

Integration³

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Abstract

Integration³

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During any given night of the year, there are more than 4500 people unsheltered, homeless in Seattle. In most cities across the US, homeless counts are declining, but not here. We have the 4th highest homeless population, and it's only getting worse. The homeless problem is getting so out of control that the Mayor, Ed Murray, called a "State of Emergency" back in November 2015, after more than 60 people died because they lacked housing and other resources needed to survive. In Seattle, like most other cities, there are available resources for the

homeless, but they are spread out across miles, making them difficult to utilize. This is where this thesis comes in. What this thesis proposes is an integration across multiple scales, which will connect the ex-homeless residents to other members of the community through programmatic and spatial overlaps within the building, an added amenity at the adjacent wetland site and connections with the neighborhood through an implemented culinary arts architecture.

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1 Introduction

Since the 1980s, many men, women, and children in the United States have become homeless; some relocate from shelter to shelter, while others sleep on the streets. Unfortunately, a rapidly growing percentage of the homeless is made up of families consisting of a single mother and her two children, usually under the age of six.¹ This thesis argues that addressing the needs of this particular group can yield immense benefits. It can improve the social and educational lives of the homeless children, it can create financial and relational stability for the homeless mothers, it can improve the health and safety of them both, and it can improve the surrounding economy.

1 America's Youngest Outcasts, p.9

A major barrier to overcoming homelessness is accessing the social services that already exist. Throughout major cities, many services the homeless need, such as affordable housing, child care, and employment training, are spread out across miles, preventing the homeless from taking full advantage of the help offered to them. In interviews of the homeless, they spend a majority of their day traveling, leaving only a minimal amount of time for actually using the services.²³ This problem is magnified for women with children who must also travel around taking their children to school. With little being done to address transportation

issues associated with homelessness, new solutions must be proposed.

In order to come up with a new solution, this thesis will explore the answers to a few key questions: How can architecture successfully integrate the components of housing, child care, and employment training, while incorporating supportive social environments that allow the growing sector of homeless women and children to learn and become independently successful and self-sustaining? How can the implementation of a culinary arts program enable the architecture to become integrated not only with its immediate site, but also with the surrounding

2 Ricky, Living Conditions Survey

3 Brian, Living Conditions Survey

neighborhood? Lastly, how can focusing on materials and fabrication techniques improve the lives of the residents while keeping the architecture affordable and beautiful?

In Chapter 2, I will provide specifics on what homelessness is and why Seattle was chosen as the site, as well as review literature and precedents in each of the four components: housing, child care, employment training, and supportive social environments.

Further, in Chapter 3, I will explain why the Seattle City Light's former Wabash Substation was chosen as the specific site for this proposal and what benefits are gained from choosing this location. Also, program descriptions and

explanations, based on placement within the site, will be described in this chapter. Lastly, I will cover the brettstapel construction method and explain how it makes the project both financially feasible for developers and aesthetically pleasing for residents. Throughout this chapter, I will describe how the implementation of a culinary arts program can weave together the program elements, as well as integration with the site and neighborhood.

In Chapter 4, I will explain how all these components came together into one cohesive building. Though this solution is not the only solution imaginable, I hope that it can be a catalyst that will allow other solutions to become available and even be realized.

Lastly, in Chapter 5, I will conclude, offering feedback of the design and suggestions for further exploration.

2 Literature Review

This chapter begins by describing the parameters of today's homelessness both nationally and in Seattle, Washington. It then reviews literature on the critical supports homeless women and children need, including housing, day care, employment. It offers case studies, both in policy and architecture, to prove how these components, along with the addition of healthy social environments, support homeless women and children and their goals of self-sufficiency. This chapter concludes by using this research to refine the initial thesis proposition.

Homelessness Defined

Though homelessness is defined in a multitude of different ways, for the purposes of this thesis, it will use the definition

provided by the McKinney-Vento Homelessness Assistance Act, which considers homelessness as lacking a permanent nighttime residence or being at risk of immediately losing it due to the inability to pay or due to the presence of violence.¹

Getting an accurate count of the number of homeless is difficult due to those in “doubled-up” situations. Homeless persons living in doubled-up situations gain shelter in the apartments of others “due to economic hardship or loss of housing.” These persons remain unaccounted for because the primary owners violate their lease agreements

and could be evicted if they disclose the actual number of people living in the unit. As many as 75 percent of homeless children in the United States live in this way and are not accounted for.²

Family and Child Homelessness

During the course of a year, 2.5 million children are homeless in the United States, and the number is growing. This translates to 1 out of every 30 children, which is almost 1 child per classroom.³ Family homelessness surfaced as an issue in the 1980s, and since then, it has been steadily climbing. Currently, family and child homelessness accounts

1 America’s Youngest Outcasts, p.12

2 America’s Youngest Outcasts, p.16

3 America’s Youngest Outcasts, p.6

for 37 percent of the total homeless population in the United States.⁴

Data from the 1990 Worcester Family Research Project suggest that homeless mothers have a variety of things that make it harder for them and their families to be stable. They typically have low levels of education, which leads to jobs with low pay and high levels of abuse, depression, post-traumatic stress disorder, and anxiety.⁵ The same research project was done in 2014 and showed that many homeless preschool children have poor mental health needing clinical evaluation. Once they reach grade school

age, their probability of mental health issues increases; homeless children have double the mental health issues when compared to their non-homeless peers.⁶

