings we held on these two trips helped ground many of our assumptions and taught us the necessity in becoming developers ourselves. On these trips, a common response we received was that developers try and limit the number of equity investors in a project. Considering this, inviting many investors into a project with crowdfunding would not always be worth the small funding gap it might fill nor the community support it might garner. Finally, in order to convince developers it would be worthwhile to open their capital stack to local investors through crowdfunding, we would need to become developers ourselves to demonstrate the value.

Sensing our excitement when reflecting on this feedback, we recognized how becoming developers was more aligned with our initial vision to create more equitable cities and places that help improve the quality of people's everyday lives.

In our research, we came across a crowdfunding platform called Small Change whose mission and purpose is aligned with our initial concept. After receiving positive feedback about the company, knowing that the there is the potential of possibly partnering with them in the future, we decided to open our research to the entire development process instead of focusing entirely on the crowdfunding element.

Phase II:
Develop Frolic Model & Choose Pilot City

After we embraced our true passion as place-building-developers, we visited Seattle, Denmark and Sweden to explore cohousing as a product type, alternative financing models, and study the relationship between design and social interaction. In Denmark, we visited a range of cohousing projects and collectives and met with a one of the leading researchers on cohousing. In Sweden, we visited B001 Malmö, which for us is an important precedent for the urban quality that can be achieved when embracing a less conventional development process.

In July and August of 2018, we traveled to the west coast and met with developers and city officials in Los Angles, Oakland, Portland, Seattle, and Shoreline (Seattle suburb). From these meetings, we further developed our model by talking with experts within the real estate ecosystem of each city we were considering building in. By the end of the trip, we established a partnership with the City of Shoreline, WA and chose to pilot our first project there.

Why Seattle Metropolitan Region?

Housing Crisis
Seattle is home to the Microsoft, Amazon, Starbucks, and Tableau Headquarters, as well as a large regional Google office. It is one of the fastest growing cities in the country and has seen a large influx of young tech money in the last decade. This has influenced a housing crisis within the entire metropolitan region, in that the existing housing stock cannot keep pace with new residents, causing prices to skyrocket.

Landscape of Ethical Investment
This housing crisis has caused the philanthropic scene in to dramatically shift and grow.

Personal Connection
It is important to us to build in region at least one of us has history with and we both can see a future. Josh grew up in Kirkland, just outside of Seattle, and both of us can imagine building our careers and families in the region.

> "the young tech sector in Seattle have resources but are probably not the type of philanthropy that gives to the Opera and Ballet; they are looking for opportunities to do good in their local community and for new ways of addressing the problems they see... your model [Frolic] may be the type of socially conscious investment that would attract them."
>
> (James Madden, Senior Program Director, Pacific Northwest Market, at Enterprise Community Partners, the largest affordable housing foundation in Seattle)

Why Ridgecrest, Shoreline?

Active Partner with City
The City is interested in being an active partner with us and is committed to help us through the entitlement process. We received feedback from local developers confirming our impression that the City of open to creative alternatives of affordable housing.

The Community
The community is well organized and interested in our mission. We have a good working relationship with an influential board member of the Ridgecrest Neighborhood Association.

Well Positioned to Benefit from Frolic Model
With a new high-speed light rail line connecting Ridgecrest to downtown Seattle and a recent upzone, the neighborhood is about to undergo a major transformation which threatens to displace many residents. Many recently upzoned single family lots have modest homes and large empty yards. Many of the homes are owned by older residents who are interested in staying in th neighborhood and aging-in-community.

Design Attributes

There are many mature trees throughout Ridgecrest and a large nearby park (Hamlin Park). Access to nature is crucial for our commitment to biophilic design.

Phase III: Vet Frolic Model and Identify Partners in Seattle

We returned to the west coast in January and March 2019 with an updated version of our model, ready to be vetted by the leading thinkers within the affordable housing and cohousing ecosystem.

The Bay Area is home to the largest concentration of urban cohousing projects in the US. We visited many of these projects in January 2019 and met with the people involved in their development process to better understand how we can organize a development model that creates well-functioning cohousing projects.

In March, we concentrated our meetings in Seattle to run our model by practitioners working in the region we are planning to pilot. On this trip, we identified potential partners and crafted a team of mentors with local experience.

Interviews

During our research trips, we conducted over 80 interviews including brainstorm and vetting sessions with experts within the real estate industry, as well as community members and potential partners/customers. A summary of these meetings is shown in this graphic and an inventory of each individual and their associated organization is included in Appendix A. An overview of the precedents and sites we visited during our study trips is provided in Appendix B.

Key Findings: Finance

The following is a summary of the key findings we made during our interviews regarding financing mechanisms that respond to our research questions.

Reduce Costs Without Limiting Quality

A developer can reduce costs without limiting quality by shortening time, lowering risk to access cheaper capital, or creating space efficiency through shared amenities.

Shorten Time

- **Design/Build firms**
  align the goals of the architect, developer, and sometimes even the general contractor. This allows design and finance decisions to be made concurrently and reduces the potential for the project to go over budget by limiting the incentive for change orders. It can also allow for a tighter schedule, overlapping the design and construction process. These benefits can reduce costs up to 33%.[1]
- **Partnering with the city**
  can streamline the pre-development phase and reduce the risk of not receiving necessary entitlements. Receiving a variance can drastically reduce the cost or increase the value of a project. For example, a variance reducing even just one parking space required on site can allow an additional unit to fit. This could earn the developer over $100k.

- **Building multiple projects in the same neighborhood**
  can shorten the pre-development phase and reduce risk as the developer is able to capitalize on good relationships and work done for other projects.

Lower Risk

- **Below-market**
  rents lower risk for investors. Instead of trying to always reach the highest rent possible, having below-market rents results in less vacancy and lower turnover. While an investor will not receive as strong of a return in a hot market, the investment is more secure, as it is protected from market shocks. When the market drops and other developers experience large levels of vacancy, a below-market product is cushioned. Below-market rents can also lead to wait lists of future tenants where there is high demand for affordable units. This can further reduce risk.

- **Partnering with the community**
  at the beginning of a project can reduce the risk of potential resistance. Lawsuits from the community can be expensive and destroy a project, regardless of the grounds. It can also improve the relationship with the city.

1. Cate, Cliff. n.d. "Locking in Cost Advantages of Design-Build Project Delivery." Accessed May 25, 2019. https://amplifiedperspectives.burnsmcd.com/post/locking-in-cost-advantages-of-design-build-project-delivery.

- **Partnering with property owners** can reduce risk to the project because the developer can postpone purchasing land until the financing and entitlements are lined up.

Share Amenities

- **Cohousing** is a product type that adapts lessons from the sharing economy to reduce the cost of housing and improve resident's everyday life by offering high quality shared amenities. Demand for this product type is high and growing. Scarcity, a San Francisco based company, had a wait list of over 8,000 people in early 2018.[1]

1. Hoffower, Hillary. n.d. "The Trendy Co-Living Spaces Attracting Millennials in New York and San Francisco Are Just the Latest Version of a Concept That's Been around for 200 Years." Business Insider. Accessed May 26, 2019. https://www.businessinsider.com/co-living-increasing-expensive-cities-old-concept-2018-9.

Precedent: Nightingale

Nightingale is an Australian Design/Build that pioneered a model they call the Nightingale Model. Their model is built off of an ethos of capping project profits for themselves, investors, and buyers of their units. They do this to align the interests of the many parties involved towards long term quality. Residents move in to live in their units, not to sell them in a few years (Nightingale's covenant on resale restricts how much residents can make when they sell). By capping developer profits, they reduce the incentive to cut corners and/or create products for the highest bidders.

For example, on the project shown in the image above, they asked their buyers if they would prefer to have an extra bathroom in their unit or have extra space and spend roughly $20,000 less on their unit. They provided the same options for parking spaces, individual washers and dryers (versus communal) as well as other features. The result was that they were able to sell the units in the project for 15% less than their appraised value, and now have a waiting list of over 3,000 people to buy future units they build with their model.[1]

1."The Nightingale Model." n.d. Nightingale Housing. Accessed May 27, 2019. https://nightingalehousing.org/model.

New New Crusher Court. Credit: Guerilla Development

Highest Does Not Always Equal Best

A developer can receive as strong, and sometimes even stronger, returns when they do not build the site out to its full capacity. By building smaller, more unique and high quality spaces, a project can become more attractive to tenants. This can result in strong rents and high returns.

Guerrilla Development in Portland, Oregon proved this concept through their New New Crusher Court project which redeveloped a 21,000 sq ft building into a 17,918 sq ft finished product, receiving a 10 year IRR of 21%.[1]

1. "New New Crusher Court." n.d. Guerrilla Development. Accessed May 26, 2019. http://guerrilladev.co/new-new-crusher-court.

Market for Ethical Investments

There is a market of people interested in making lower-risk, lower-return investments. This includes both high net worth individuals and everyday people. In our research we found that a 3-5% return is adequate for ethical investors, especially if it is a low-risk real estate product.

Value of Transparency

Honesty and transparency can help build trust between developers and future buyers. This also applies to the design of terms for investors. To prevent people from feeling cheated, the most important thing is to disclose terms early and be transparent.

Willingness to Help Within the Development Community

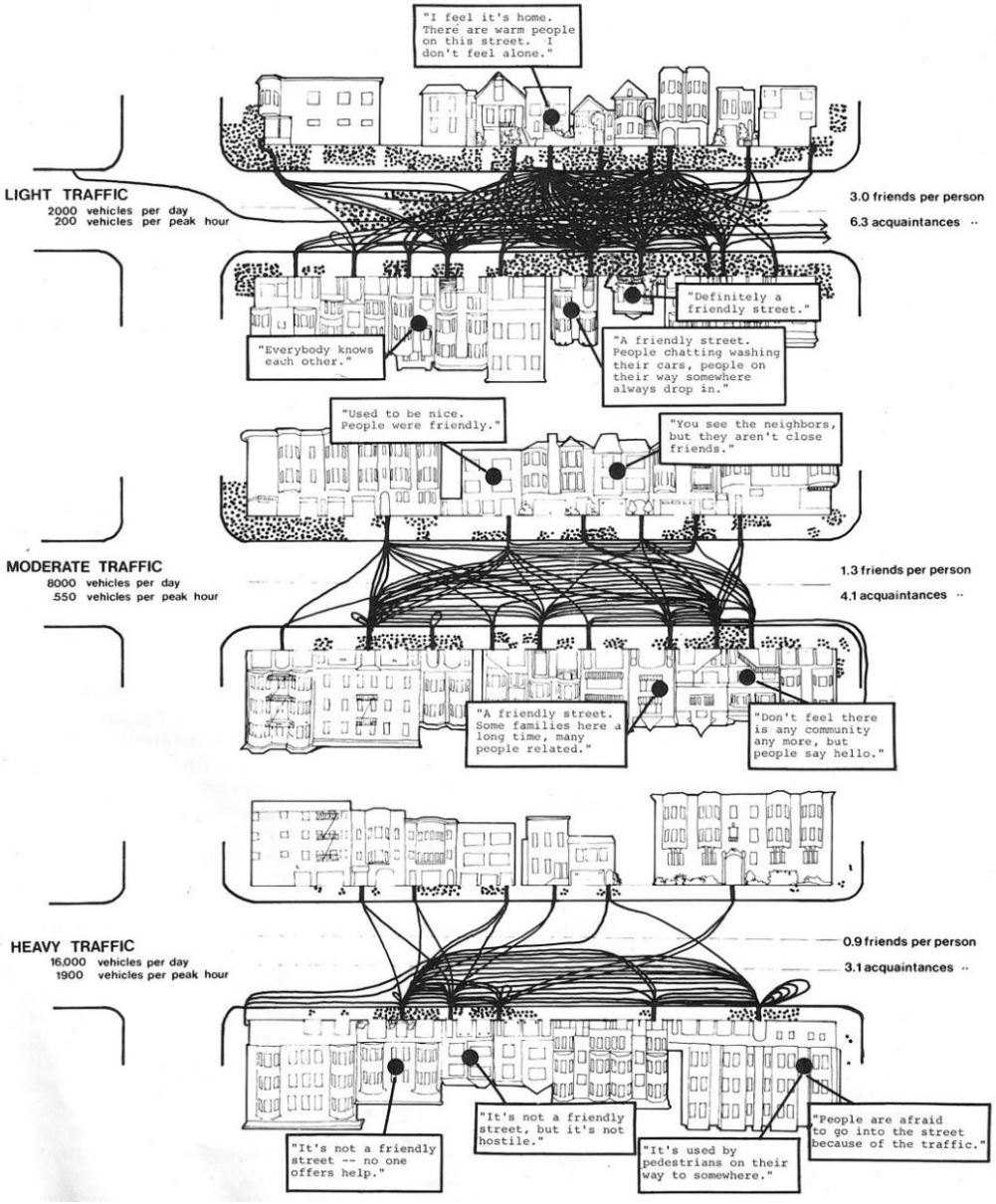
There is a burgeoning field of thoughtful developers whose values are aligned with planners. There is potential to work together and form a supportive ecosystem. This is especially true when working with cohousing or cooperative financing. Instead of being seen as a competitor, a new developer's existence in the ecosystem is advantageous because they expose the planning department, banks, and customers to a new product type.

Key Findings: Design

The following is a summary of the key findings we made during our interviews and site visits regarding design principles that respond to our research questions.

Environments Affect Social Interaction

This seminal study done by Donald Appelyard in San Francisco demonstrated the strong role streets, public spaces, and edge zones have on how we relate to our neighbors. On calmer, narrower streets, we can see far more social relationships amongst residents than on wider streets with busier traffic. We also see that the places where people are said to gather take place along the edges of buildings, in the semi-private, semi-public spaces: the stoop, the porch, the front garden.[1]

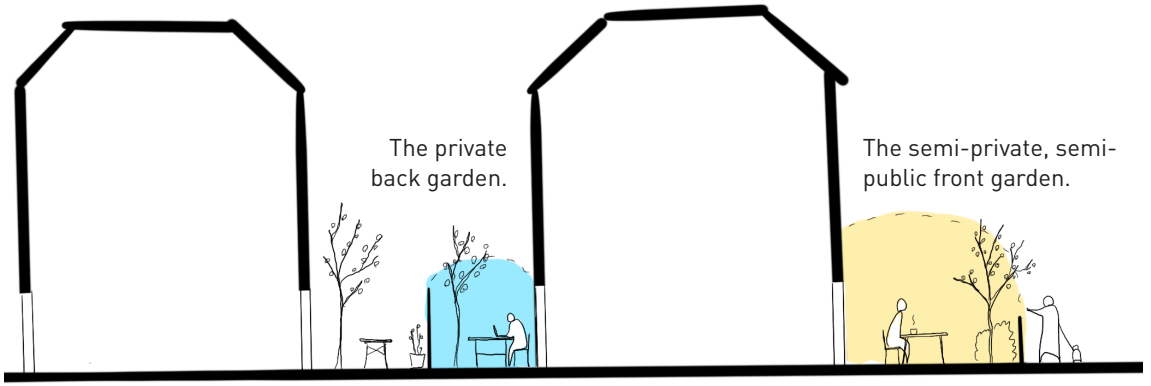


1. Appleyard, Donald. 2015. Livable Streets. Place of publication not identified: Routledge.

Gradation from Private to Public

At several cohousing projects we were told that it was essential to create a balance between places where people could interact, and places where people could retreat and be alone. This was an essential feature for projects that could withstand the test of time, and continue to function from generation to generation. It also allowed for different types of people to adjust their interaction with a space to their individual and momentary needs.

A perfect illustration of this was the workers housing project we visited in Copenhagen. Each home in this project had a front garden with a low fence, and a back garden with a high fence. The residents we interviewed explained that while the back gardens are very close to one another, the design makes clear that neighbors should not strike up conversation when a family is in their back garden.



Workers Housing, Copenhagen, Denmark.
Figure and Photo Credit: Author

If residents sat in their front garden however, it was a signal to their neighbors that they would be happy to chat. The low fences make visual contact easy, and lower the threshold for interaction. It is much easier, for example, to strike up a conversation with someone having coffee in their front garden than it is to go knock on their door and say hi. These edge zones create a safe place for "low stakes" interaction. They blur the edge between the private zone of the home with the public zone of the street or shared courtyard.[1]

1. A careful study of the effects of the gradation of public and private spaces, as well as the importance of edge zones is provided by the Danish Architect Jan Gehl.
Gehl, Jan, and Jo Koch. 2001. Life between Buildings: Using Public Space. Copenhagen: Arkitektens Forlag.

Edge zone in Malmö Western Harbor, Sweden.

Edge Zones + Nooks

People often desire the right balance between privacy and public interaction along with the flexibility to move between spaces. Edge zones and nooks are design features that can satisfy these desires and, therefore, create a sense of comfort.

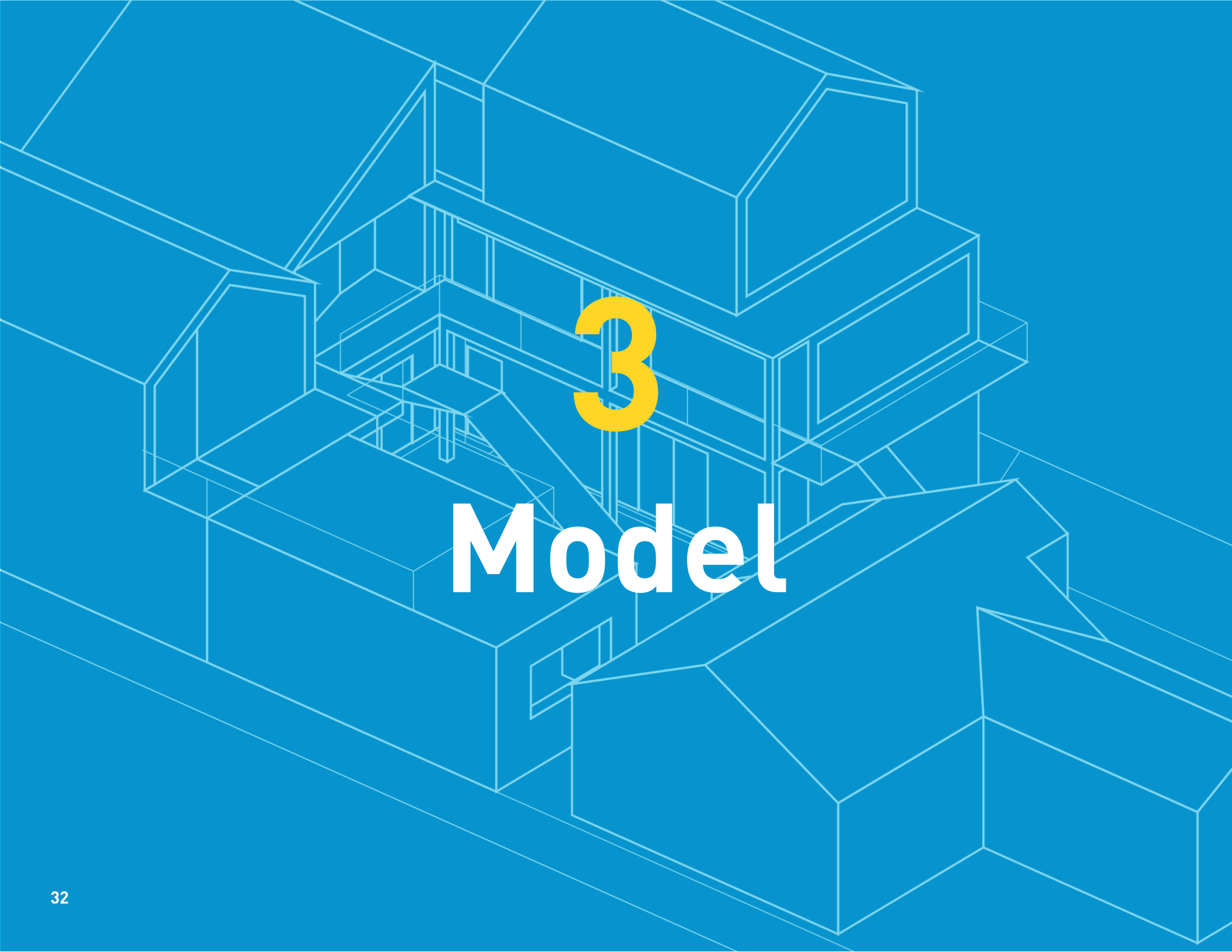
An edge zone is a space that lies at the edge of (and within) two separate spaces. Often people feel more comfortable in an edge zone because it allows them to exist in two separate spaces while not committing to either of them.

A similar effect is had inside a nook because an inhabitant is able to be both private and a part of the larger more communal space. This allows them to take ownership of the smaller space and make it their own.

Infrastructure for Community

5th Commons, shown above, is an example of a adaptive re-use cohousing project initiated by an architect and developer. The project was originally built as rental apartments with a centrally located laundry building and carport. The architect, Ross Chapin, purchased the property and renovated the laundry building into a common house. While the apartments were sold on the conventional market, soon after residents moved in, they began using the common house for communal meals. They eventually constructed a playground together and made improvements to the landscaping and public spaces. This is one example of a developer led project, and how the infrastructure for community, in this case a common house, can lead to a different form of interaction amongst residents.[1]

1. "Fifth Street Commons | Ross Chapin Architects." n.d. Accessed May 27, 2019. https://rosschapin.com/projects/pocket-neighborhoods/project_pn_fifthstreet/.



3 Model

Overview

This model is an attempt to respond to the questions we pose in our research chapter:

- Can we introduce the benefits of density to urban America without displacing the people who live there?
- Can we bring the comfort of permanence and planting roots to the non-wealthy?
- Can we build places that make daily life easier, more affordable, and more enjoyable?

The Frolic Model was developed through the DesignX incubator at MIT with input from over 50 developers, city staff, lawyers and bankers working in major cities across the U.S. In our research, we found that there are several potential mutual gains missed out on in the current housing development paradigm - between property owners, investors, future residents, developers and community members. By restructuring the development process around mutual gains, the Frolic Model seeks to bring the

1. oldbarnstar. 2014. "A Celebration of Amish Barn Raising Season." Old Barn Star (blog). April 23, 2014. http://www.oldbarnstar.com/celebration-of-amish-barn-raising-season/.