4 America's Youngest Outcasts, p.9

5 America's Youngest Outcasts, p.9

6 America's Youngest Outcasts, p.10

Figure 1
Mental Illness Comparisons
By Age and Home Status

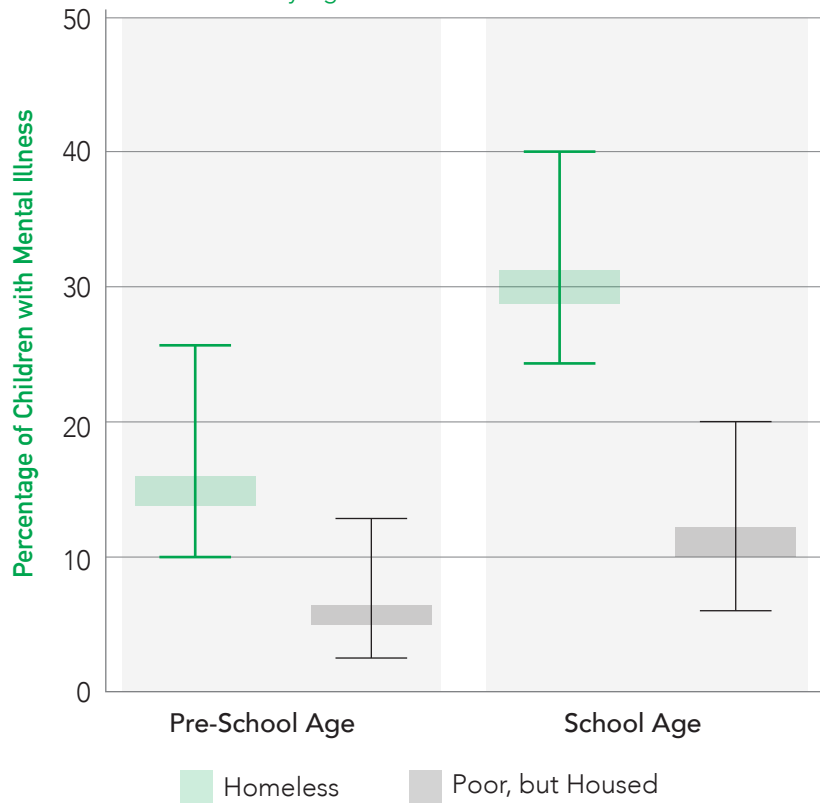


Figure 2
Shelter Turnaways
January 27, 2012

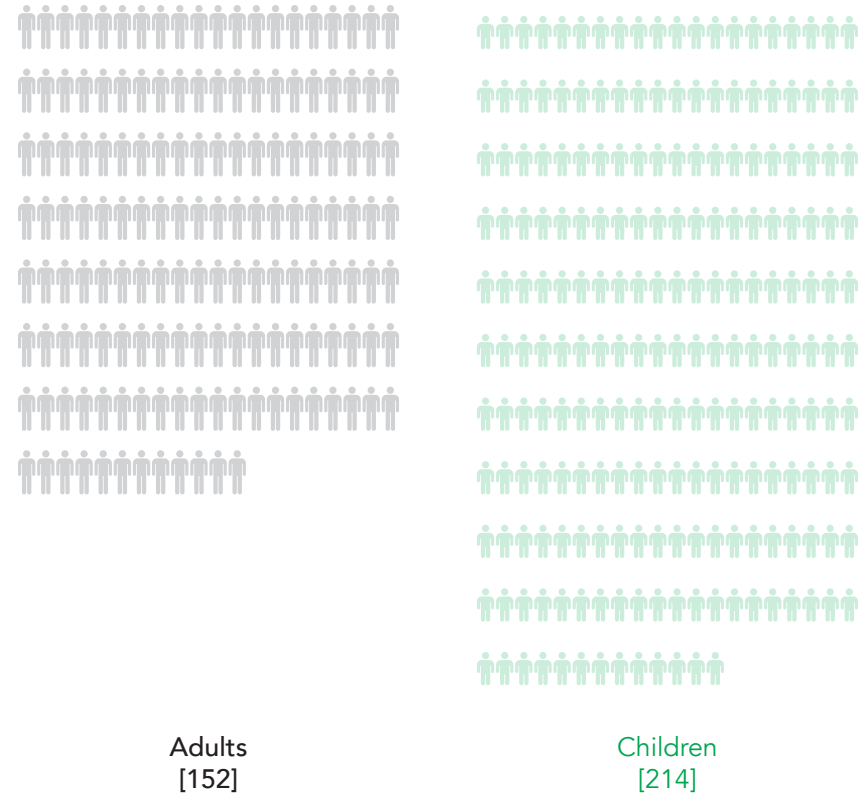


Figure 3
Homelessness Breakdown in Seattle
January 27, 2012

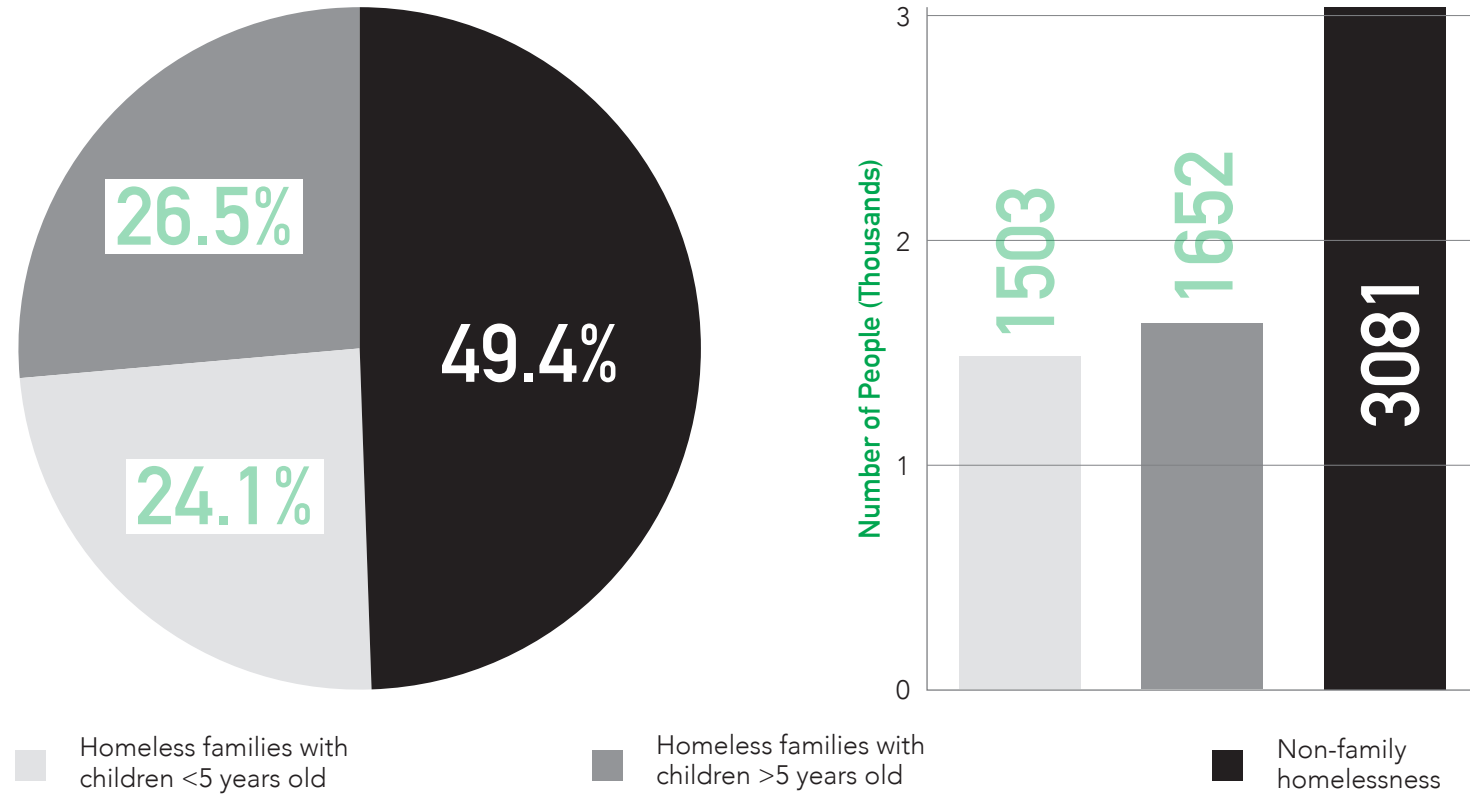


Figure 4
Ages of Homeless Children in Seattle
January 27, 2012

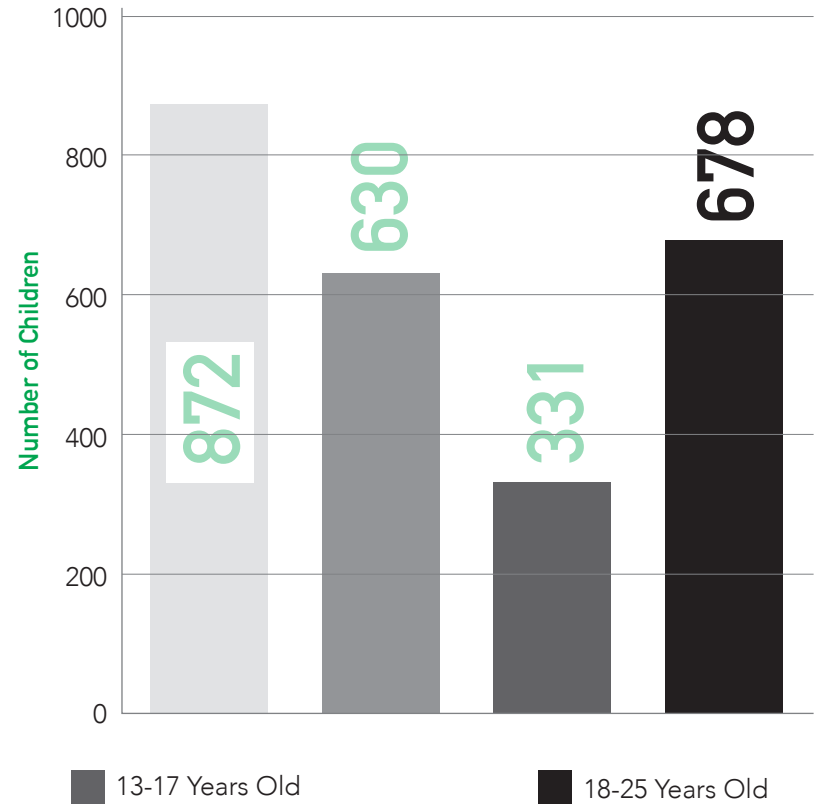
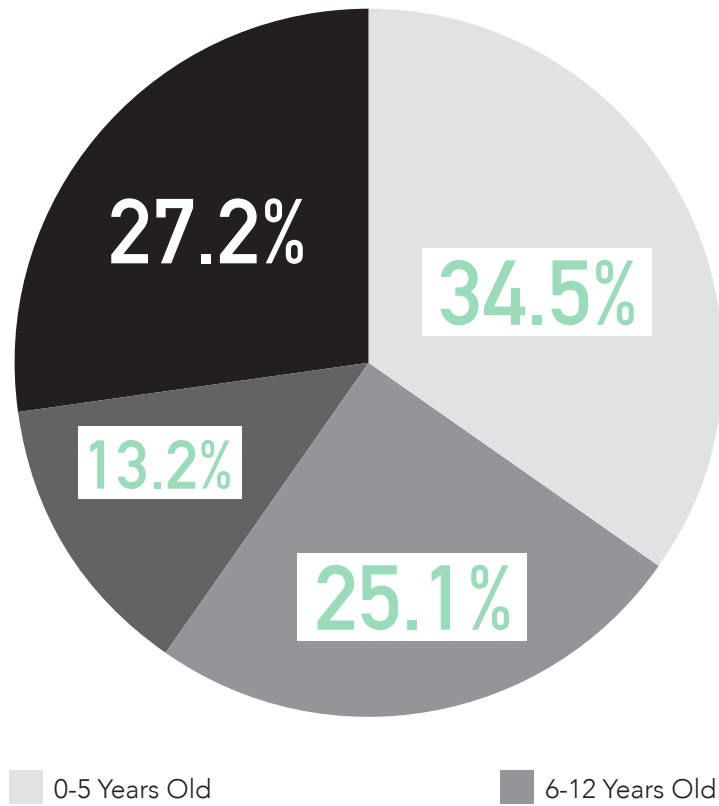


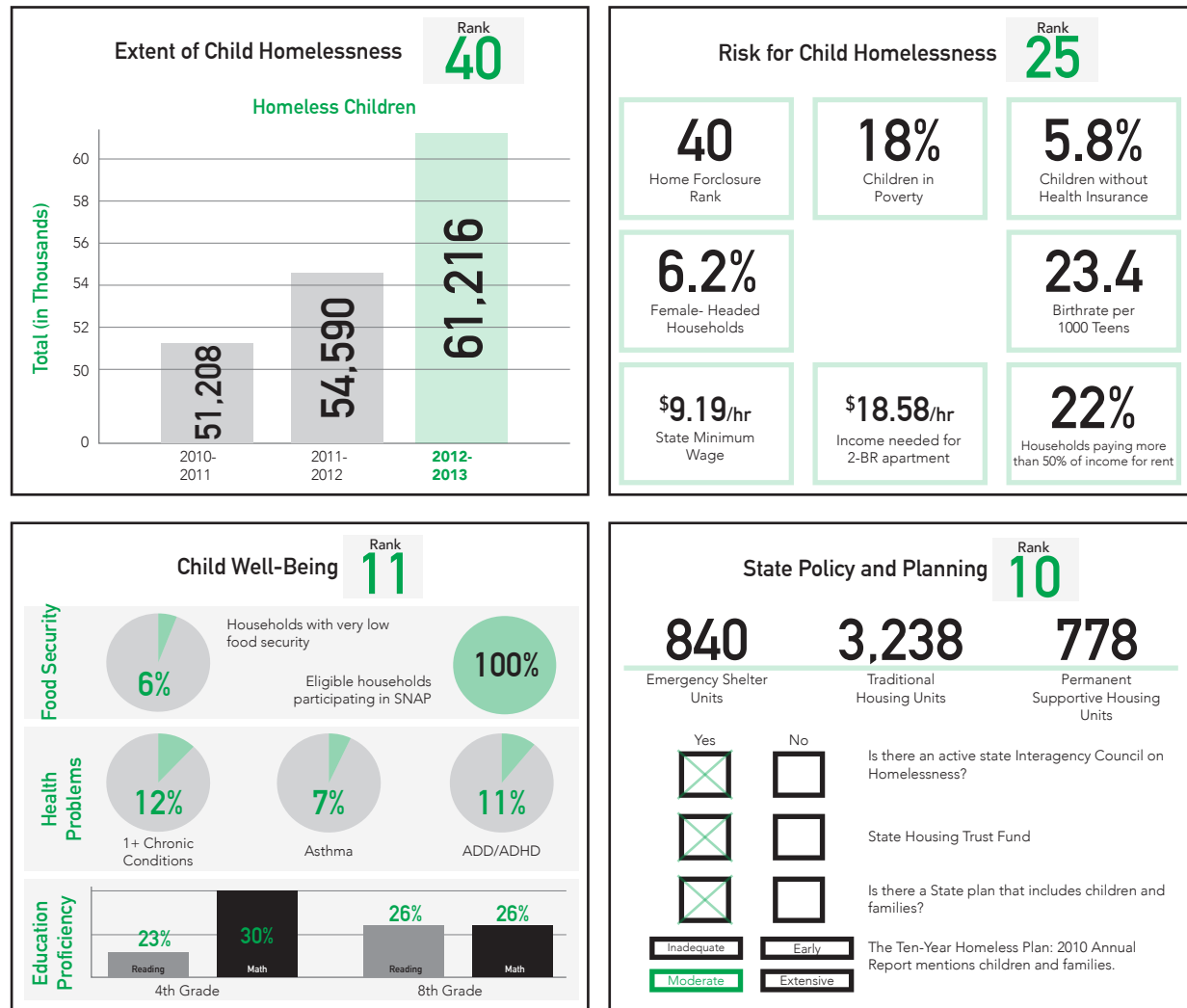
Figure 5

Washington State Child Homelessness Rankings

Child Homelessness

Rankings: Washington

In 2013, the National Center on Family Homelessness (NCFH) published a report on child homelessness. In that report, the NCFH ranked all 50 states on four domains to determine the magnitude of child homelessness in that state, including extent of child homelessness, children’s well-being and risk, and policy and planning efforts.



*** State Ranks: 1 = Best, 50 = Worst

Homelessness - A State of Emergency in Seattle

On January 26, 2016, Seattle mayor Ed Murray declared:

Emergency responses alone are not the answer. Too much of the debate, energy, and resources have been focused on the short-term strategies. We must shift to long-term solutions.⁷

Throughout the speech, Murray discussed the extent of homelessness in Seattle and what he was planning to do about it. He explained that before the Great Recession, there were 13,000 homeless children in the state of Washington, but since, the number has skyrocketed to more than 32,000.⁸ The mayor then went on to say that homelessness

is a federal issue, made worse by 35 years of budget cuts. In the last 5 years, alone, there has been a 33 percent decrease in the funding for federal affordable housing.⁹ Since Mayor Murray declared the state of emergency, he, with the help of many others, has been aggressively trying to impact the homelessness epidemic in Seattle by joining with state and federal governments. Together, since November 2015, they have raised money, opened new safe places, and deployed a mobile medical van.¹⁰ With the mayor actively trying to solve homelessness, there is an opportunity for this thesis to make some real change.

7 Murray, Homelessness Address to the City

8 Murray, Homelessness Address to the City

9 Murray, Homelessness Address to the City

10 Murray, Homelessness Address to the City

Figure 6
Sorting of Low-Income Barriers

Lack of Housing	Lack of Child Care	Lack of Employment
Lack of stable address/phone	Family obligations	Low education and literacy
Lack of hygiene/clothing	Unreliable childcare arrangements	Work history gaps
Low self-esteem		Lack of transportation
Poor health		Fear of losing public benefits
Physical disabilities		Criminal Records
Mental health issues		Weak labor markets
Substance use issues		

Barriers for Low-Income Women and Children

According to the National Transitional Jobs Network, there are significant barriers for low-income women and children that push them into homelessness. If the obstructions could be lifted, the homeless would be more likely to become self-sufficient.¹¹ When analyzing these barriers, they fall into three main categories, which will be addressed by this thesis and studied through successful precedents. Removing these three categories of barriers and adding on a supportive social environment would not yield a complete or total fix. Homelessness is a complex problem, but breaking it down into manageable chunks is the first step to impacting lives.

11 Dunlap, Nathan

The following sections take a closer look at each barrier, plus architectural precedents that facilitate healthy social interactions.

Lack of Housing

The core issue of homelessness is, not surprisingly, the lack of a home. The problem is that homelessness isn't just something that should be solved just because it fulfills an emotional need or because it is "the right thing to do"; there are also political and economic reasons why homelessness should end.

Political Human Right to Housing

The National Economic and Social Rights Initiative (NESRI) states,

Everyone has a fundamental human right to housing, which ensures access to a safe, secure, habitable, and affordable home with freedom from forced eviction. It is the government's obligation to guarantee that everyone can exercise this right to live in security, peace, and dignity. This right must be provided to all persons irrespective of income or access to economic resources.¹²

It does not matter how, or why someone is in the state they

are in, they still have the human right to basic shelter. Not including the treaties upheld by the United Nations or the Committee on Economic, Social, and Cultural Rights, there are seven articles, listed in Appendix A, that protect the fundamentals human right to housing in the United States.¹³

Economic Rationale for Housing First Models

In addition to the laws that need to be upheld by the U.S. government, the cost due to homelessness changes drastically when homeless people move into a Housing First scenario. In this scenario, "the state provides apartments to the chronically homeless and worries about addressing the

underlying causes, such as drug abuse, later. By allowing bodies to rest and heal, housing officials say, emotional health will probably follow."¹⁴

The outcomes of the Housing First program are impressive. For example, the state of Utah reduced the amount of those chronically homeless (defined as someone who has spent at least one year full-time on the streets) by 91 percent. In 2015, a mere 178 people were without housing in the entire state.¹⁵ With the savings gained from providing an apartment and social work to those remaining homeless, the state saves more than \$1,000,000 per year.

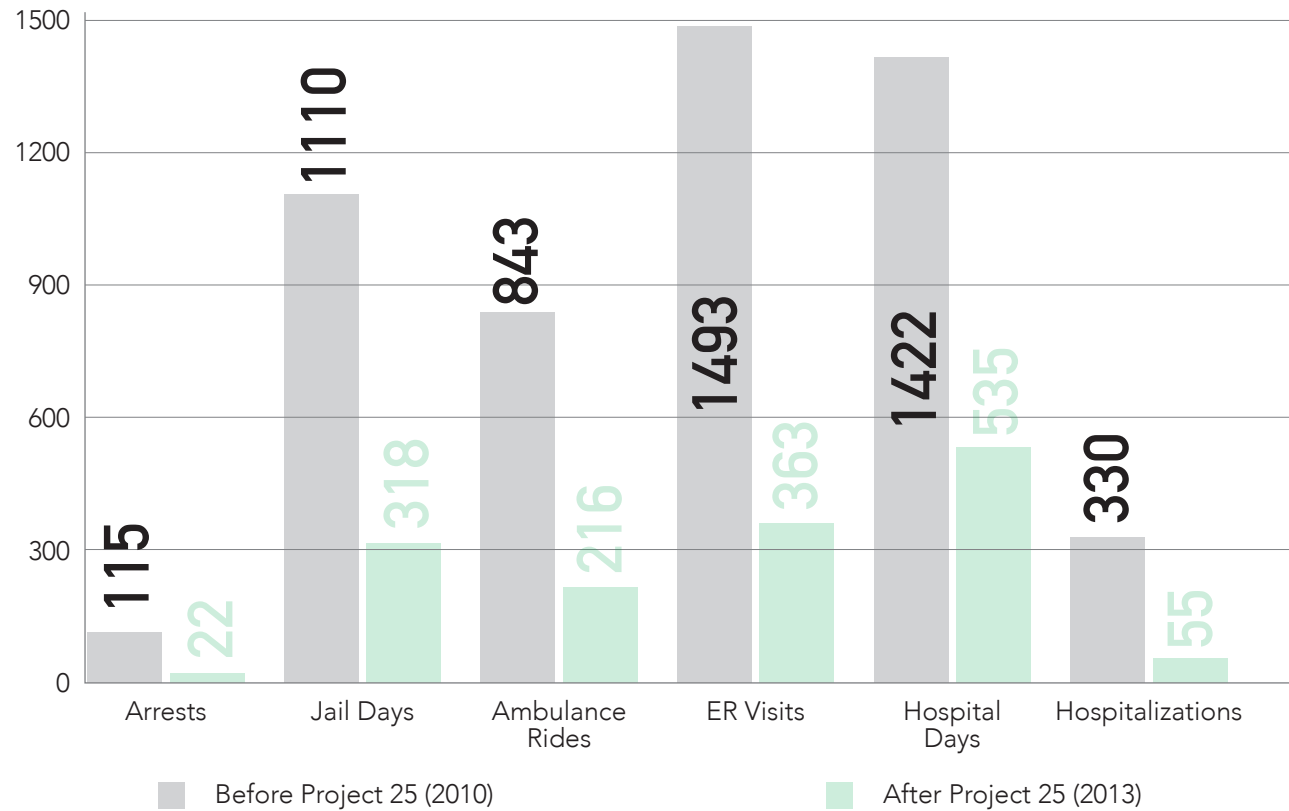
13 What Is the Human Right to Housing?