"Frolic" is an Amish term referring to practices that involve group labor, a common vision, and celebration. It was used to describe joyous festivals in which over 100 families would raise a barn together in one week.

benefits of homeownership to a broader population, while allowing smaller, more intimate development projects to become viable.

The Three Principles

The three principles of the Frolic Model are cooperative financing, co-development, and cohousing. These three principles respond respectively to the research questions we pose in the Research Chapter. Each of the Frolic Principles can be applied independently, however, we feel that their strength lies in how they work together. Combined, they create the potential for a new type of development product and development process to take place. The center of this process is people: those currently living in neighborhoods as well as new arrivals. With this model, we believe it may be possible to create more vibrant, caring, and socioeconomically diverse places.

Densify without Displacement

By partnering with land owners to co-develop their property, we allow them to avoid displacement and financially benefit from redevelopment.

Broaden Access to Permanence

The cooperative financing structure enables crowd-investing and a decoupling of share ownership and tenancy. This allows residents to act as long-term tenants of a project without requiring a large down payment or a personal mortgage. community asset.

Places that Improve Daily Life

Through elements of cohousing, we create infrastructure for community and improve affordability through shared amenities.

Pilot Project

To illustrate how the model works, we will demonstrate how we plan to apply it to our pilot project. We are planning to build our pilot in Shoreline, WA (see Research Chapter and Context Chapter).

Most houses in this area were built in the 1950's, with a modest home on a large lot. We selected this site because it is generic to many of the sites within the upzoned area of Shoreline.

We have a strong relationship with the Ridgecrest Neighborhood Association and City. (See Research Chapter for information on why we chose Shoreline).

Site Details
Size: 7,440 square feet
Estimated value: $440,000[1]
Existing home:
2 beds
1.5 baths
780 square feet

1. Inc, Zillow. n.d. "Shoreline Real Estate - Shoreline WA Homes For Sale." Zillow. Accessed May 21, 2019. https://www.zillow.com:443/homes/Shoreline-WA_rb/.

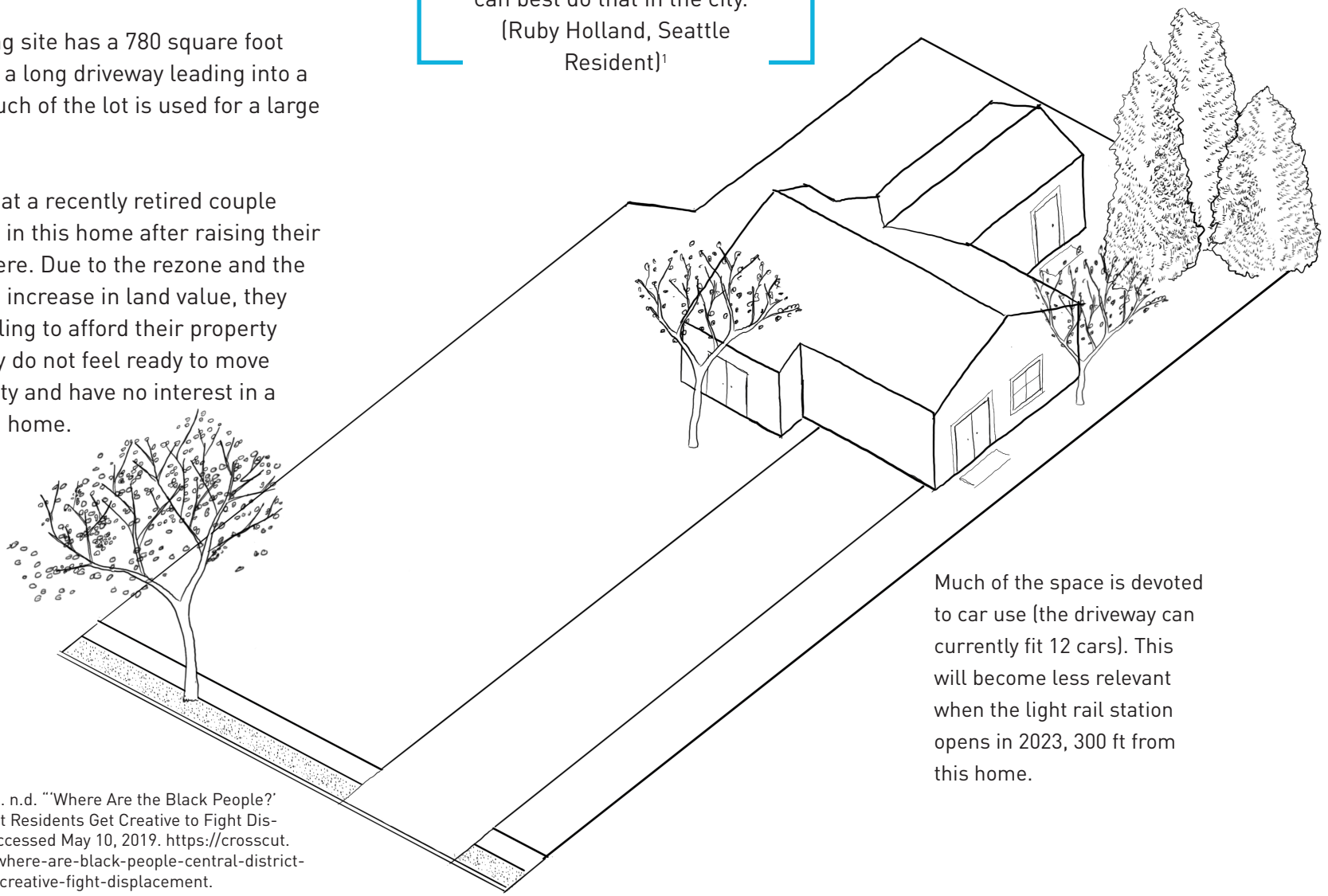
Co-Develop

Existing Condition

The existing site has a 780 square foot home with a long driveway leading into a garage. Much of the lot is used for a large front lawn.

Imagine that a recently retired couple lives alone in this home after raising their children here. Due to the rezone and the associated increase in land value, they are struggling to afford their property taxes. They do not feel ready to move to a new city and have no interest in a retirement home.

> "Most of us with some age on us, we've had the big yard, the white picket fence ... That's not that important to us. We need sidewalks. We need to be close to hospitals. We need to have good public transportation. You can best do that in the city." (Ruby Holland, Seattle Resident)[1]



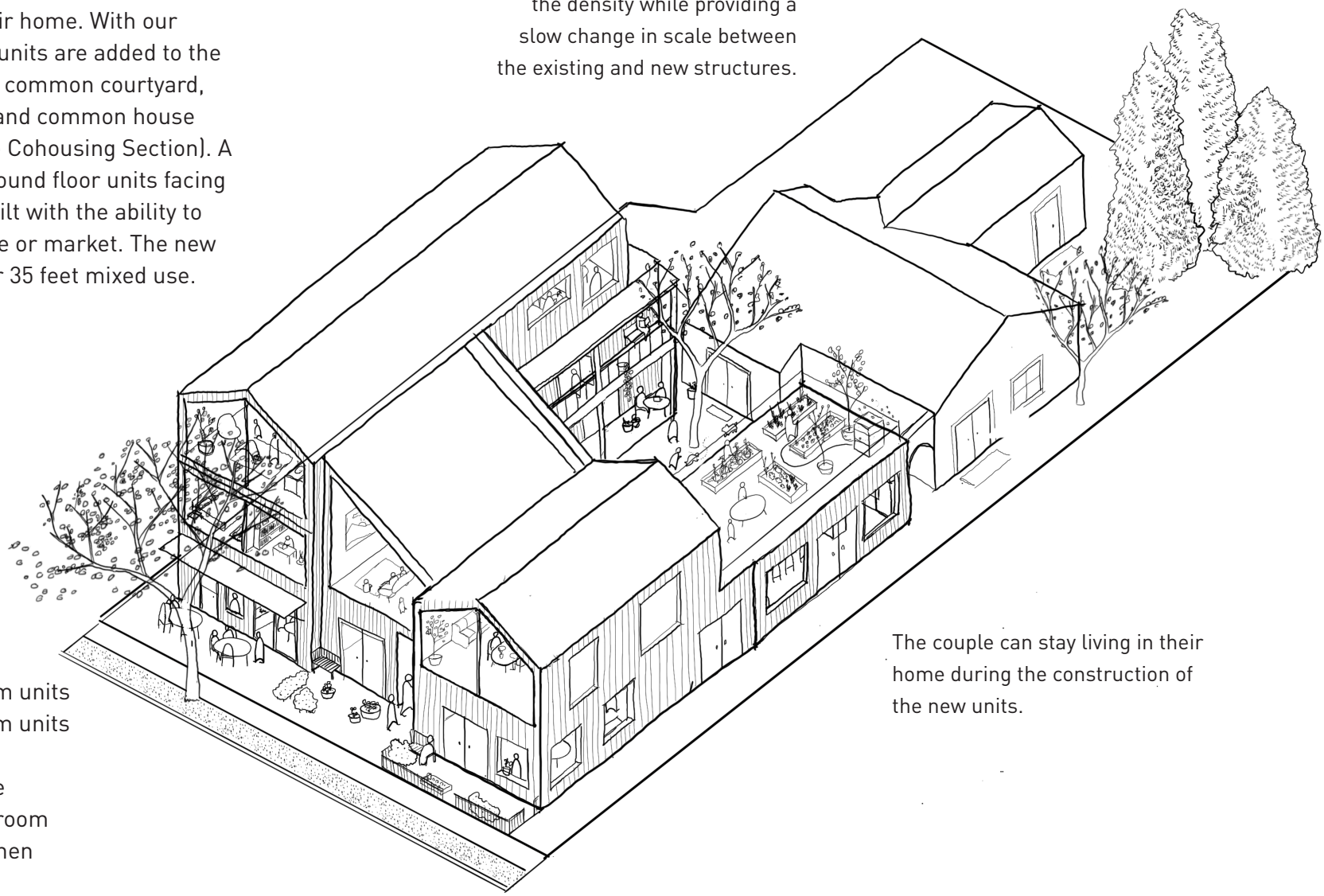
Much of the space is devoted to car use (the driveway can currently fit 12 cars). This will become less relevant when the light rail station opens in 2023, 300 ft from this home.

1. Cohen, Josh. n.d. "'Where Are the Black People?' Central District Residents Get Creative to Fight Displacement." Accessed May 10, 2019. https://crosscut.com/2019/01/where-are-black-people-central-district-residents-get-creative-fight-displacement.

After Development

By partnering with the property owners on site, we offer them a way to extract the increased value of their land while remaining in their home. With our proposal, 7 new units are added to the site, as well as a common courtyard, rooftop garden, and common house (described in the Cohousing Section). A portion of the ground floor units facing the street are built with the ability to function as a cafe or market. The new zoning allows for 35 feet mixed use.

An attempt is made to increase the density while providing a slow change in scale between the existing and new structures.



The couple can stay living in their home during the construction of the new units.

Details

8 units in total
- 3 Two-bedroom units
- 2 One-bedroom units
- 3 Studios

1 common house
- Shared guest room
- Industrial kitchen

The Advantages of Co-Development

Partnering with a property owner provides advantages to many of the people involved in a development process. This is especially true in cases where the property owner has an interest in staying on their lot and has adequate space for infill development.

For Property Owners

For property owners who want to stay in a neighborhood and are facing challenges affording their property taxes, partnering with a developer to co-develop their lot provides a mechanism for them to extract the increased value of their property without having to leave. Under the Frolic Model, we will develop cohousing, which provides access to local community. For older residents, this can improve the experience of aging-in-place by allowing them to age-in-community.

For Developers

By partnering with a land-owner, a developer is able to postpone purchasing the land until all the financing and entitlements are arranged. By reducing the time needed to hold the land before starting construction, they are able to avoid one of the riskiest parts of the development process. This allows them to access cheaper capital and reduce the interest they need to pay for a construction loan.
For our pilot, this allows us to develop the project without taking out a line of credit or acquisition loan.

For The City

Partnering with property owners who are not interested in selling and moving creates an opportunity to unlock land that would otherwise be inaccessible for creating additional housing in the city. In cases where the existing structures are saved, the character and people of a neighborhood are not erased in the course of adding density.

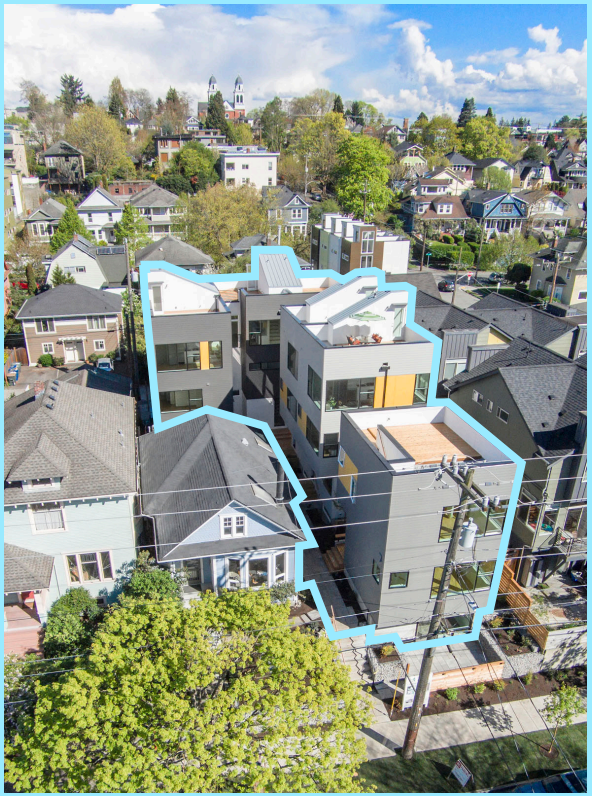
Precedent

Walker Town Homes

The Zosels (shown in image on right) lived in this small blue house for 30 years. They loved their neighborhood and had no intention of moving. Many developers tried to buy their home, one even mailed them a check for $1 Million as an incentive to sell. "We were sitting in a house of 1,000 sq. feet ... and our property taxes were at a point where we couldn't afford to continue to live here."[1]

They felt that if they did sell, they would then join the thousands of other people trying to find a home in the Seattle region that met their needs, and wouldn't have been able to afford a home in their own neighborhood. They were then approached by a design/build firm called Hybrid, who offered to partner with them and co-develop their lot. they were then able to have a voice in designing their new home on their lot. In addition to building a new home for the Zosels, Hybrid was able to build 5 other units on the same lot.

1. Zosel, Bill. 2019. Story of Walker Town Home Development In Person Interview.



The Zosel's old house (lower left) and the 7 new units (outlined in blue). Credit: Hybrid

The Zosels in front of their old house (on the left) and their new house (on the right). One of the key motivators for them to co-develop was "to be able to preserve the house" and to "stay in the neighborhood."

> "By partnering with [hybrid] we were able to sell the house and stay in the neighborhood."
>
> (Bill Zosel)

Co-Housing

Shared Amenities

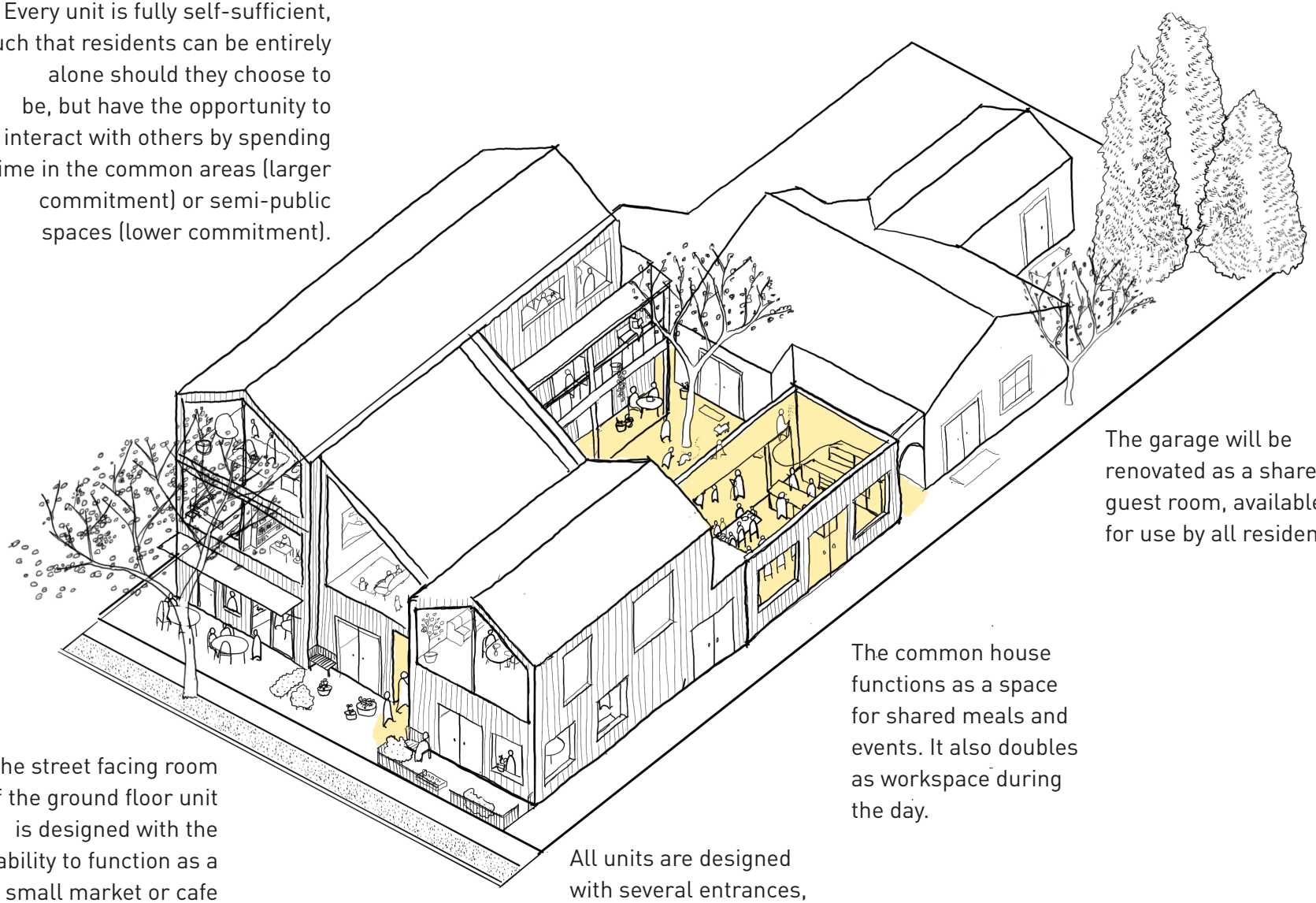
All of our projects feature a common house, which may be a separate structure or floor of a multi-story building. The common house can include: a kitchen and dining area for communal meals, pantry for bulk food items, work space, shared guest room(s), a hobby room/workshop, laundry facilities, media room, teenager room, bathroom with bathtub for bathing children, sauna, and/or play space for children.

An important lesson from the sharing economy is that things don't have value when they are not being used. Our goal is to make sure people have access to things when they want them but don't have to pay for them when not in use. Rather than each unit having a small guest room that is used 10% of the time, we design projects with one quality guest suite used 50% of the time. These shared spaces increase the chances of members of a project to form relationships with one another, by reducing barriers for everyday interaction.

The common house faces the courtyard, allowing communal meals and activities to spill out into public space.

Each unit has a "porch space" in front of their front door. These semi-public, semi-private spaces make it easier for residents to strike up conversation as others pass by without a large personal commitment.

Every unit is fully self-sufficient, such that residents can be entirely alone should they choose to be, but have the opportunity to interact with others by spending time in the common areas (larger commitment) or semi-public spaces (lower commitment).



The garage will be renovated as a shared guest room, available for use by all residents.

The common house functions as a space for shared meals and events. It also doubles as workspace during the day.

The street facing room of the ground floor unit is designed with the ability to function as a small market or cafe space.

All units are designed with several entrances, allowing for room flexibility as the needs of tenants change.

Precedent

Lange Eng Cohousing

This is a cohousing community by Dorte Mandrup Architects we visited during our study trip to Denmark. It has 54 owner-occupied units as well as a common house. The common house includes an industrial kitchen for group meals, a guest suite, a play area for children, a teenager cottage, a theater for watching films, and a sauna.

One family we interviewed described the dramatic change in their day-to-day life they experienced after buying a unit at Lange Eng. Before they moved in, coming back from work was a stressful time of trying to coordinate watching their children, cooking, and barely having a chance to talk to each other. Now, since each family in the project cooks one day a month for all the families, they are able to enjoy a meal cooked by their neighbors every night. This gives them an extra 2 hours to relax and hang out with their kids before going and eating in the common house. When they feel like being alone with their own family they also have an option to pick up food from the common house and bring it to their unit.

Above: Theodorougr, Maria. 2015. "Lange Eng Collective Living." November 20, 2015. https://newspitalfields.wordpress.com/2015/11/20/lange-eng-collective-living-2/.
Below: "Lange Eng Cohousing Community | Dorte Mandrup." n.d. Accessed May 23, 2019. https://www.dortemandrup.dk/work/lange-eng-cohousing-community.

Precedent

Capitol Hill Cohousing

This Seattle project is designed by Schemata Workshop. It is an urban cohousing community with 9 units, a common house, and one commercial space. It is built on a tight 4,500 sq. foot lot. The common house has a communal kitchen and dining area, as well as a guest suite and laundry facilities. The laundry facilities have allowed owners of some of the units to opt out of personal laundry machines, reducing the cost of their unit and gaining additional space.