14 Glionna, John M.

15 Glionna, John M.

Another case is Project 25 in San Diego, California, which saved the city \$2,000,000 per year just by housing 36 people. Before they were housed, “the annual cost per person amounted to \$120,000 ... Even though the program requires a lot of manpower and ongoing expenses, it’s saved taxpayers about \$80,000 per participant per year.”¹⁶

Figure 7
Impact of Project 25



Precedent: Mary's Place, Family Center

Mary's Place was founded in 1999 as a response to "homeless women's cry for a complete resource center." With the help of a grant from the Boeing Community Fund and the Church of Mary Magdalene, the board was able to host several planning sessions in which it asked homeless women what they needed to "rise up out of homelessness." Mary's Place is a wonderful example of an inclusive resource and housing center because, according to the staff, this location is designed to be a one-stop shop. If the services included in the day center were scattered across town, the homeless women would waste time traveling, time that

Figure 8
Mary's Place Volunteers



they could have used trying to find a job, housing, or other services.¹⁷

The most beneficial part of touring Mary's Place was observing staff members' ability to think critically about the layout of the spaces and their analysis of their own program. Michael Rea, a volunteer coordinator at Mary's Place, discussed how the open spaces are great for security and community aspects, but lack quiet, private spaces for medical consultations or tutoring services. He also recognized the need for better monitoring and measuring of what happens after the guests leave Mary's Place.

Sometimes their guests are asked to leave before they are ready to be effectively transitioned to permanent housing, so they end up homeless again. He stressed that all the guests needs to be checked in with so there can be a better understanding of how to prevent chronic homelessness. Lastly, he praised the commercial kitchen at Mary's Place, which allows for the feeding the one hundred people that come through the doors for breakfast and lunch everyday. In addition, staff members can train the guests for a future job because many entry level positions are kitchen-related. Finally, after the training, staff members can employ the guests for a six-month internship. This internship allows them to have something on their resume that they can use to secure a more permanent job, which can lead to the end

of their homelessness.¹⁸ This kind of closed system is a very effective way to integrate the newly housed residents with employment training opportunities.

Lack of Child Care

Child care strengthens families' overall economic security and helps prevent future episodes of homelessness.¹⁹

For families living in homelessness, their greatest need is having sufficient economic resources. They have many strengths when compared to other homeless populations, including being resilient and creative in meeting their needs,

but they also have substantial barriers, the main one being a lack of child care. Without a safe, stable environment to keep their children, the parents will repeatedly miss work and sometimes even lose their jobs.²⁰ Though child care provided by family or friends is more realistic for an average household, homeless mothers have poor social networks, and usually cannot have their children taken care of by someone they know personally. The more effective solution for them is to place their children in center-based care, which is expensive and provides very few subsidized rates.²¹

Based on analysis from the Institute for Children, Poverty

18 Rea, Michael (February 19, 2016).

19 Meeting the Child Care Needs... p. 2

20 Dunlap, p. 2

21 Dunlap, p. 3

and Homelessness (ICPH), a homeless mother is less likely to get subsidized child care than a poor housed mother. With the annual cost of child care for a four-year-old in the United States being \$7,817, almost half of the federal poverty line for a family of three, it is understandable why subsidized child care is needed.²² With the help of subsidies, child care usually costs only five percent of the families' income (\$990 per year for a family of three at poverty level).²³

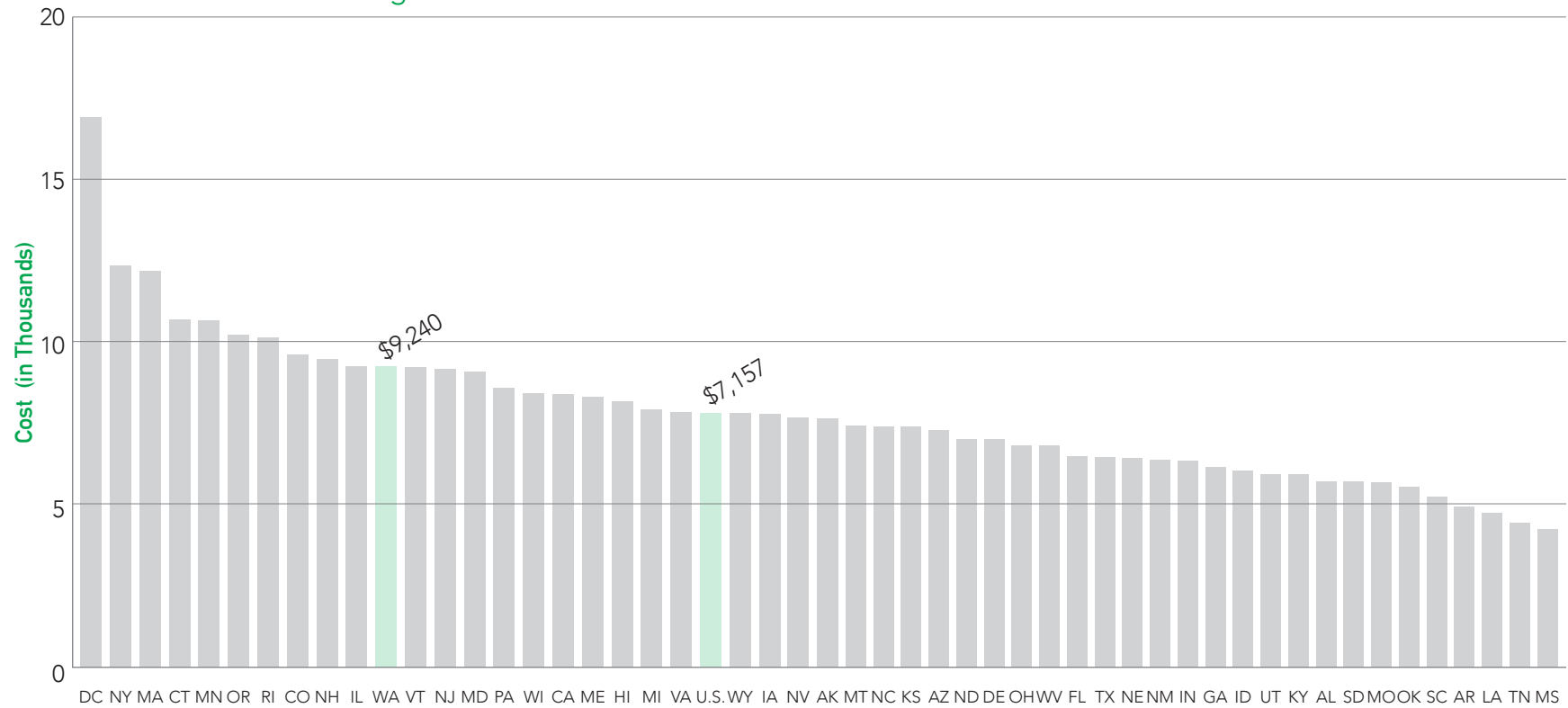
Every two years, states send their plan for child care subsidy programs to the United States Department of Health and Human Services so they can evaluate the plans and provide

assistance through the Child Care and Development Fund (CCDF). The largest issue is that states do not encourage homeless families' use of child care subsidies. But, based on the ICPH's findings, homeless parents whose children are in subsidized child care programs are more likely to be employed, work ten hours more per week, and work for longer periods of time. These facts prove that having an affordable, subsidized, child care is needed for the homeless mothers to be able to provide more for themselves and their children, possibly even propelling them out of homelessness.

22 Meeting the Child Care Needs... p. 1

23 Meeting the Child Care Needs... p. 3

Figure 9
Average Annual Cost of Center-Based Child Care for a Four-Year-Old Per State



Precedent: Pike Market Child Care and Preschool

The Pike Market Child Care and Preschool (PMCCP) is an excellent precedent for a successful child care center that addresses the needs of the community, including families with low incomes. The PMCCP states that it has continued to “foster a passion for learning by ensuring that all families we serve have access to high quality early education in a diverse, urban environment.” Since the opening on October 1, 1982, the facility has been renovated twice, once in 1990 and again in 2012, to accommodate the growing needs of the Pike-Pine Community. The current version of the PMCCP, designed by Weinstein A+U, gives the 60 children, ranging from infancy to 5 years old, the views overlooking Elliot Bay, while the adults have the internal spaces. The

Figure 10
Reading Time at PMCCP



Figure 11
Walk for Kids Event



Figure 12
Walk for Kids Event



whole preschool is just over 4,000 square feet and includes a nursery, a 200 square foot kitchen, a dining room, administrative spaces, and 500 square foot classrooms with toddler bathrooms.

The PMCCP is rare because it not only provides tuition assistance for more than 75 percent of the enrolled families, but it also accepts children of families participating in subsidy programs. If the children belong to a family that does not have a subsidized rate, but still has a low income, the child care center provides a sliding fee scale, based on the income and the size of the family.²⁴ The PMCCP is

able to help the families in the area with tuition by receiving donations, in the form of money, food, or volunteer hours, from its sponsors, but the PMCCP also actively fundraises between 40 and 50 percent of its tuition each year through their “Walk for Kids” and “Great Start Breakfast” events.²⁵

The high quality of its education is not an unsubstantiated claim; it is monitored by many upstanding organizations. The PMCCP works closely with the City of Seattle Comprehensive Child Care Program and the State of Washington Department of Social and Health Services. It is also only one of eighty child care institutions in Washington to be monitored by the

24 “History,” Pike Market Child Care and Preschool

25 “Events,” Pike Market Child Care and Preschool

National Association for the Education of Young Children, an association which makes sure the PMCCP is meeting the appropriate standards of excellence.²⁶

One of the main ways the PMCCP achieves excellence is through its meal program. With help from donations and access to local products from the Pike Place Market, the child care is able to provide seventy percent of a child's nutritional needs for a day. The child is served breakfast, lunch, and two afternoon snacks, family style. These meals serve two main goals. The first is to encourage children to be adventurous eaters and the second is to educate the

families, volunteers, staff, and children on appropriate food choices, serving sizes, etc.²⁷ The use of the meals as both a teaching and learning moment is something that will be adapted in this thesis; it is not just the homeless children that need to learn about nutrition, but also the homeless mothers.

Lack of Employment

The Transitional Jobs Network suggests that in order for homeless or low-income families to gain employment, they need skills training and placement in local industries that

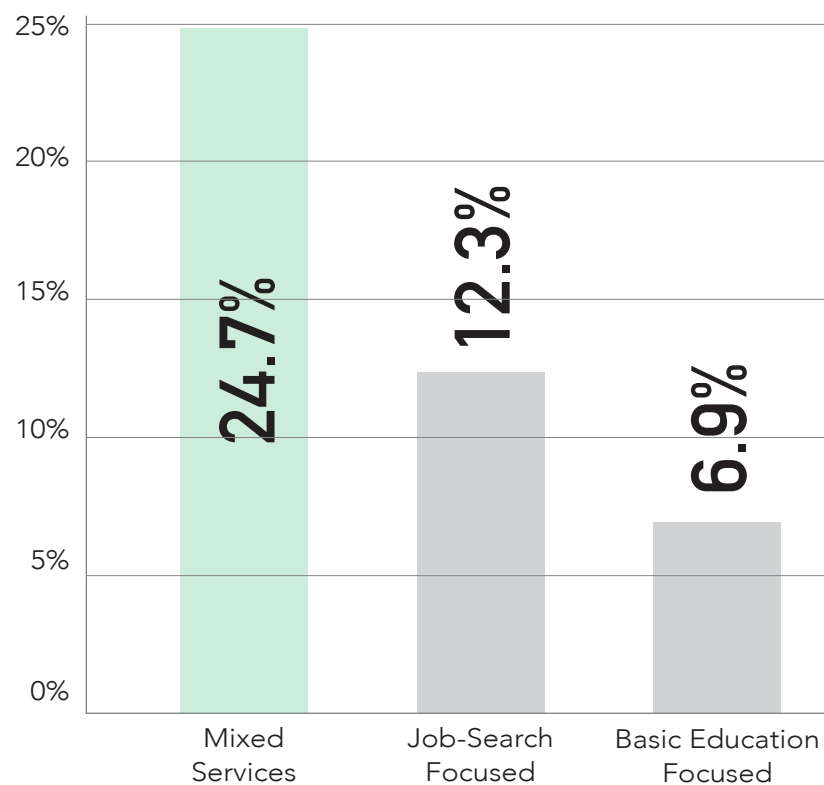
26 "History," Pike Market Child Care and Preschool

27 "Program Goals," Pike Market Child Care and Preschool

offer immediate entry-level jobs with flexible career ladders and schedules.²⁸

A report published by the Center for Law and Social Policy outlines the specific points needed to help someone successfully transition from welfare to a long-term job. First, "skills are strongly linked to success in the labor market." If someone does not have the skills to perform the task needed in their job, they will get passed over for someone who is more fit for the job. Second, "The most successful welfare-to-work programs include education and [job] training as well as other services."²⁹ In a study done over five years,

Figure 13
Average Increase in Earnings Over Five Years
By Welfare-to-Work Strategy



28 America's Youngest Outcasts, p.88

29 Martinson, Built to Last, p. 1

the average increase to earnings from participants initially in poverty was at least 200 percent more if the participant had skills and education training services, versus skills or education training alone.³⁰ Though combined education and job training can take more than a year on average, it pays off substantially in the long run. This thesis proposes that residents stay between two and five years, it allows them to accomplish a few key things. First, they can receive the training they need to become self-sufficient. Second, it allows them to form a bond with their new home: they can paint the walls, hang up pictures and make it their own. Third, it allows time for a mentor program to be established.