One design feature that inspires us is that the kitchens of all of the units face into the courtyard which connects to the common house. Residents we spoke with said that while doing the dishes they can see if anything is going on in the common house or courtyard. Being able to peer into the common space is also helpful for children to see if there are others to play with. The balcony space connecting the units is as an important in-between space, where residents will occasionally read the newspaper or have their morning coffee together.

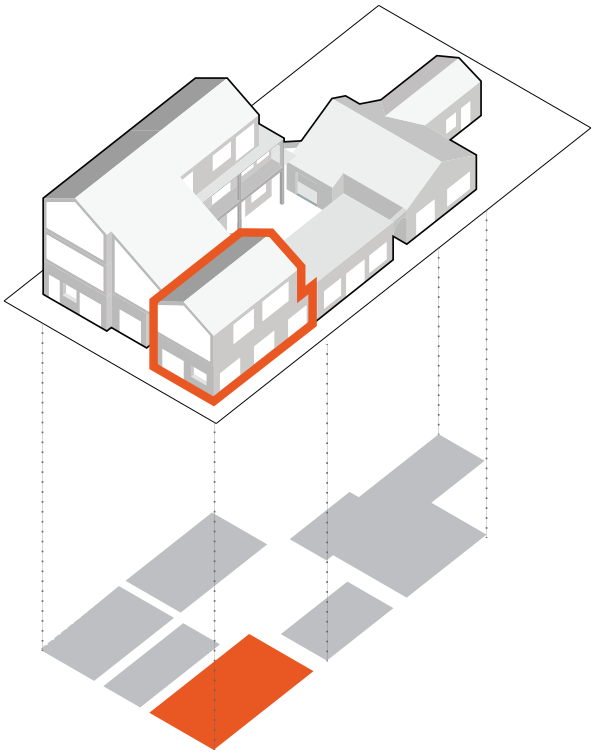
Above: "Capitol Hill Urban Cohousing." n.d. Schemata Workshop. Accessed May 23, 2019. https://www.schemataworkshop.com/chuc.
Below: photo Credit: Author

Co-Finance

Cooperative Financing

There are two main benefits of homeownership in the US. The first is the comfort that comes with long-term security. This security is the knowledge that your rent will not suddenly increase nor will you be evicted because your landlord decides to sell. Should you desire, you can raise your kids in your home, grow old in your home, and even leave it to your children. The second benefit is the ability to use your home as an investment vehicle. If your home is worth more in the future, you can sell it to earn a profit.

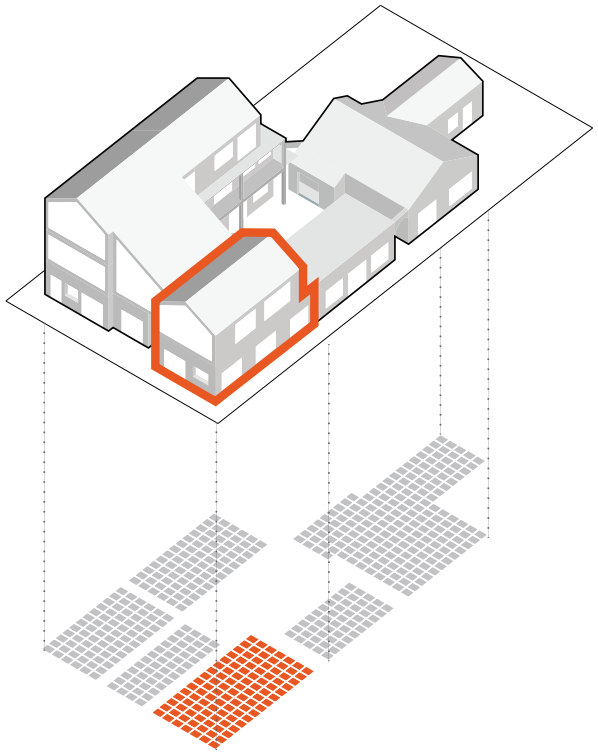
Using cooperative financing, the Frolic Model decouples the long-term security and investment aspects of homeownership. This allows a broader population to access the security of homeownership regardless of whether they have enough savings to put down a large downpayment or able to receive a personal mortgage from a bank. It also allows others in the neighborhood to buy shares in the project and invest in a tangible, low-risk, low-return community asset. Here is how it works:



1

Traditional Coop

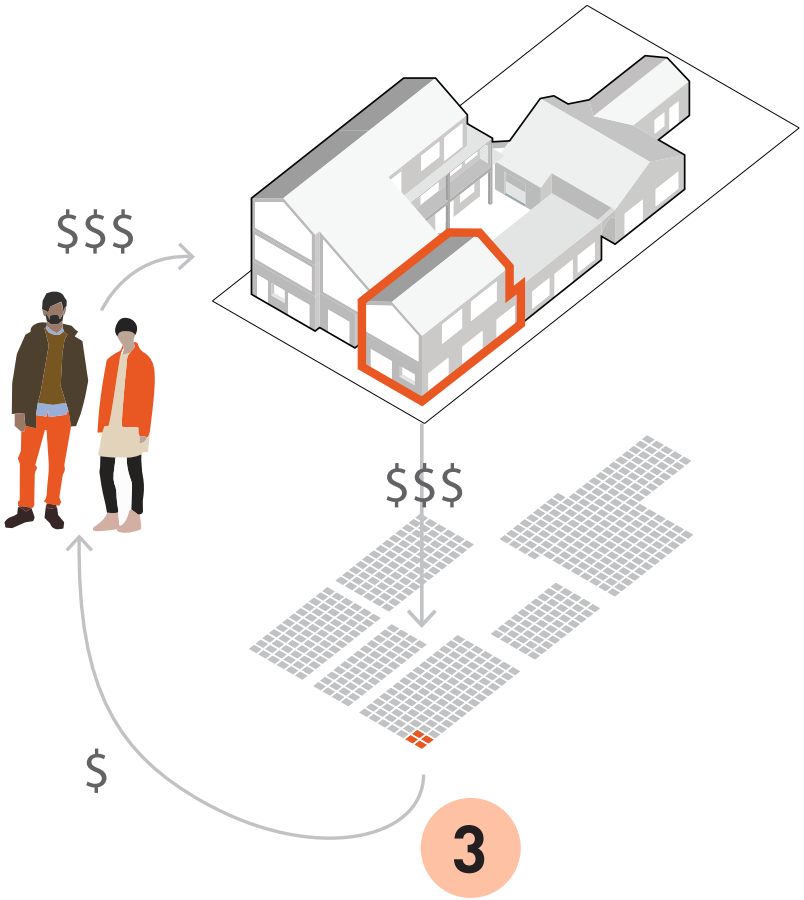
In a traditional multi-family cooperative, a project is split into shares and each share gives the shareowner rights to one unit in the project. In a 10 unit project, there would be 10 shares.



2

Frolic Coop

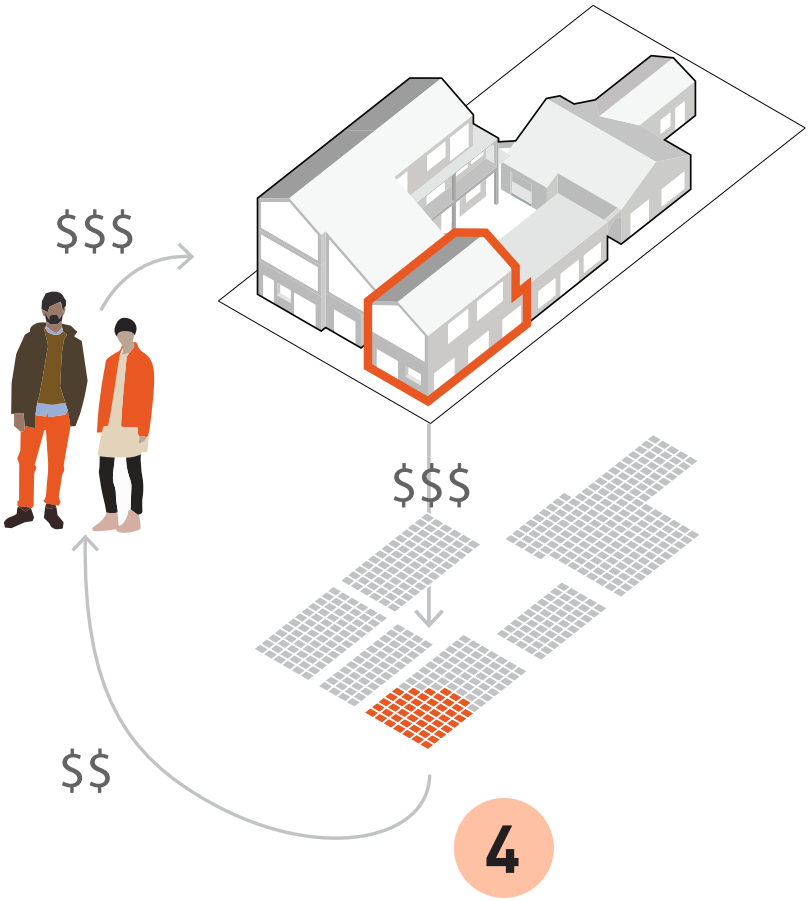
Under our model, this same 10 unit project would be broken into 1,000 shares. If the project cost $4 Million, each share would be worth $4,000.



3

Permanence, Then Equity

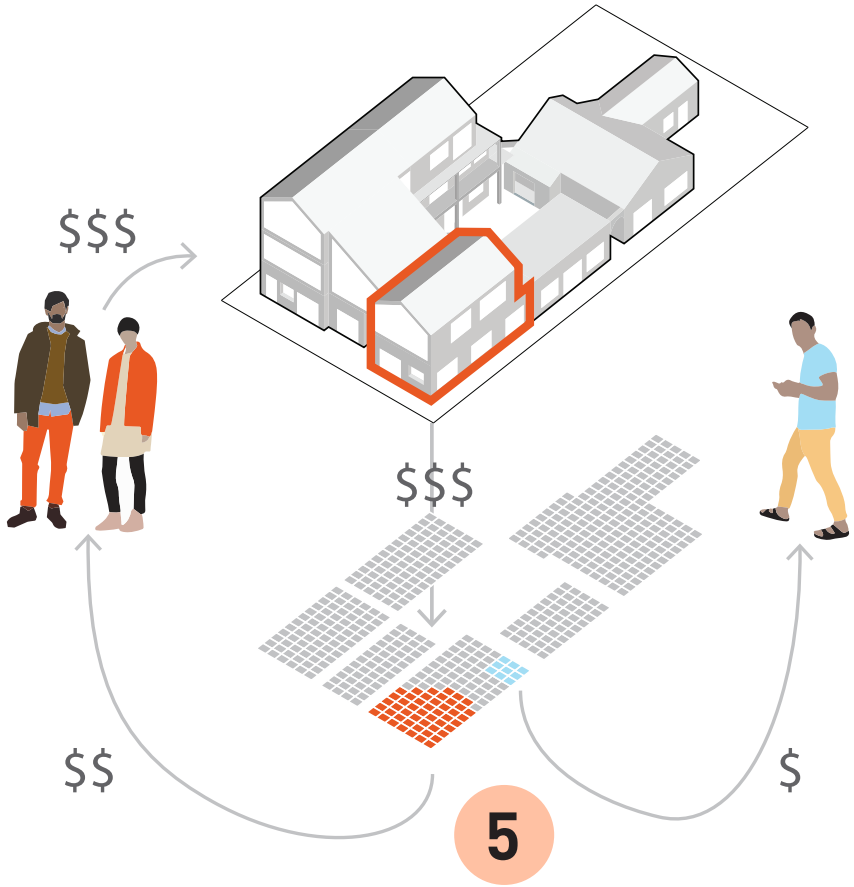
Residents moving into a project are only obliged to purchase one share. Each month, they will pay rent. All rents are controlled and only increase with inflation. This makes them increasingly affordable over time. As they pay rent, a portion of the rental revenue (after operating expenses are paid) is returned to the resident proportional to their ownership of the overall project.