Figure 14
Increase in Earnings for Adult Participants
By Educational Outcome

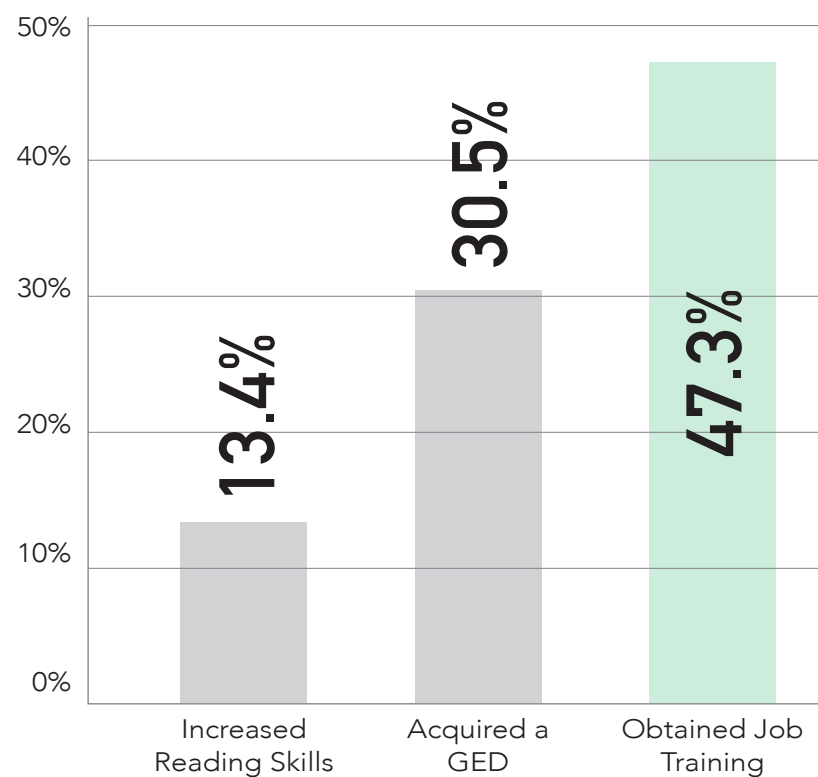
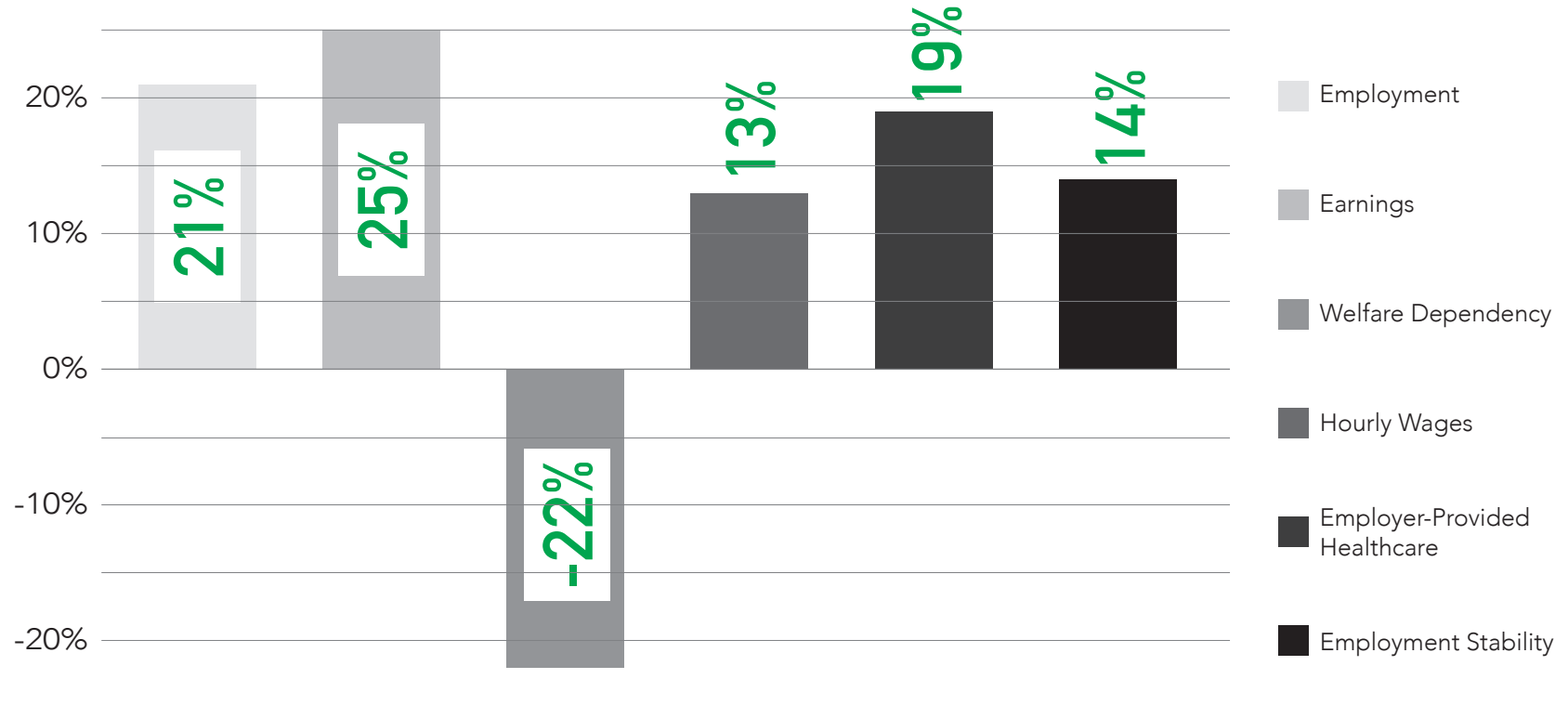


Figure 15
Impact of the Portland Program



Inevitably, some residents will leave and others will take their place. This long cycle encourages the new residents to be counseled by those who have been there longer, offering wisdom and advice from the viewpoint of someone who has been in their shoes.

In one case study in Portland, Oregon, the statistics speak for themselves. The program offered tailored services for the participants: they got skills training, education, and/or job search help based on their individual needs, instead of a blanket approach for everyone. The program also emphasized job quality. Instructors counseled the participants to wait for a good job, one that offered more than minimum wage and more benefits, instead of accepting

the first job offered to them.³¹ Due to the training, both employee and employer benefits increased, for high school graduates and non-graduates.³²

Based on the Portland example and other successful case studies, the National Evaluation of Welfare-to-Work Strategies (NEWWS) compiled a list of suggestions that lay the framework for new job training programs. These suggestions were made to ease some of the current restrictions on counting education and training participation, make it easier to balance work, family, and school by keeping the overall required hours of weekly

31 Martinson, Built to Last, p. 13

32 Martinson, Built to Last, p. 12

participation at a reasonable level, and offer incentives to states to provide support services and work-study positions to low-income parents who are students.³³

Precedent: Northwest Center, South Park Headquarters

The Northwest Center is a “leader in advancing equal opportunities for children and adults with developmental disabilities.”³⁴ Even though they are geared towards those who are disabled, the stigma that the work force feels towards them is the same as the feeling towards the homeless; companies feel that the individuals are not teachable, lack responsibility, and would rather pass them over for an able-

bodied person. But research done through the Northwest Center shows that making diverse work environments with attention to unique needs can be beneficial for all involved.

In order to be most effective, the Northwest Center first begins with individualized employment plans based on the interests, skills, and aspirations of the prospective employees. Then the center starts trial work sessions, where it increases skill levels, practices job development, and offers support. Next, after placement into a job, the Northwest Center works with the employees and its new employers to address the concerns and misconceptions

33 Martinson, Built to Last, p. 24-25

34 What We Do

Figure 16
Businesses Owned By The Northwest Center



about the employment capabilities.³⁵ Job coaches are then put in place to offer occasional or continuous assistance throughout the shift.³⁶

The Northwest Center owns ten businesses, whose profits go back into the program and administration costs of the mother company, contributing to its sustainability.³⁷ Due to its training program, these businesses have witnessed an increase in sales, productivity, innovative thinking, and



35 Our Programs
36 Supported Employment Services
37 Social Enterprise

general moral, and a decrease in absenteeism. The center also has over 150 corporate, foundation, and organization sponsors. These sponsors can fund the Northwest Center, but they can also open doors to employment for the clients.³⁸

The Northwest Center also offers insights for policy intervention. It works as a closed loop system, training the people it eventually employs and then using the extra profits to go back into training. In my thesis, I will be using culinary arts as my closed loop system: through this common thread, there are opportunities for growing, cooking, learning, and selling; opportunities that can bring people together from

multiple ages, income levels, and geographic locations within the neighborhood.

Lack of Supportive Social Environment

In almost all interviews involving housing the homeless, the major issue after they are housed is their feeling of loneliness. Living on the streets, or even in transitional housing, the homeless learn to rely on each other emotionally, physically and socially. Placing them in an apartment or home, though it is physically and economically beneficial, leaves them feeling isolated from the others they might call their "family." Also, because this design is for homeless women and their children, the social lives of the children need to be accounted for. At school, homeless children are ostracized because they do not have the same resources

and opportunities that housed children do. The homeless children need a safe space where they can learn to have healthy and judgment-free interactions with other, homeless or housed, children their age.

Precedent: Williams Terrace Senior Housing

In order to alleviate the feeling of loneliness, there needs to be ample shared spaces where the women and children can socialize freely and openly. The Williams Terrace Senior Housing, designed by David Baker Architects, does a great job of providing these spaces. All of the apartments are laid out along a wide circulation corridor that is programmed as a porch; it's filled with seating and is wonderfully daylit. Because it is wide enough for the residents to walk through,

Figure 17

Williams Terrace Senior Housing Rendering



but also stop and socialize, it becomes a very lively space. The individual apartments also have a small living room to offer solitude when the residents need time to themselves.³⁹ Since the seniors are not forced to be with one another all the time, it makes their interactions more sincere, meaningful, and positive. In the same way, this thesis design will have smaller private living spaces and larger communal living spaces. Expanding upon this idea, there will also be shared gathering spaces, where the residents will be able to cook, dine, and play together.

Chapter 2 Conclusions

After researching the relevant issues and case study examples, it became clear that the best way to integrate the housing, child care, and employment training, along with shared gathering spaces, was to employ a culinary arts program. As part of their employment training, the residents in the housing complex could cook meals for the children in the child care, who might also live there. The neighborhood could be invited learn how to prepare fresh, healthy meals for themselves or be taught where food comes from. The cooked meals could then be sold to nearby markets and food stands. The culinary arts architecture can impact more than just the residents in the housing complex; it can impact the whole community.

3 Methodology

The Site: Wabash Substation

When considering a site for the future housing complex, certain criteria must be met. After touring Pike Market Child Care and Preschool and Mary's Place, I recognized that financing the project would be challenging. I also knew that the site needed to be in a location that had access to downtown, either through a minimal distance or by a successful public transit route. Being close to a school is also preferable, but not necessary if the school system has an adequate bus system. Next, it was preferable that the site be in an urban village to be able to benefit from the Housing Affordability and Livability Agenda (HALA) recommendations. And last, because this would be a shelter

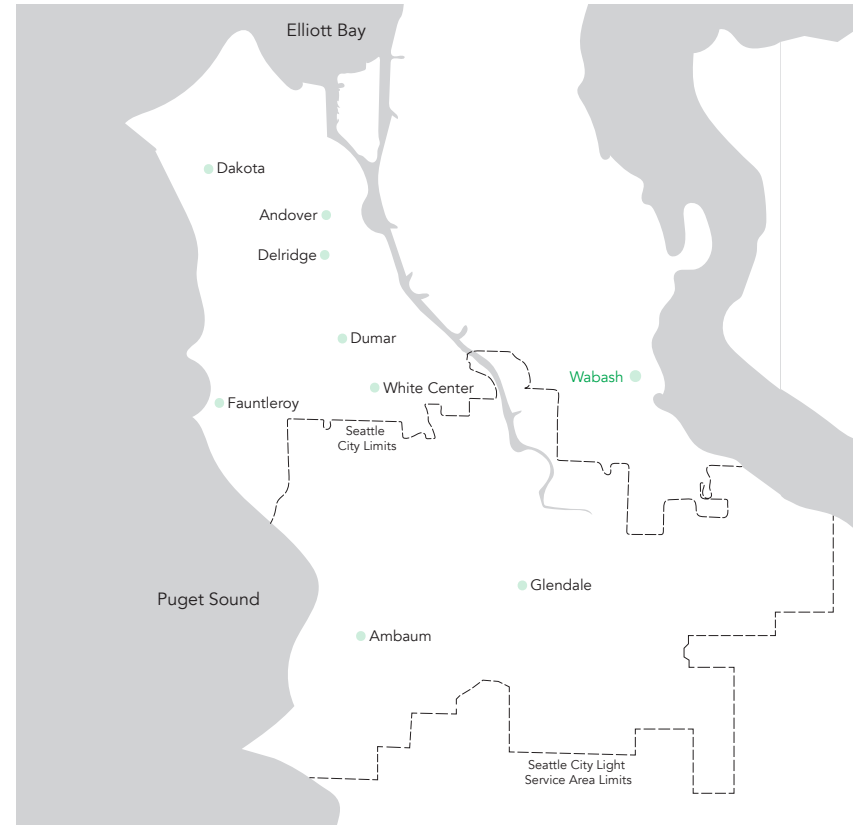
for families, it would need to be close to a public outdoor park or have a new space incorporated into the design.

In order to find a site with these characteristics, city-owned property was researched. Because of the State of Emergency, Seattle is able to give its properties to non-profit organizations, like this thesis would be. The most promising of the city-owned properties are those owned by Seattle City Light.

Seattle City Light Background

Currently, Seattle City Light has more than a dozen surplus properties, most of which are old substations that haven't been used for more than 25 years. The Seattle

Figure 18
Seattle City Light Surplus Property Locations



Surplus Property Disposition Study estimates that these 20 properties, if sold, could add over \$27 million to the City Light Fund. In 2012, they began by researching and selling six surplus properties. After the success of this Surplus Pilot Project, Seattle City Light decided to find a second group of properties that could be sold. In mid September 2015, Seattle City Light released the Southwest Seattle Surplus Property Disposition Study. In this study, they identify nine properties that can be sold by Seattle City Light for use by other parties.¹

The Wabash substation was chosen because it fulfills the criteria set at the beginning of the thesis. It has great access to transit, including being a short walk to a new Light Link Rail station, along with five other far-reaching bus routes.² It also is very close to three schools: Rainier Beach High School, South Lake High School, and South Shore K-8, making it an ideal place to raise children. Next, it also is within the Rainier Beach Urban Village. This allows it to receive a FAR increase from 1.5 to 2.0 and a height bump from 40 feet to 55 feet.³ These increases allow the housing complex to have an 83 percent increase in volume, which