4

Incremental Ownership

Over time, residents can purchase more shares and receive more of the rental revenue as shareholders. This begins to mirror the experience of a homeowner who has paid off all of their mortgage and now only pays for maintenance and property taxes.



5

Crowd Investing

This model also allows neighbors, friends, and other people to purchase shares in the project and take part in their portion of the rental revenue.

Terms for Residents

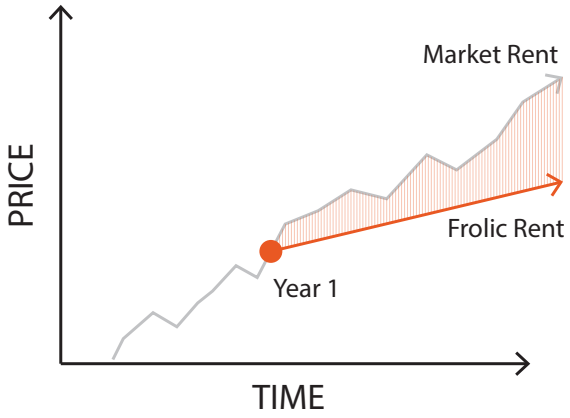
Every resident has the right to purchase all of the shares equivalent to their unit within the project. Share proportions are determined by the size and proportionate cost of a unit. A two-bedroom unit will have more shares associated with it than a studio. Share purchases and sales are conducted on a bi-annual schedule, with all transfers taking place on two dates a year. If residents choose to purchase more shares than those equivalent to their unit, they then must follow the investor terms for these additional shares. Each year, like investors, they will receive a dividend of the project's profits.

Terms for Investors

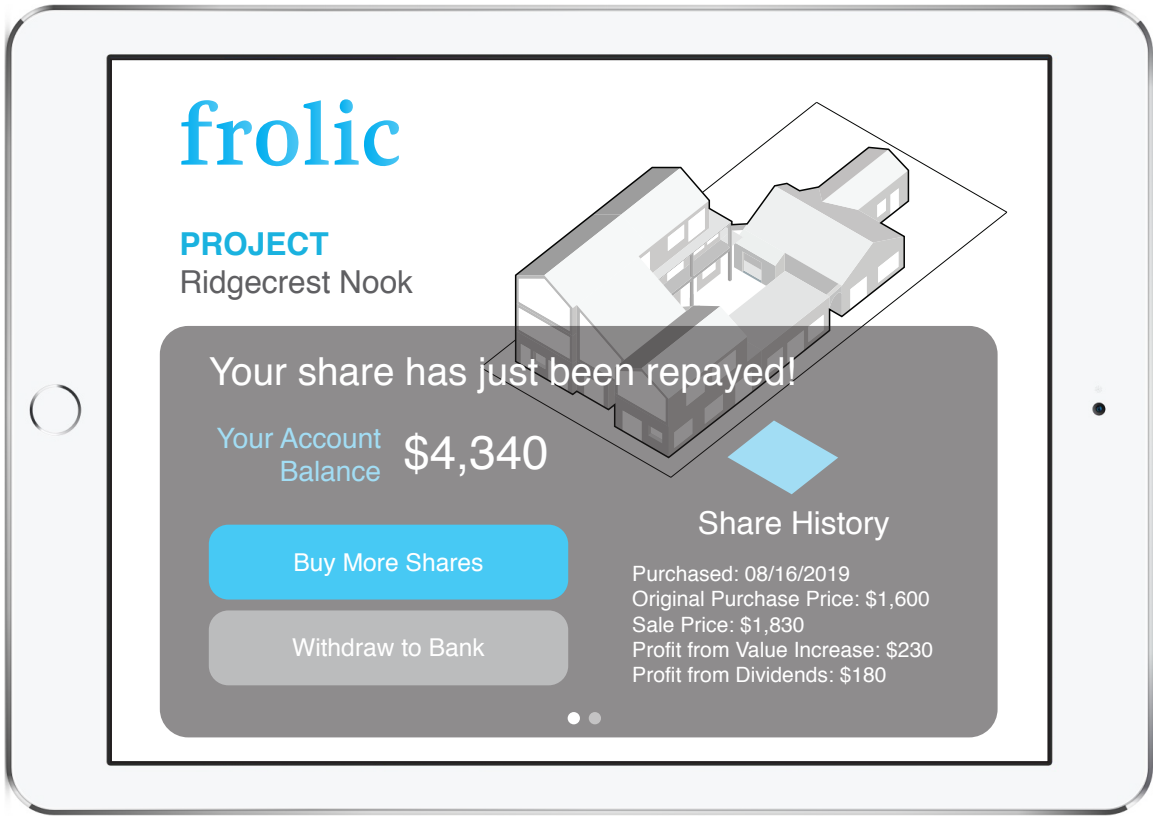
Investors can buy the maximum number of available shares in a project. For every year that they hold a share, they will receive a dividend of the project's profits. For our pilot project, this will be approximately 3% each year, with a 5.3% 10 yr IRR. As residents purchase shares, investors will be notified that their share value has been repaid. They will then have the option to reinvest these funds in a new Frolic project or to withdraw them. They can also opt to have Frolic continue reinvesting their prepaid shares. See figure on following page.

Why Buy Shares?

A share in a frolic model is a bite-sized investment mechanism that provides passive income and a way to invest in your own community. Because rent growth is capped at 2% annually (roughly the rate of inflation), it is likely that the cost of renting a unit in a frolic project will be less than market value within a few years. This is especially true in a market like Seattle that has seen consistent population growth in the last several decades.[1] By being able to offer below-market rents, the likelihood of a Frolic project experiencing vacancy becomes significantly less than comparable units charging market rents. This also creates a buffer protecting Frolic rents against fluctuations in the market (see figure below). These factors reduce risk for investors.



This graphic shows the changes in rents of market rent and Frolic rent over time. The orange circle shows the time the project opens.

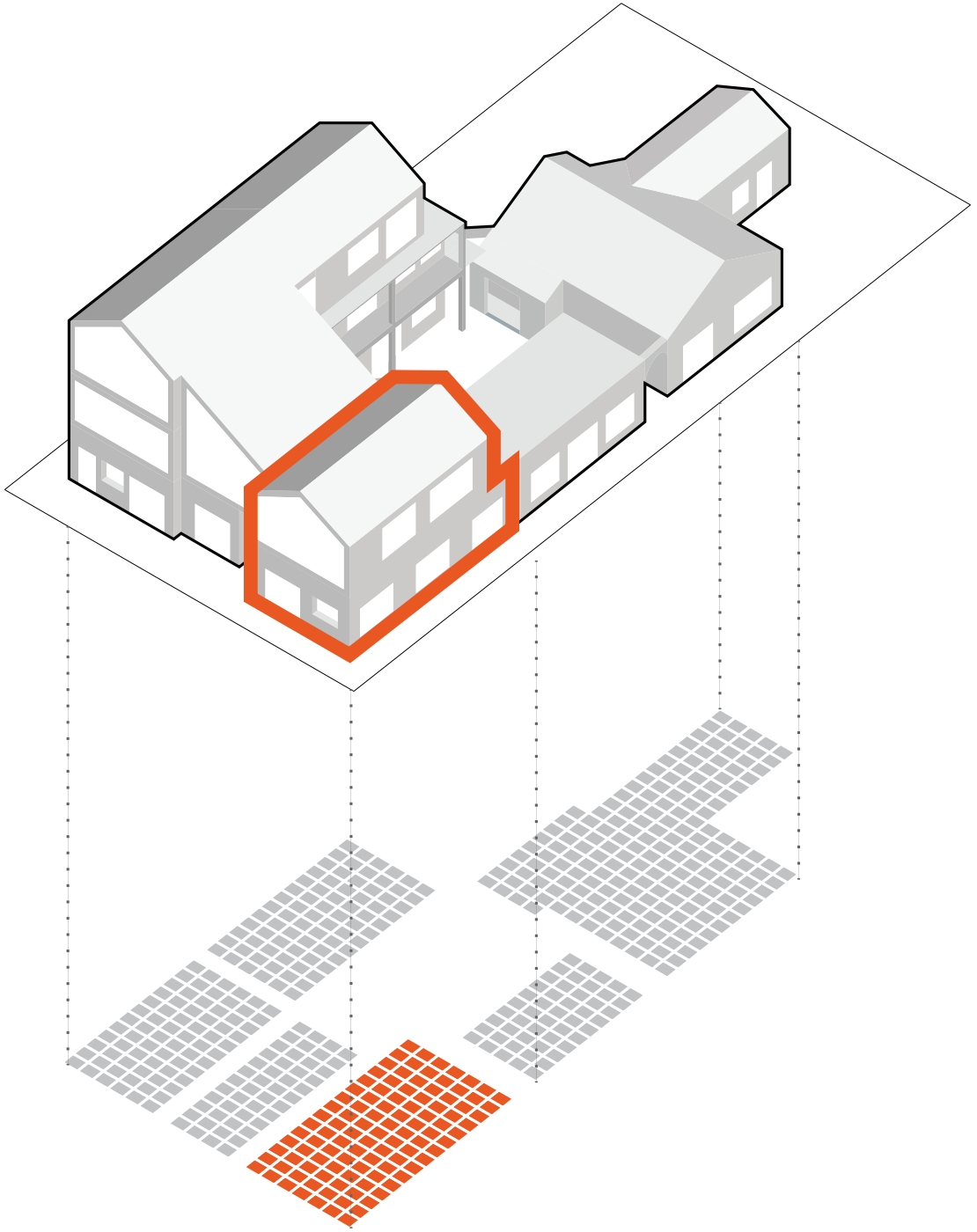


This graphic shows an example of what a dashboard might look like for an investor that recently had one of her shares purchased by a resident.

1. "114,000 More People: Seattle Now Decade's Fastest-Growing Big City in All of U.S. | The Seattle Times." n.d. Accessed May 6, 2019. https://www.seattletimes.com/seattle-news/data/114000-more-people-seattle-now-this-decades-fastest-growing-big-city-in-all-of-united-states/.

Pilot Project Financials

This section provides a preliminary overview of the financials for our pilot site. The following tables show the calculated returns for residents and investors that would be involved in the project through our model.