1 Southwest Seattle Surplus Property Disposition Study

2 King County Metro Schedules & Maps

3 Seattle Housing Affordability and Livability Agenda

Figure 19
Transit Access

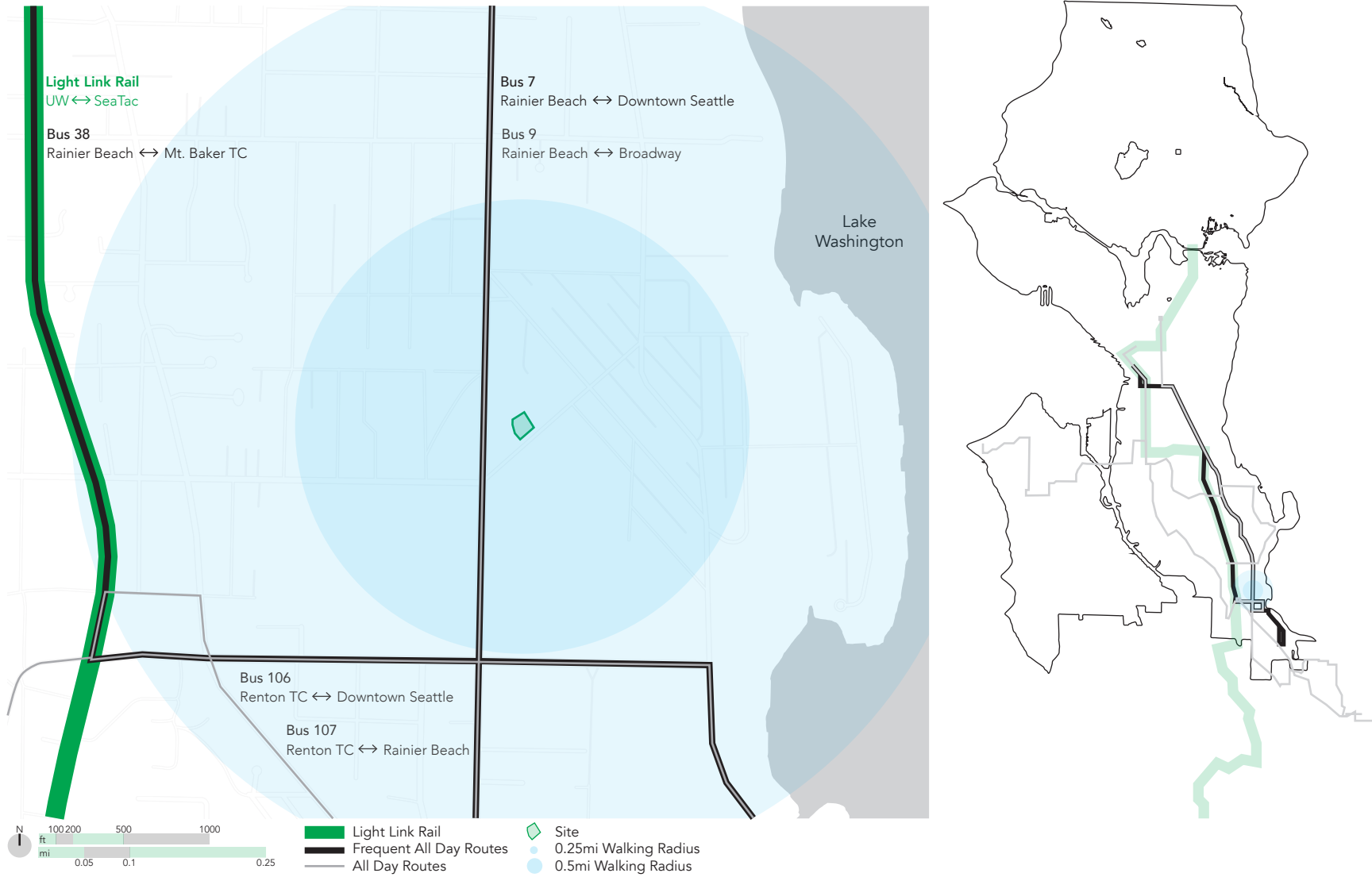


Figure 20
Important Neighbors

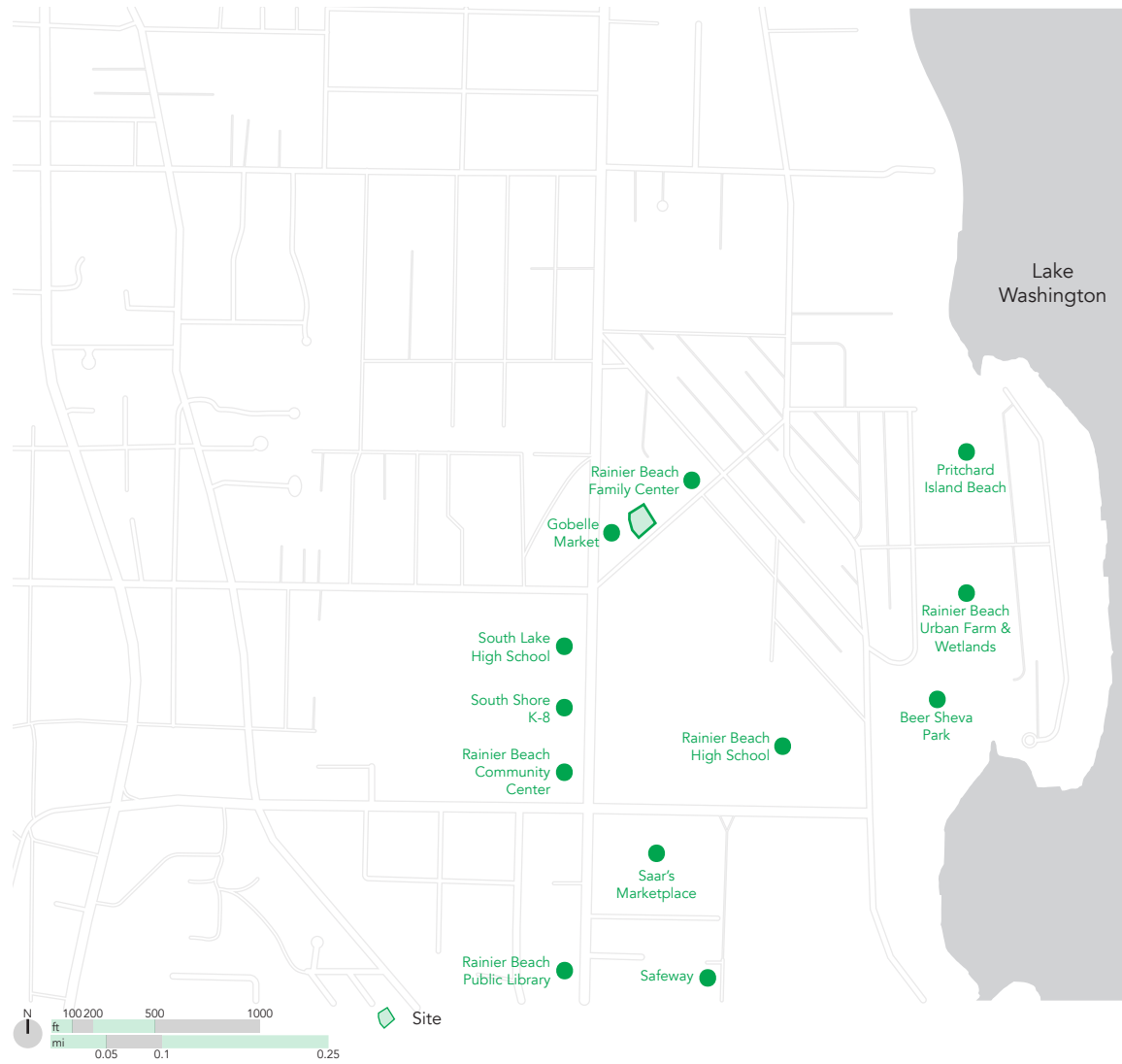


Figure 21
Zoning

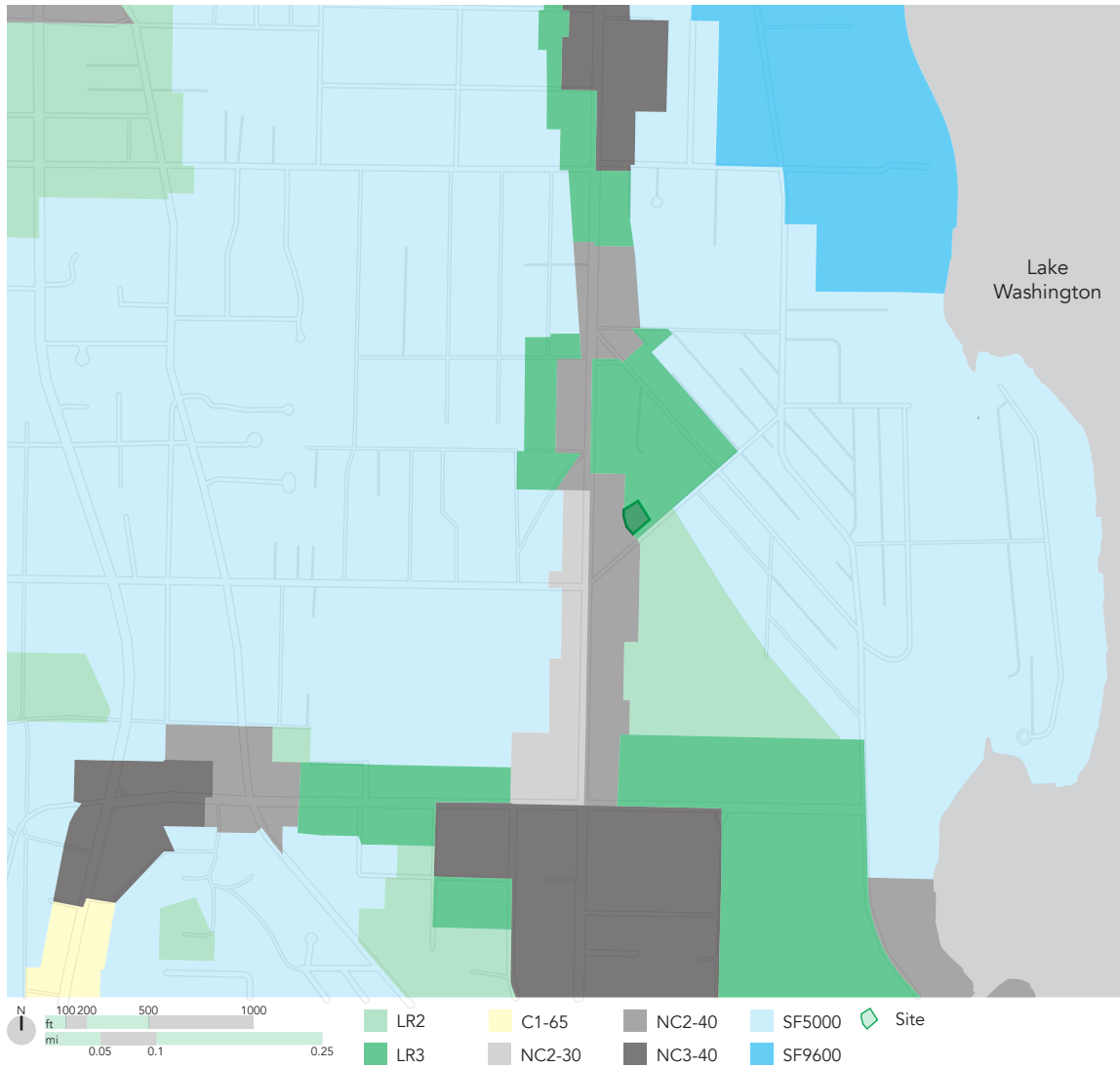


Figure 22
Urban Villages

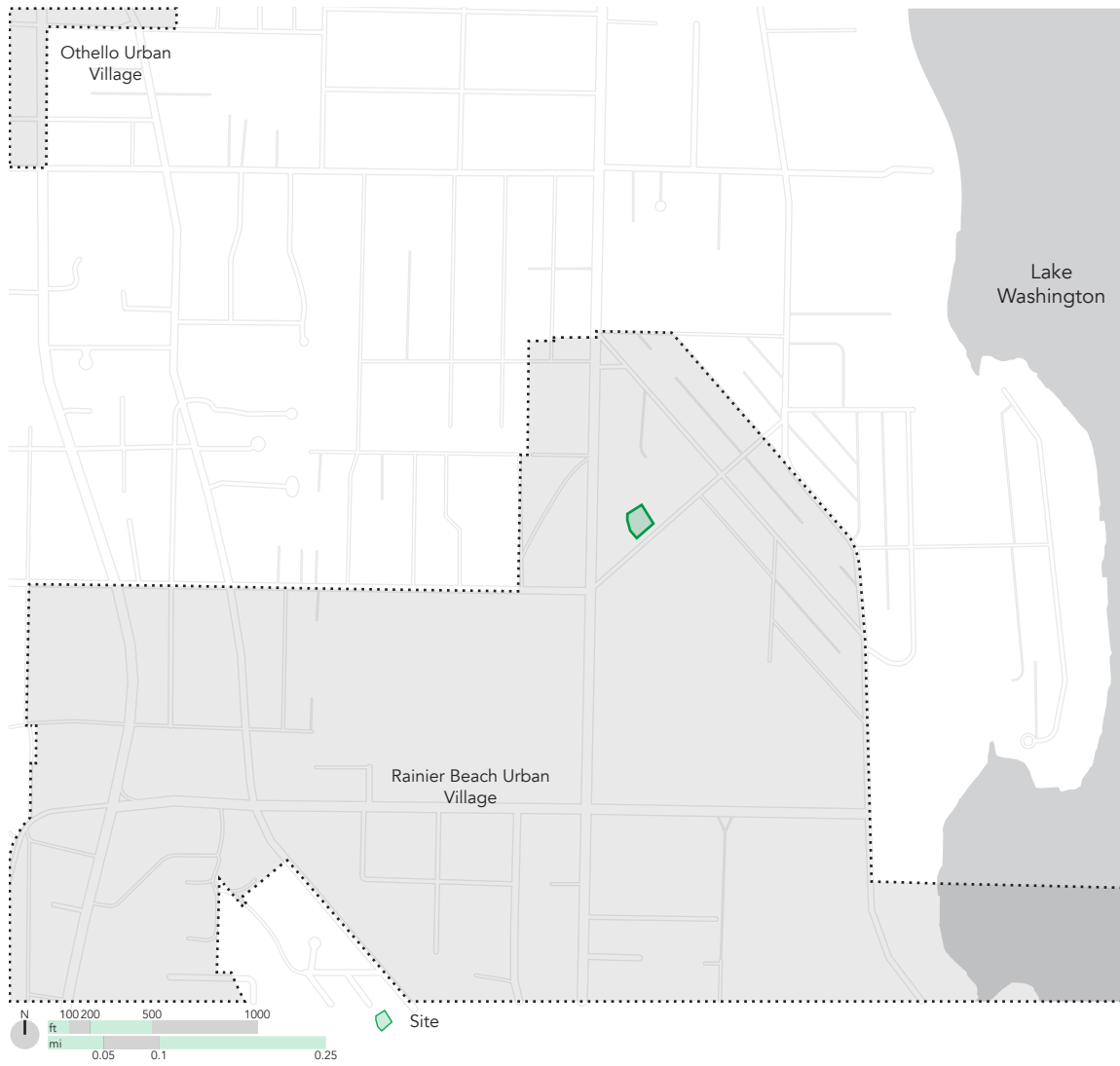
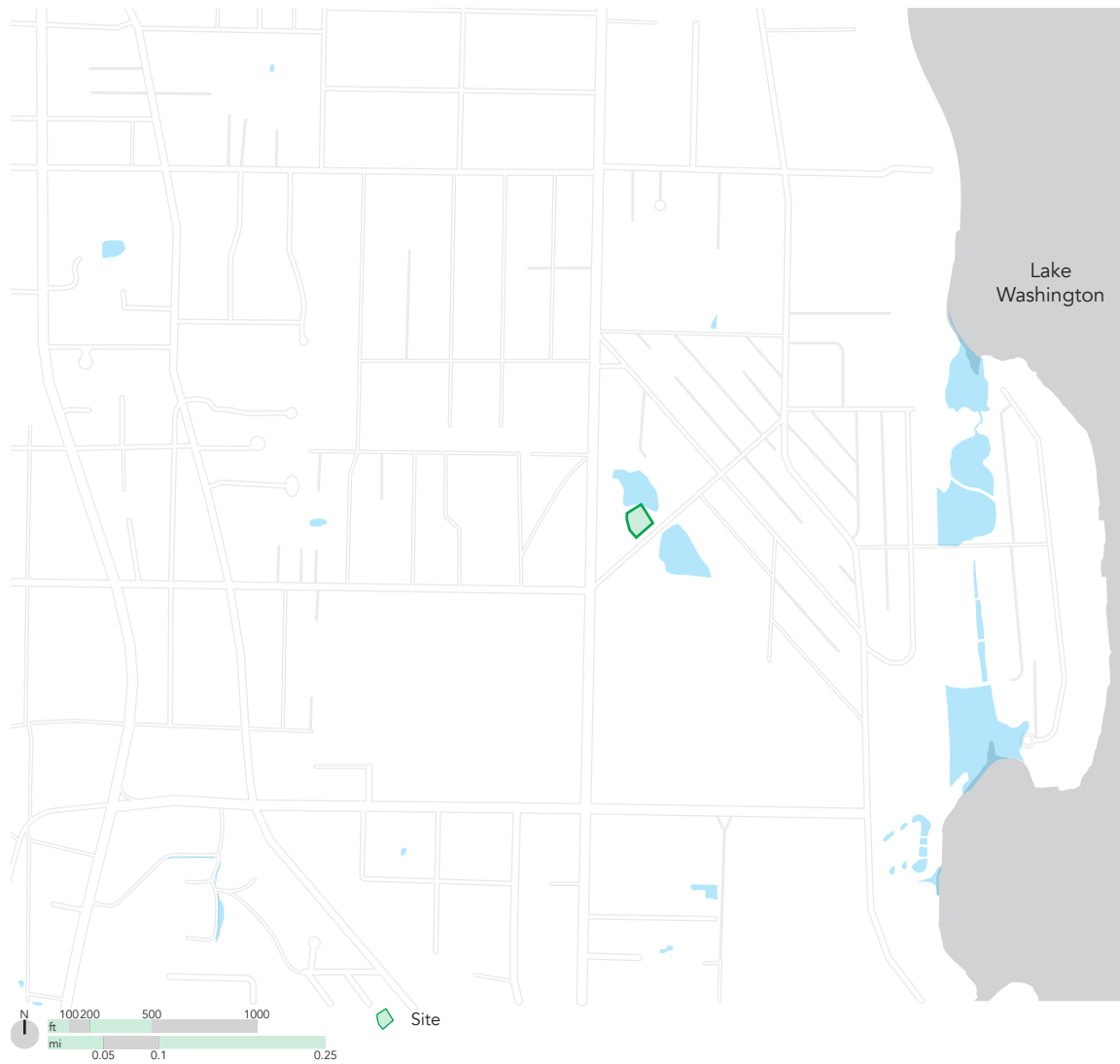


Figure 23
Wetland Locations



allows it to house more homeless and more substantially impact the community.

And most important, it is adjacent to a protected wetland.⁴ By developing the wetland into a public amenity that is closely linked to the Wabash substation site, it becomes a hub

4 Seattle Parcel Data

Figure 24
Wabash Substation Site Photos



that allows interaction between the community and the residents within the complex.

Culinary Arts Implementation

Heavily linked to the wetland is the culinary arts program, which is divided into 4 key categories: grow, learn, cook, and sell. Each of these categories have architectural components that need to be incorporated into the housing complex, and each category is also associated with certain buildings in the neighborhood. For example, a home economics class from South Shore K-8 could take field trips once a week to tend to their fruits and vegetables that are growing in the community wetland garden. Classes from the Rainier Beach Community Center could wander throughout the wetland's

boardwalk, learning about water purification and the Living Machine. Residents of the Rainier Beach area could practice their cooking skills in a professional kitchen. Or possibly, food grown in the garden could be canned or dried and sold to the Gabelle Market next door.

Figure 25
Culinary Arts Categories

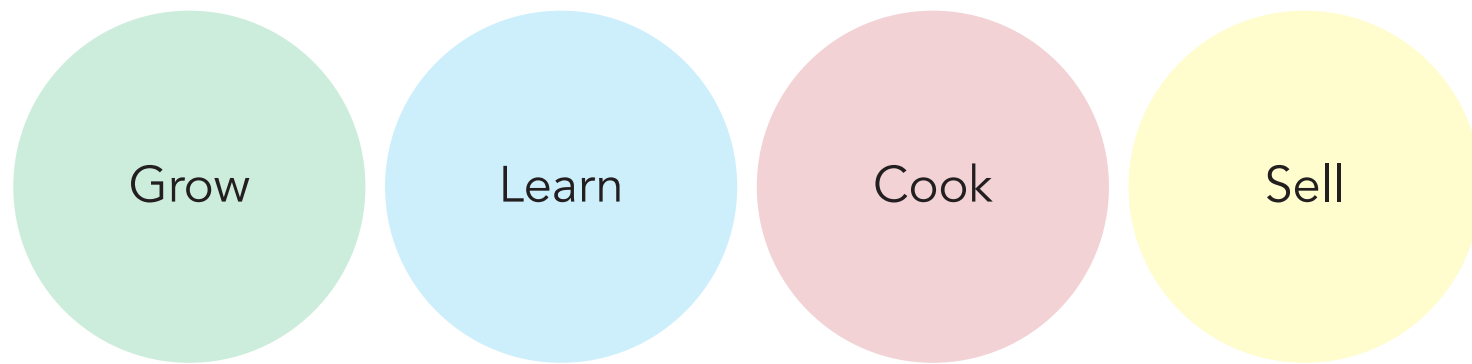


Figure 26
Culinary Arts Breakdown

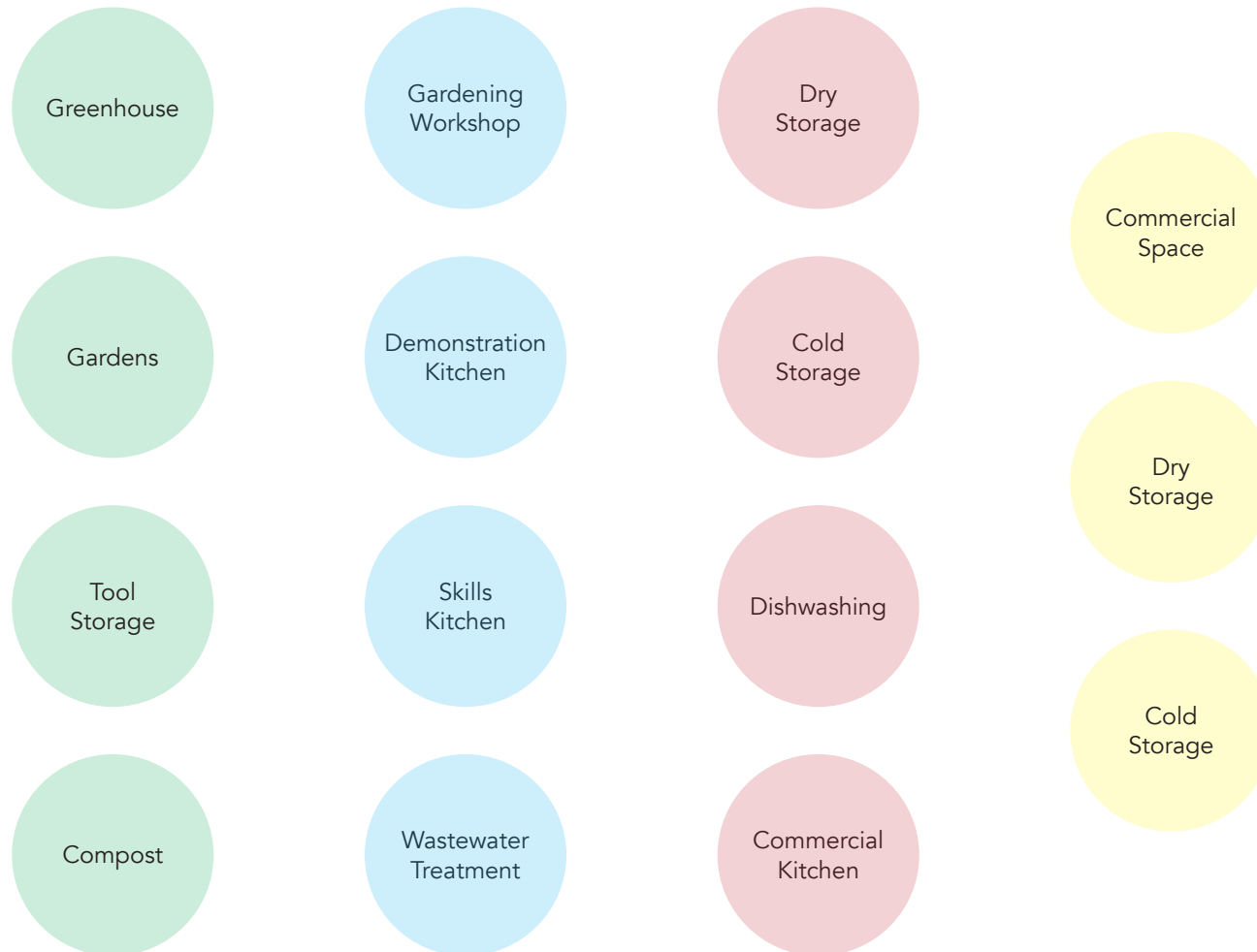
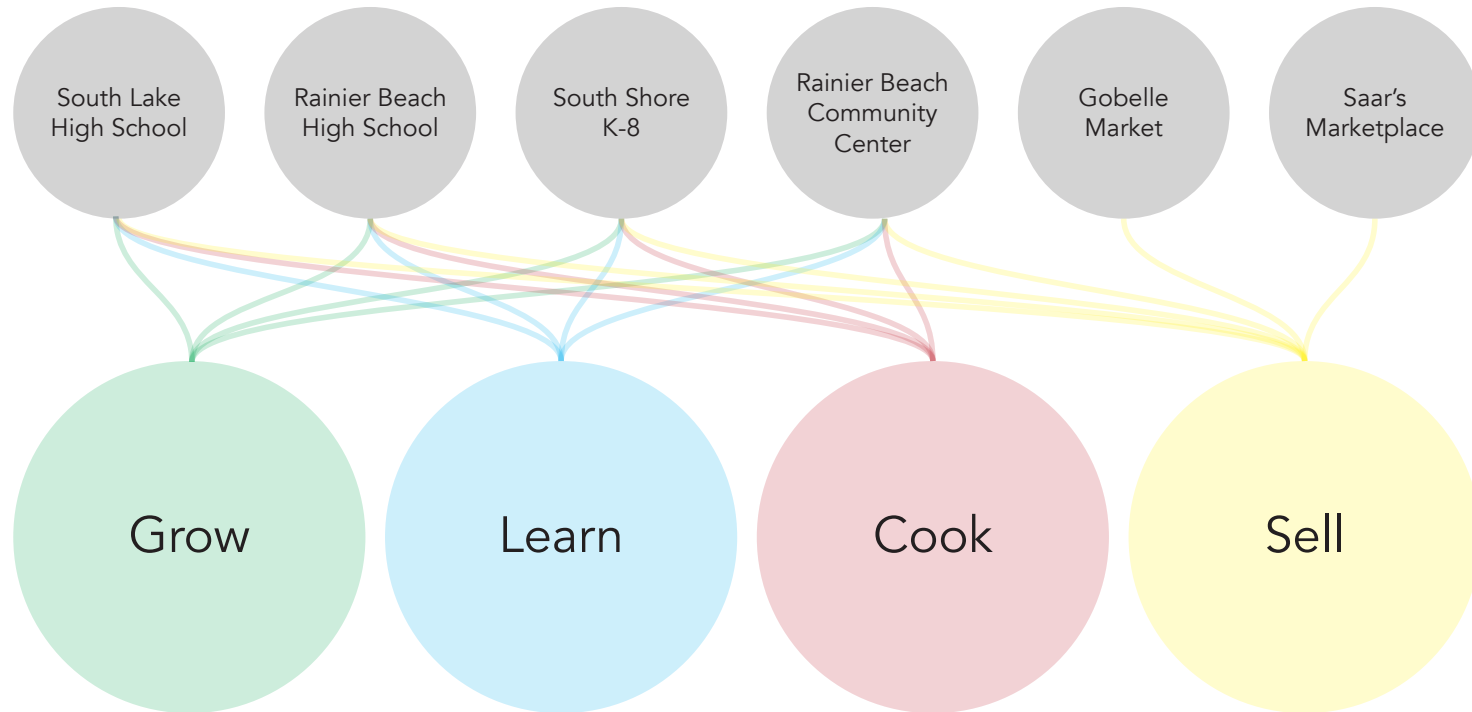


Figure 27
Culinary Arts Integration



Programmatic Breakdown

In addition to the culinary arts program, housing for sixteen families is provided as it nearly leverages the maximum FAR.