Project Summary

Land	
Number of Parcels	1
Site Acreage	0.2
Site Area (SF)	7,440
House On-Site	
Number Bedrooms	2
Number Bathrooms	1.5
Total SF	780
Re-Development Proposal	
Total Dev Cost (TDC)	$2,619,779
Total Number of Units	8
Rentable SF	4,420
Common House SF	1,000
Project Gross SF	5,420
Parking Spaces Required	4

Development Budget

Costs	
Land + Building Acq. Costs*	$475,512
Hard Costs	$1,409,200
Soft Costs	$422,760
Developer Overhead	$70,460
Developer Fee	$70,460
Financing Costs	$171,387
TOTAL DEV. COSTS	$2,619,779

* Average of Trulia and Zillow Estimates of Sale Price. Zillow Estimated Sale Price= $436,796. Trulia Estimated Sale Price = $514,227.

Unit Breakdown

	# Units	Avg. Unit Size (SF)	Rent / Unit	Rent Collected
Studio	3	340	$1,050	$3,150
1 Bedroom	2	500	$1,250	$2,500
2 Bedrooms*	3	800	$1,550	$6,200
Total	8		$1,481	$11,850
Common House	1	1,000		

* One of these units is the original house.

Assumptions

To demonstrate our model, we used the following preliminary assumptions. They are conservative estimates based on conversations with developers within the Boston and Seattle region.

Development Budget	
Hard Cost ($/ SF)	$260
Soft Costs	30% Hard Costs
Developer OH	5% Hard Costs
Developer Fee	5% Hard Costs
Financing Costs	7%
Vacancy Rate	5%
Operating Expenses	$7,000 / unit
Capital Reserves	$400 / unit
Yearly Increase	
Rent	2%
Share	2%
Operating Expenses	2%
Capital Reserves	2%
Parking Requirement	0.5 sp. / unit

Discounted Cash Flow Analysis

	Assumptions	0	1	2	3	4	5	6	7
DEVELOPMENT COSTS									
Site Acquisition + Land*		($475,512)							
Construction Costs	$260/SF	($1,409,200)							
Soft Costs	30% TCB	($422,760)							
Developer Overhead	5%	($70,460)							
Developer Fee	5%	($70,460)							
Financing Costs	7%	($171,387)							
Total Development Costs		($2,448,392)							
RENTAL INCOME	Growth								
Rental Income	2%		$142,200	$145,044	$147,945	$150,904	$153,922	$157,000	$160,140
Potential Gross Income			$142,200	$145,044	$147,945	$150,904	$153,922	$157,000	$160,140
VACANCY									
Vacancy Rate	5%		($7,110)	($7,252)	($7,397)	($7,545)	($7,696)	($7,850)	($8,007)
Effective Gross Income			$135,090	$137,792	$140,548	$143,359	$146,226	$149,150	$152,133
OPERATING EXPENSES									
(Total Operating Expenses)	$7,000 / unit		($56,000)	($57,120)	($58,262)	($59,428)	($60,616)	($61,829)	($63,065)
NOI			$79,090	$80,672	$82,285	$83,931	$85,610	$87,322	$89,068
(Capital Reserves)	$400/unit		($3,200)	($3,264)	($3,329)	($3,396)	($3,464)	($3,533)	($3,604)
PROFIT		(2,448,392)	$75,890	$77,408	$78,956	$80,535	$82,146	$83,789	$85,464
Profit Distribution									
Per Share	1,000 Shares		$76	$77	$79	$81	$82	$84	$85
Owner of Full Unit	125 Shares		$9,486	$9,676	$9,869	$10,067	$10,268	$10,474	$10,683

Note: Why no debt service? In the Frolic Model, when all shares are sold to residents and investors, there is no need to take a permanent loan. The construction loan is payed off completely from the sale of shares. The monthly dividends from rental revenue equate to the "interest" investors receive. Investors thus provide the debt for the project by purchasing the shares, similar to how a city can float a bond for a project in order to loan money from individuals rather than banks.

8	9	10	11	12	13	14	15	16	17	18	19	20
$163,343	$166,610	$169,942	$173,341	$176,808	$180,344	$183,951	$187,630	$191,382	$195,210	$199,114	$203,097	$207,159
$163,343	$166,610	$169,942	$173,341	$176,808	$180,344	$183,951	$187,630	$191,382	$195,210	$199,114	$203,097	$207,159
($8,167)	($8,330)	($8,497)	($8,667)	($8,840)	($9,017)	($9,198)	($9,381)	($9,569)	($9,761)	($9,956)	($10,155)	($10,358)
$155,176	$158,279	$161,445	$164,674	$167,967	$171,327	$174,753	$178,248	$181,813	$185,450	$189,159	$192,942	$196,801
($64,326)	($65,613)	($66,925)	($68,264)	($69,629)	($71,022)	($72,442)	($73,891)	($75,369)	($76,876)	($78,414)	($79,982)	($81,581)
$90,850	$92,667	$94,520	$96,410	$98,338	$100,305	$102,311	$104,358	$106,445	$108,574	$110,745	$112,960	$115,219
($3,676)	($3,749)	($3,824)	($3,901)	($3,979)	($4,058)	($4,140)	($4,222)	($4,307)	($4,393)	($4,481)	($4,570)	($4,662)
$87,174	$88,917	$90,696	$92,509	$94,360	$96,247	$98,172	$100,135	$102,138	$104,181	$106,264	$108,390	$110,557
$87	$89	$91	$93	$94	$96	$98	$100	$102	$104	$106	$108	$111
$10,897	$11,115	$11,337	$11,564	$11,795	$12,031	$12,271	$12,517	$12,767	$13,023	$13,283	$13,549	$13,820

Scenario: Resident Purchases Unit Over 30 Years

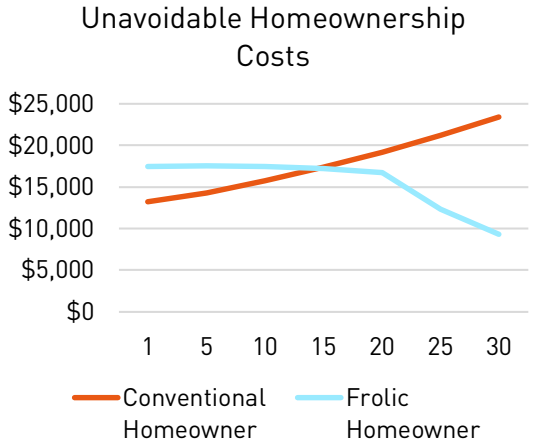
This scenario demonstrates how the Frolic Model can allow a resident to purchase equity over time. In this scenario, a resident purchases four shares when they move in at Year 1. They then purchase 21 additional shares every five years, allowing them to own enough shares in Year 30 to equate to their unit (125 shares).

The share values increase each year by a set percentage. When this tenant purchases additional shares, they pay the new rate for the shares. The value of shares owned is calculated by adding the value of new shares purchased in that year with the increased value of shares already owned.

At the end of 30 years, once the resident has purchased their unit, **their yearly dividend will be $22,277. This will offset their rent by 71%**. In 30 years, their rent is expected to be $2,630 per month. This is due to a 2% rent increase each year to keep up with inflation and increasing operating and maintenance expenses. Deducting the dividend from rent brings the **rent down to $774 per month**.

There are many costs conventional homeowners are required to make in addition to a downpayment and mortgage payments. According to a Zillow report published in 2017, homeowners in the Seattle Metro region are expected to spend $12,924 per year in utilities, real estate taxes, homeowner's insurance and home maintenance expenditures.[1] This resident living in a Frolic home is also making payments that are not going towards their equity stake in their home. A portion of their rent will always go towards costs similar to the ones outlined above regardless of how many shares they own.

This graph illustrates how these unavoidable costs are lower for Frolic residents (once they own more than 50% of their shares) than other conventional homeowners. At the beginning of the 30 years, when they only own a small portion of their unit, their dividends are small and a significant portion of their rent goes to other investors. As they purchase more shares, they receive a larger portion of their rent back through dividends. Regardless of how many shares they own, the same portion of their rent will go towards similar costs conventional homeowners always need to pay.



The Zillow estimate grows gradually each year by 2% to mimic inflation. The Frolic estimate is yearly rent after the dividend is returned.

1) Zillow. 2017. "Homeowners Can Spend More Than $9,000 a Year on Hidden Homeownership and Maintenance Costs." Zillow MediaRoom. July 31, 2017. http://zillow.mediaroom.com/2017-07-31-Homeowners-Can-Spend-More-Than-9-000-a-Year-on-Hidden-Homeownership-and-Maintenance-Costs.

		1	5	10	15	20	25	30
Growth in Ownership								
% of Unit Owned		3%	17%	33%	50%	67%	83%	100%
Number of Shares Owned		4	21	42	63	83	104	125
Price of New Shares Purchased		$10,202	$26,723	$60,959	$67,304	$74,309	$82,043	$90,583
Total Money Invested		$10,202	$36,924	$97,884	$165,188	$239,497	$321,540	$412,123
Value	Growth							
Each Share	2%	$2,448	$2,650	$2,926	$3,231	$3,567	$3,938	$4,348
Full Unit		$306,049	$331,277	$365,757	$403,825	$445,856	$492,261	$543,495
Shares Owned		$10,202	$37,765	$102,655	$180,644	$273,755	$384,291	$514,870
Dividends								
Per Share		$76	$82	$91	$100	$111	$156	$178
All Shares Owned		$316	$1,711	$3,779	$6,258	$9,213	$16,264	$22,277
Rent	Growth							
Avg. Monthly Rent	2%	$1,481	$1,603	$1,770	$1,954	$2,158	$2,382	$2,630
Avg. Yearly Rent		$17,775	$19,240	$21,243	$23,454	$25,895	$28,590	$31,566
Rent After Dividend								
Yearly Rent After Dividend		$17,459	$17,529	$17,464	$17,195	$16,682	$12,326	$9,289
Monthly Rent After Dividend		$1,455	$1,461	$1,455	$1,433	$1,390	$1,027	$774
Rent Saved		$26	$143	$315	$522	$768	$1,355	$1,856
% Rent Payed		98%	91%	82%	73%	64%	43%	29%

Comparison: Two Extreme Scenarios

The following compares two extreme scenarios. In the first scenario, a resident moves in, purchases all the shares equivalent to their unit and stays for 30 years. In the second scenario, a resident moves in, purchases one share, never again purchases another share, and also stays for 30 years.

PURCHASE ENTIRE UNIT

In Year 1, 53% of the resident's rent is returned through dividends. In Year 30, 71% of their rent is returned. When a resident owns their entire unit, the rent they pay only goes towards operating and maintaining the project.