Table 1
Programmatic Quantity Comparison

	Quantity needed for 12 families	Quantity needed for 16 families	Quantity needed for 20 families
Housing			
Bedrooms (175 SF)	12	16	20
Bathrooms (100 SF)	12	16	20
Apartment storage (50 SF)	12	16	20
Apartment living room (300 SF)	12	16	20
Apartment laundry (30 SF)	12	16	20
Shared kitchen (300 SF)	1	1	1
Shared pantry (7 SF/person)	1	1	1
Shared playspace (400 SF)	1	1	1
Shared dining room (10 SF/person)	1	1	1
Child Care			
Classrooms with bathroom (500 SF)	3	3	3
Adult bathrooms (75 SF)	2	2	2
Commercial kitchen (300 SF)	1	1	1
Family-style dining room (300 SF)	1	1	1
Teacher's Lounge (150 SF)	1	1	1
Meeting Room (150 SF)	1	1	1
Outdoor Space (500 SF)	1	1	1
Employment			
Skills Kitchen (900 SF)	1	1	1
Performance Kitchen (700 SF)	1	1	1
Dishwashing (50 SF)	1	1	1
Walk-in freezer (50 SF)	1	1	1
Walk-in refrigerator (50 SF)	1	1	1
Dry storage (50 SF)	1	1	1
Living machine (100 SF)	1	1	1
Greenhouse (100 SF)	1	1	1
Gardens (400 SF)	1	1	1
Tool storage (50 SF)	1	1	1
Compost (50 SF)	1	1	1
Miscellaneous			
Circulation (+10%)			
Entry (200 SF)	1	1	1

Table 2
Programmatic Size Comparison

	Square footage needed for 12 families	Square footage needed for 16 families	Square footage needed for 20 families
Housing	9864	12,912	15,960
Bedrooms (200 SF)	2400	3200	4000
Bathrooms (125 SF)	1500	2000	2500
Apartment storage (60 SF)	720	960	1200
Apartment living room (320 SF)	3840	5120	6400
Apartment laundry (35 SF)	420	560	700
Shared kitchen (320 SF)	320	320	320
Shared pantry (10 SF/person)	120	160	200
Shared playspace (400 SF)	400	400	400
Shared dining room (12 SF/person)	144	192	240
Child Care	3050	3050	3050
Classrooms with bathroom (500 SF)	1500	1500	1500
Adult bathrooms (75 SF)	150	150	150
Commercial kitchen (300 SF)	300	300	300
Family-style dining room (300 SF)	300	300	300
Teacher's Lounge (150 SF)	150	150	150
Meeting Room (150 SF)	150	150	150
Outdoor Space (500 SF)	500	500	500
Employment	2500	2500	2500
Skills Kitchen (900 SF)	900	900	900
Performance Kitchen (700 SF)	700	700	700
Dishwashing (50 SF)	50	50	50
Walk-in freezer (50 SF)	50	50	50
Walk-in refrigerator (50 SF)	50	50	50
Dry storage (50 SF)	50	50	50
Living machine (100 SF)	100	100	100
Greenhouse (100 SF)	100	100	100
Gardens (400 SF)	400	400	400
Tool storage (50 SF)	50	50	50
Compost (50 SF)	50	50	50
Miscellaneous	1761	2066	2371
Circulation (+10%)	1561	1866	2171
Entry (200 SF)	200	200	200
Total Square Footage	17,175	20,528	23,881
Cost of Construction (@ \$250/SQFT)	\$4,293,750	\$5,132,000	\$5,970,250

Building Integration Strategies

Throughout the design, it was important to have multiple scales of integration so the residents were not ostracized from each other or from the community, as a whole. I imagined ways that interactions could take place and used these concepts to drive the thesis design.

Figure 28
Integration Through Public Amenity
Ground Floor



Figure 29
Visual Connection from Street to Courtyard
Ground Floor

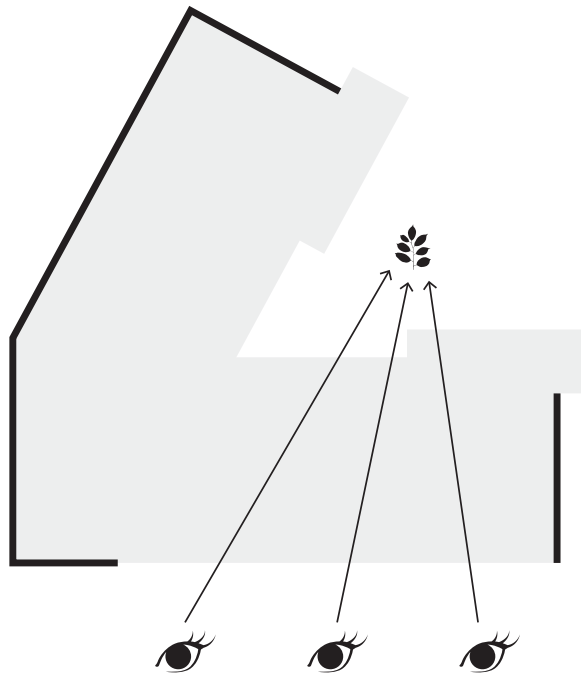


Figure 30
Street Engagement Through Dynamic Movement
Residential Floors

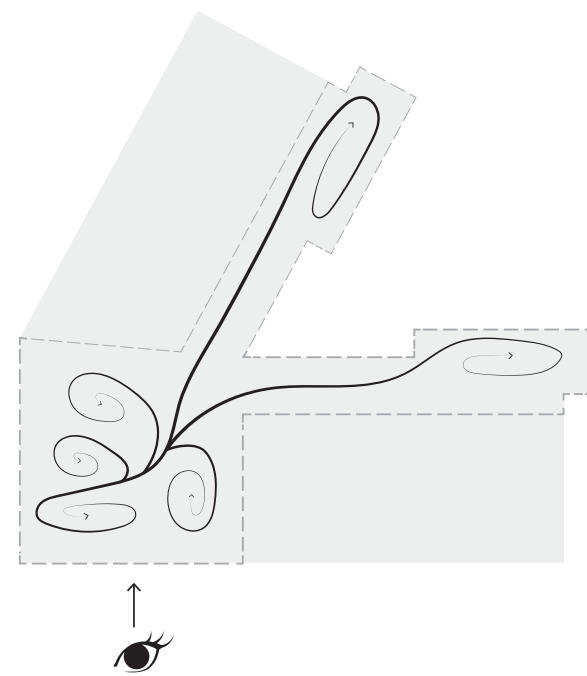


Figure 31
Interactions Through Shared Spaces
Residential Floors

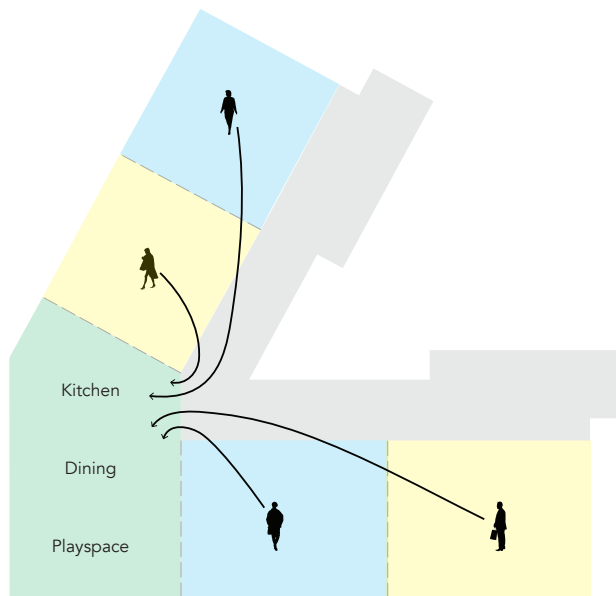


Figure 32
Personal Connection Through Intimate Spaces
Residential Floors

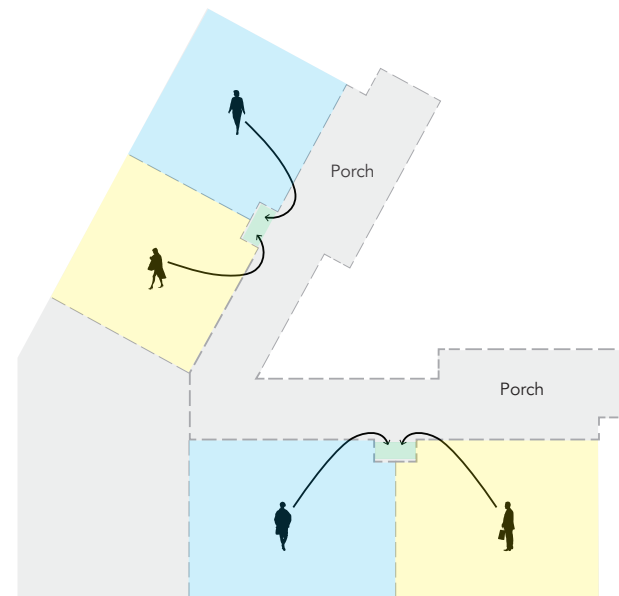
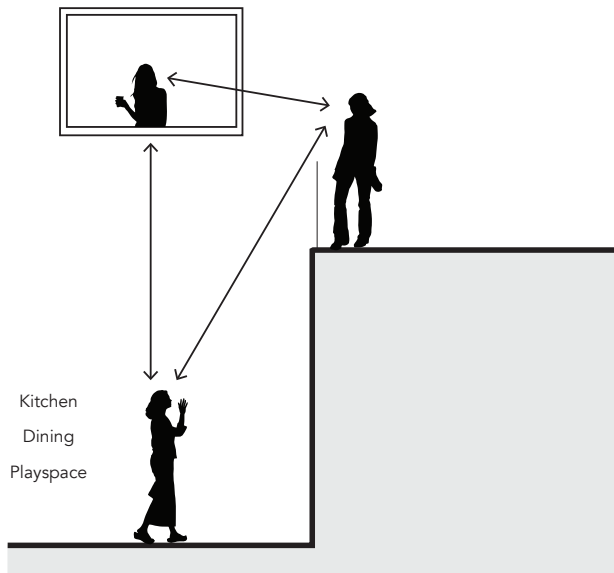


Figure 33
Interactions Through Vertical Openings
Residential Floors



Brettstapel Construction Method

The building must be cost-effective yet beautiful. In response, the building structure employs Seattle's most renewable resources: wood. In a typical heavy timber construction, many materials are needed to make the construction feasible, including glue, nails, and concrete. These additional materials are not only unsustainable, but also increase the cost of the building. By using the brettstapel construction method for the walls, floor, and roof panels, there is no need for any of the above mentioned materials.⁵

“Brettstapel is a solid timber construction system fabricated from softwood timber posts connected

with hardwood timber dowels. This relatively simple method of construction does not use glues or nails and can be used to make beautiful, low carbon, healthy buildings that are quick and easy to build.”⁶

By connecting soft, low-grade timber with hardwood dowels, the construction can “utilize low grade timber that would otherwise be unsuitable for use in construction,” thus saving money. “The system works by using dowels with a moisture content lower than that of the posts; over time the dowels expand to achieve moisture equilibrium thus

5 What Is Brettstapel?

6 Brettstapel Construction

'locking' the posts together and creating a structural load-bearing system."⁷

Besides being beautiful, brettstapel construction has many benefits that will help with the cost over the long run, including a high thermal mass and low thermal conductivity, and a low cost of maintenance. For the residents, there are more benefits: sound reduction and insulation, humidity control, and chemical-free construction.⁸

7 What is Brettstapel?
8 What are the Benefits?

Figure 34
Brettstapel Finished Panel

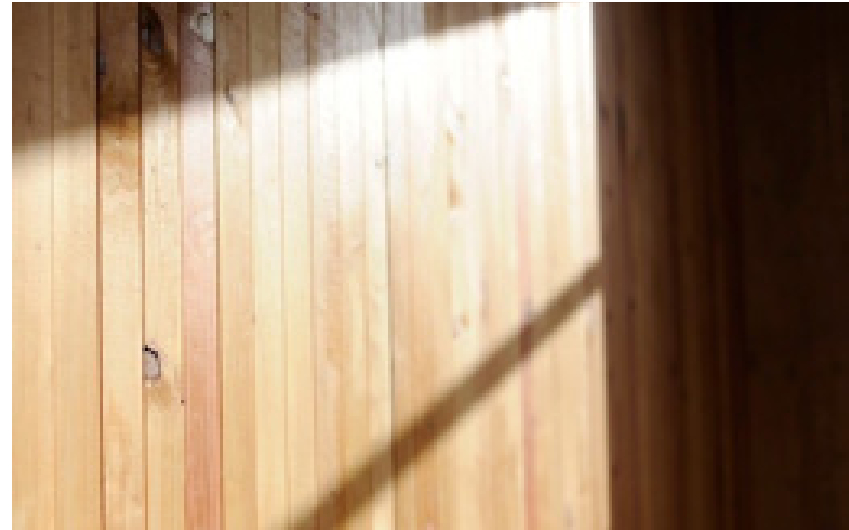


Figure 35
Brettstapel Construction

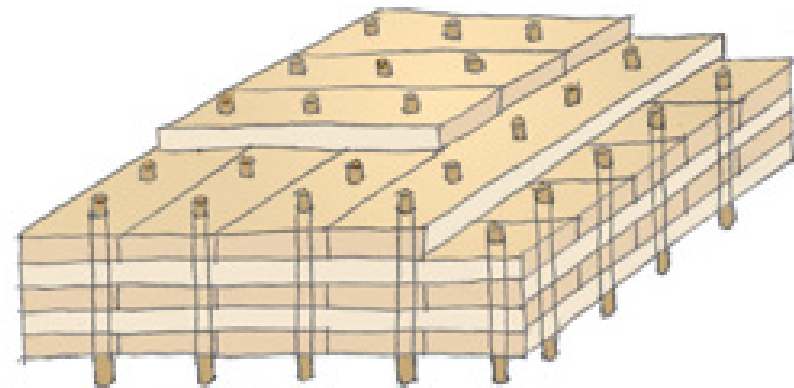
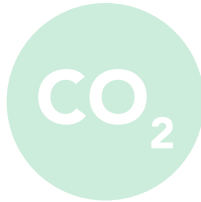


Figure 36

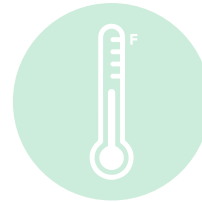
Brettstapel Construction Benefits



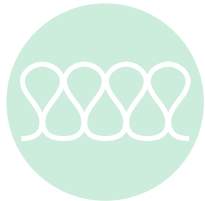
A - Local Timber



B - Embodied Carbon



C - Thermal Mass



D - Thermal Conductivity



E - Health



F - Breathable Construction



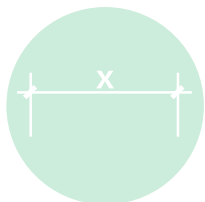
G - Airtight



H - Acoustic



I - Lifecycle Cost



J - Spans



K - Prefabrication



L - Fire Resistance

A - From WA's forests

B - Locks in 930kg of CO₂ per m³

C - Specific heat capacity of 760 J/kg*K (5x higher than timber frame)

D - Low thermal conductivity (0.13W/m*K)

E - Free from harmful compounds

F - Hygroscopic & moisture transusive - keeps indoor environment comfortable

G - Exceptional airtightness (<1 air change per hour @ 50 Pa)

H - 54db sound reduction

I - Reduced energy demand, labor, construction, and maintenance

J - Spans 3-15m in one direction

K - Less on-site labor

L - 30 or 60 minute fire rating

4 Findings

Initial Siting & Massing Strategies

Three key concepts drove the initial design of the housing complex. First, it needed to fit within the limited parcel boundary and street front, while being open to the wetland. This orientation allowed the building to have a proper street-front presence, while still having room for a rear, wetland-facing courtyard. Second, the entry needed to serve both the existing parking lot to the Southwest and the street front to the South. This allowed for a central core where the two wings of the building meet, making a perfect spot for interaction and integration to occur. Lastly, each wing of the complex needed its own green space. Further down the line, Wing A would be programmed for child care, and the courtyard space associated with it would be transformed

into a lively playground for children to play, while residents could supervise, being the “eyes on the street.” Because Wing B was associated more with the wetland, it made sense for the employment training to be housed there. In addition to the wetland, itself, other amenities, such as the gardens, greenhouse, tool storage, and compost, would be located just outside this wing.