Share Breakdown @ Year 1	
Total Development Costs	$2,448,392
# of Shares	1,000
# Units	8
# of Shares / Unit	125
Price per Share	$2,448
Price per Unit (125 Shares)	$306,049

	Assumptions			1	2	3	4
OVERALL PROJECT							
Project Profit				$75,890	$77,408	$78,956	$80,535
Profit Distribution per Share	1,000	shares	Growth	$76	$77	$79	$81
Unit Value	125	shares	2%	$306,049	$312,170	$318,413	$324,782
PURCHASE ENTIRE UNIT							
Dividends							
Dividends per Year ($)				$9,486	$9,676	$9,869	$10,067
Dividends per Month (%)				$791	$806	$822	$839
Return (%)				3.1%	3.2%	3.2%	3.3%
Return on Investment*							
Value of Shares				($306,049)			
Dividend				$9,486	$9,676	$9,869	$10,067
Total Profit				($296,563)	$9,676	$9,869	$10,067
IRR: 5.3%							
Rent			Growth				
Rent Before Dividend	$1,481	avg. rent	2%	$1,481	$1,511	$1,541	$1,572
Rent After Dividend				$691	$705	$719	$733
% Rent Saved				53%	53%	53%	53%
PURCHASE ONE SHARE							
Dividends							
Dividends per Year ($)				$76	$77	$79	$81
Dividends per Month (%)				$6	$6	$7	$7
Return (%)				3.1%	3.2%	3.2%	3.3%
Return on Investment*							
Value of Shares				($2,448)			
Dividend				$76	$77	$79	$81
Total Profit				($2,373)	$77	$79	$81
IRR: 5.3%							
Rent			Growth				
Rent Before Dividend	$1,481	avg. rent	2%	$1,481	$1,511	$1,541	$1,572
Rent After Dividend				$1,475	$1,504	$1,535	$1,565
% Rent Saved				0.43%	0.43%	0.43%	0.43%

* Return does not include payments towards rent

5	6	7	8	9	10	20	30
$82,146	$83,789	$85,464	$87,174	$88,917	$90,696	$110,557	$178,216
$82	$84	$85	$87	$89	$91	$111	$178
$331,277	$337,903	$344,661	$351,554	$358,585	$365,757	$445,856	$543,495
$10,268	$10,474	$10,683	$10,897	$11,115	$11,337	$13,820	$22,277
$856	$873	$890	$908	$926	$945	$1,152	$1,856
3.4%	3.4%	3.5%	3.6%	3.6%	3.7%	4.5%	7.3%
					$365,757		
$10,268	$10,474	$10,683	$10,897	$11,115			
$10,268	$10,474	$10,683	$10,897	$11,115	$365,757		
$1,603	$1,635	$1,668	$1,701	$1,736	$1,770	$2,158	$2,630
$748	$763	$778	$793	$809	$825	$1,006	$774
53%	53%	53%	53%	53%	53%	53%	71%
$82	$84	$85	$87	$89	$91	$111	$178
$7	$7	$7	$7	$7	$8	$9	$15
3.4%	3.4%	3.5%	3.6%	3.6%	3.7%	4.5%	7.3%
					$2,926		
$82	$84	$85	$87	$89			
$82	$84	$85	$87	$89	$2,926		
$1,603	$1,635	$1,668	$1,701	$1,736	$1,770	$2,158	$2,630
$1,597	$1,628	$1,661	$1,694	$1,728	$1,763	$2,149	$2,616
0.43%	0.43%	0.43%	0.43%	0.43%	0.43%	0.43%	0.56%

While these returns apply for a resident owning one share, the same 5.3% IRR would exist for any investor owning a share in the project over 10 years.

PURCHASE ONE SHARE

When a resident only owns one share in a 1,000 share project, the financial benefits tied to that share are limited. Since their share ownership of the company is only 0.1%, they collect a negligible amount of dividends each year. In Year 1, they collect only $76 in dividends.

BOTH SCENARIOS

In both scenarios, for the first 10 years, residents earn a 10 Yr. IRR of 5.3%. Their return includes the compounded increase in share value in addition to yearly dividends. Each year, they receive a 3.1% - 3.5% return on their initial investment through a dividend. After 10 years, this return increases. In 30 years, it is 7.3%.

4

Frolic: The Business

Our Role

What will Frolic's role within the development process be for it's first project?

We will be the project sponsor and junior partner in the joint venture. In this role, we will take on laying the groundwork for a smooth and transparent development process, forming the development team, and structuring the deal.

The team might include: land owner, design/build firm, general contractor, city, equity investors, bank providing construction loan, bank providing permanent loan, local community members, and future tenants.

We will require a local developer to partner with. This will allow us to use their balance sheets when arranging a bank loan, and capitalize on their reputation when recruiting tenants and investors.

During our recent trips to Seattle, we have identified possible partners and gathered a group of local and experienced mentors who will assist us in choosing the right team and navigating obstacles. This is in addition to the group of mentors we have from our MIT and professional networks.

In addition to forming the development team and structuring the deal, we will:

- **Negotiate terms with the landowner** and be their first point of contact.
- **Navigate the entitlement process** and gather necessary entitlements.
- **Engage with the community**, gather their input and advocate on their behalf throughout the development process. Keep them up to date on the process and always ask, whose voice is not being heard?
- **Arrange the legal and financing structure** to allow for the selling and transferring of shares.
- **Design educational material to recruit and protect unaccredited investors.**
- **Head marketing and lease-up.** We will design and implement initial marketing campaign. If necessary, we will hire a broker.

How will Frolic's role change over time?

As we gain more experience, we will take on the developer's role, earning a larger portion of the developer fee. After our first completed project, if we can line up all necessary investors, we will take on the role as senior partner in the project and create a fee-for-service relationship with a developer. Until we build up our own balance sheet, we will pay the developer a guarantor fee of 5-6%.

How do we make money?

Construction Phase
Each project will include a 3-10% Developer Fee and Developer Overhead Fee. This will be calculated directly from the construction budget.

These fees will be shared between Frolic and a possible development partner.

Stabilized Asset
Depending on our involvement, we may charge a 5-10% Management Fee. This will differ from project to project.

Share Ownership
Frolic will retain a portion of the shares in each project, and earn dividends on those shares until they are purchased by residents.

Business Model Ethos

We believe in keeping our developer fees low in order to deliver low cost units without limiting their quality.

As we build trust and experience in a neighborhood, we will streamline the pre-development phase of our projects allowing us take on multiple projects at once. As we scale, we will take smaller development fees since our business will not be as tied to the profit of each individual project.

We also hope that over time we can reach deeper levels of affordability. One of the ways we see doing this is to establish a fund to subsidize rents and help acquire land near transit.

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Appendix A: Interviews

Developers & Consultants
General

Seattle, WA
Maria Barrientos, Barrientos Ryan
Kristin Ryan, Barrientos Ryan

Portland, OR
Kurtis Fusaro, Gerding Edlen

Los Angeles, CA
Mott Smith, Civic Enterprise
Wally Marks, Walter N Marks Realty

Boston, MA
Kristen Hunter, Faculty Harvard GSD
Kerry Bowie, Masada Partners

New York, NY
Alex Klatskin, Forsgate Industrial Partners
Mitch Salmon, Lee & Associates
Nicko Elliott, Macro Sea
Zach Cilman, Colliers

Developers & Consultants
Affordable Housing

Seattle, WA
James Madden, Enterprise Comunity Partners
Ellen Lohe, Beacon Dev. Group

Boston, MA
Beverly Gallo, Peregrine Urban Initiative
Peter Roth, New Atlantic Development
Noah Maslan, Eden Properties
David Tisel, Somerville Community Corporation

New Orleans, LA
Casius Pealer, Director of Tulane's MSRED Program

Developers & Consultants
Cohousing

Seattle, WA
Serina Holmstrom, EcoThrive
Ecovillage
Chris ScottHanson, Urban Cohousing Associates

Portland, OR
Eli Spavek, Orange Splot
Joren Bass, Urban Development Partners
Lew Bowers, PDXCommons

Bay Area, MA
Heidi Lubin, Sole Proprietor
Jim Bergdoll, Neighborhood Development Ministries
Laila Ibrahim
Katy Gordon, Nuns and Nones
Raines Cohen, Cohousing California

Architects
Cohousing

Seattle, WA
Grace Kim, Schemata Workshop

Boston, MA
Brooks Mostue, Davis Square Architects

Copenhagen, Denmark
Anne Romme, KADK School of Architecture

Anders Sørensen, Vandkunsten

Architects
General

Boston, MA
Curt Lamb, Faculty Boston Architectual College

New York, NY
Drew Lang, Lang Architecture

Copenhagen, Denmark
Mauricio Duarte Pereira, Gehl Architects

Bankers

Bay Area, CA
Mindy Christensen, Amalgamated Bank

New York, NY
M & T Bank

Design/Build Firms

Seattle, WA
Robert Humble, Hybrid
**Leah Martin, allied8

Portland, OR
Kevin Cavenaugh, Guerrilla Development
Anna Mackay, Guerilla Development

Lawyers

Bay Area, CA
Shushil Jacob, East Bay Permanent Real Estate Cooperative

Boston, MA
Jerome Garciano, Robinson+Cole

New York, NY
Jones Day

Academics

Andrea Chegut, Director MIT Real Estate Innovation Lab
Dennis Frenchman, Director MIT Center for Real Estate
Justin Steil, Assistant Professor of social stratification and inequality
Karl Seidman, Senior Lecturer of Economic and Community Development
Ceasar McDowell, Professor of Civic Engagement
Charles Steelman, TA Real Estate Finance
David Ulin, Writer
Garnette Cadogan, Writer

Startup Advisers

Boston, MA
Gilad Rosenzweig, MIT DesignX
Svafa Gronfeldt, MIT DesignX
Norbert Chang, MIT DesignX
Jinane Abounadi, MIT Sandbox Innovation Fund

City Government

Shoreline, WA
Miranda Redinger, Senior Planner
Nathan Daum, Economic Development Program Manager
Catherine Lee, Associate Planner
Constance Perenyi, Neighborhood Coordinator

Seattle, WA
Sam Assefa, Director of Planning and Community Development
David Driskell, Deputy Director Planning and Community Development
Bin Jung, Senior Community Development Specialist, City of Seattle

Bay Area, CA
Pat Kernighan, Former Oakland City Counciler

Los Angeles, CA
Rick Cole, City Manager Santa Monica

Boston, MA
Prataap Patrose, Sr. Advisor for Long Term Planning

Community Members

Shoreline, WA
Patty Hale, Ridgecrest Neighborhood Association Board of Directors

Seattle, WA
The Zosels, Walker Townhomes

Boston, MA
Meg Campbell, Founder Codman Academy

Appendix B: Project Visits

Seattle, WA

Cohousing
Capitol Hill Cohousing, Schemata Workshop
Puget Ridge Cohousing
5th Street Commons

Infill
Walker Townhomes, Hybrid

Portland, OR

Cohousing
PDX Commons
Cully Grove, Orange Splot
Mason St. Townhomes, Orange Splot

Adaptive Re-use
New Crusher Court, Guerilla Development

Crowd-Funded
The Fair-Haired Dumbbell, Guerilla Development

Bay Area

Cohousing
Mariposa Grove Cohousing
Golden Gate Cohousing
Berkeley Cohousing
Temescal Commons
Woolseyville

Boston, MA

Cohousing
Cambridge Cohousing

New York, NY

Community Land Trust
Bronx Community Land Trust

Infill
Walker Townhomes, Hybrid

Scandinavia

Cohousing
Lange Eng, Dorte Mandrup Architects
Saettedammen
Bauneholm

Workers Housing
Potato Rows
Humleby

Neighborhood Scale
Malmo Western Harbor