Figure 37
Site Before

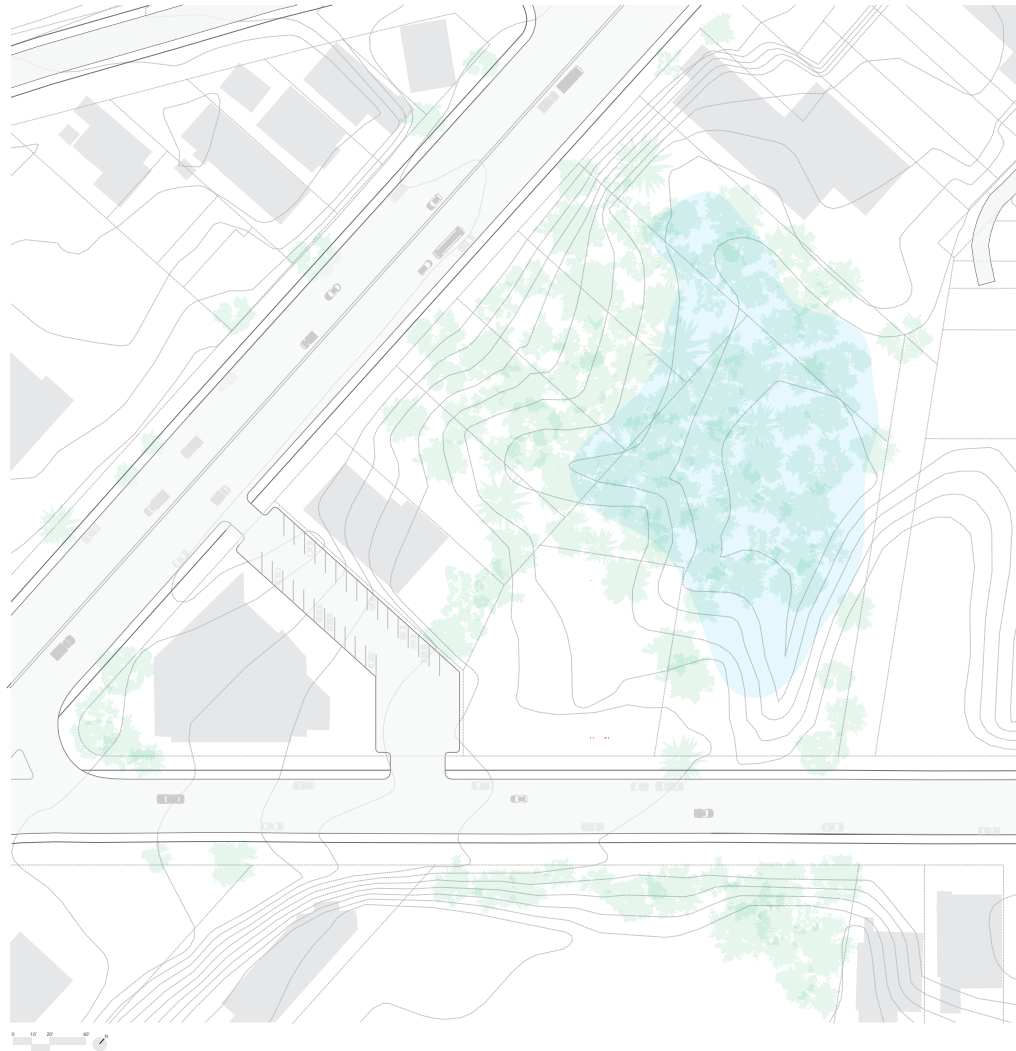
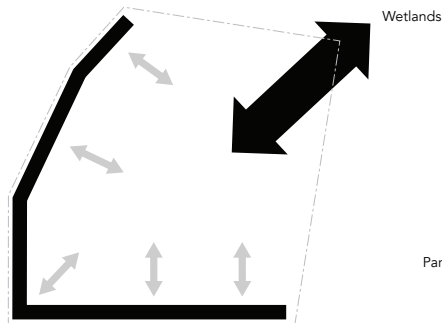
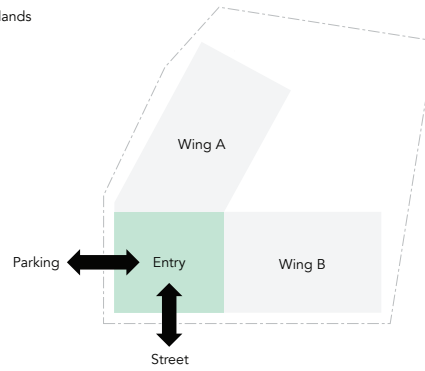


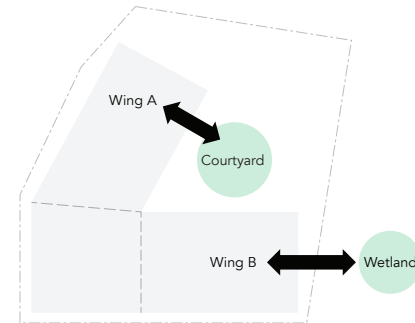
Figure 38
Initial Design Strategies



Hug Parcel Boundary
Open to Wetland

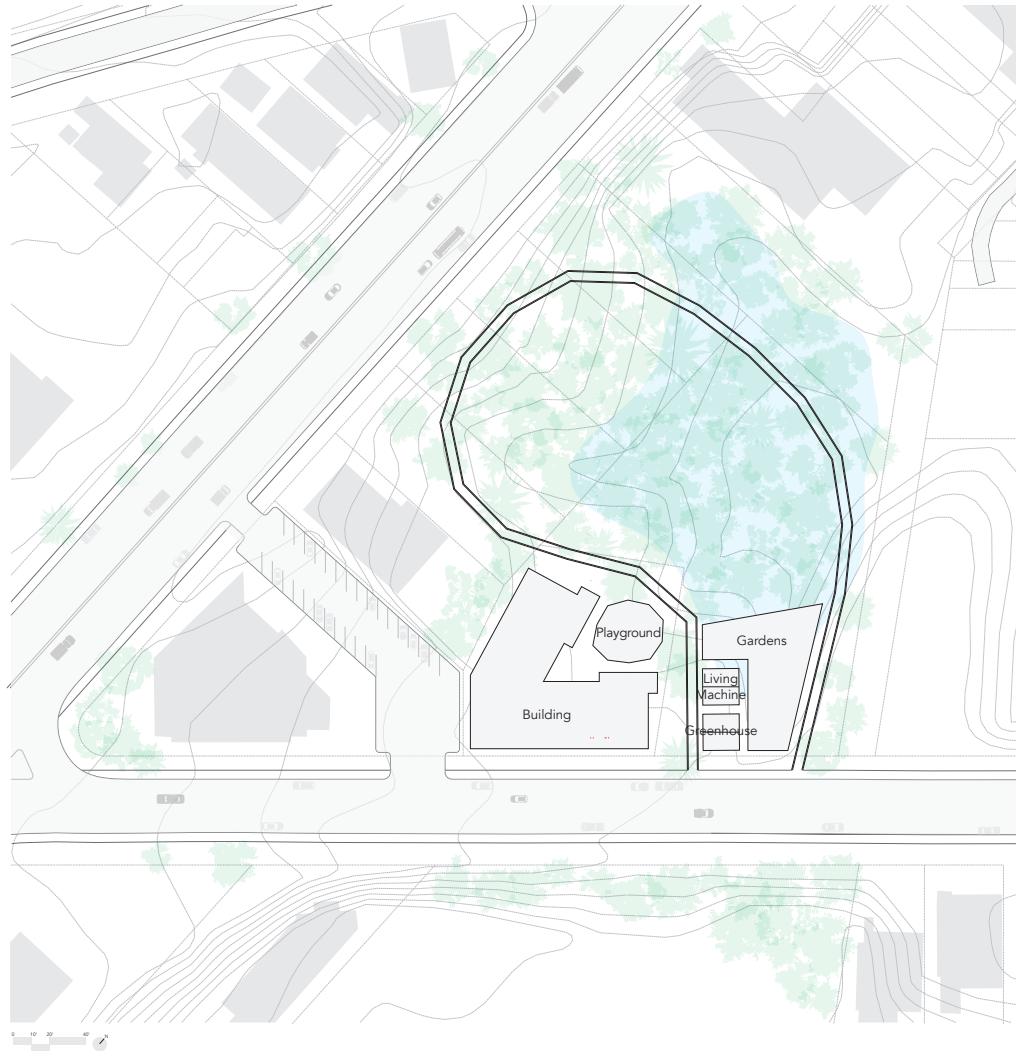


Make Entry Adjacent to
Existing Parking and Street
Face



Give Each Wing It's Own
Green Space

Figure 39
Site After



Ground Floor

On the ground floor, the main concept was transparency. People on the street should be able to see the courtyard and wetland beyond, while also seeing into the culinary arts spaces. From the outside, pedestrians should be able to engage with what happens inside the building. Thinking compositionally, the programs were arranged in a way that would allow fluidity to occur; for example: between kitchen and dining room or between outside and inside.

Figure 40
Ground Floor Programming

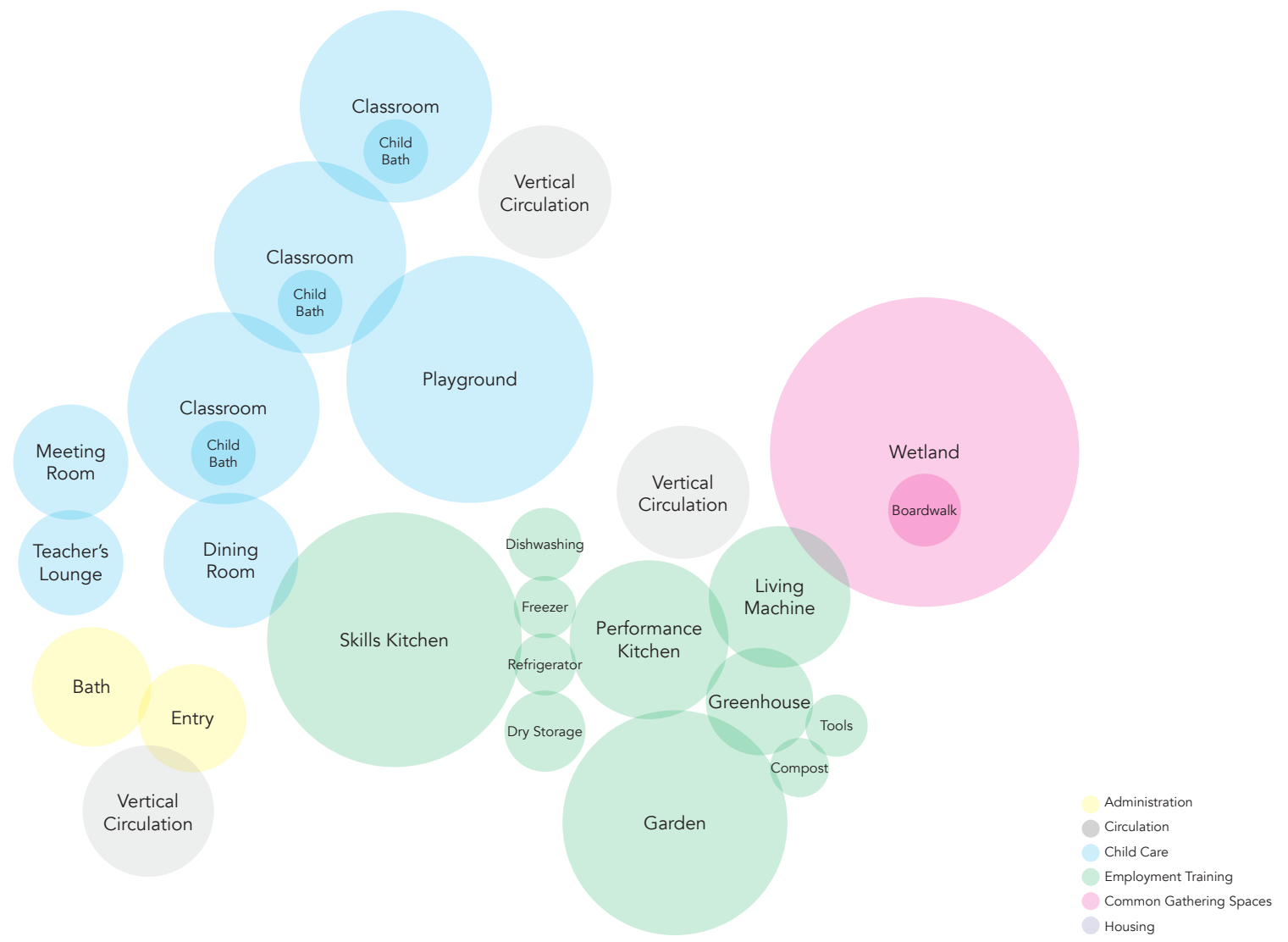


Figure 41
Ground Floor Plan

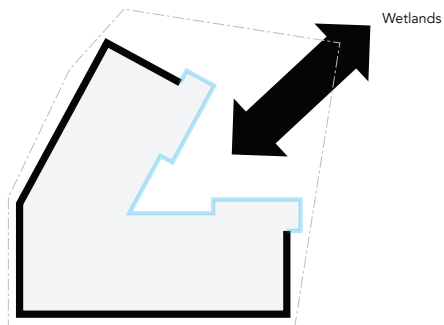


Residential Floors

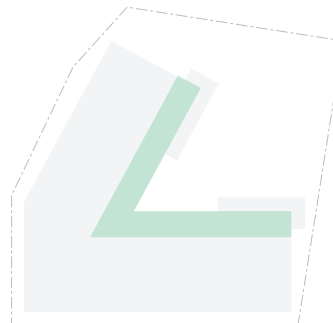
The upper floors were designed in response to similar considerations. A connection to the wetland is established through a porous screen that admits light, air, sounds and smells to the residents circulating from their rooms to the common spaces. A porch allows residents to interact with one another while a common gathering space connected to the porch allows for larger gatherings. In this common gathering space, the residents socialize with one another: they could cook breakfast together or dine together, while enjoying a home cooked meal. They could also arrange playdates where their children could get to know new best friends. This gathering space would be double-height, serving two floors. It not only saves money by cutting down

on the built space, it also facilitates interactions between residents in both the horizontal and vertical planes. On all residential floors, even the ones without the common gathering space, there are still ways to interact with one another, through the intimately scaled lounges.

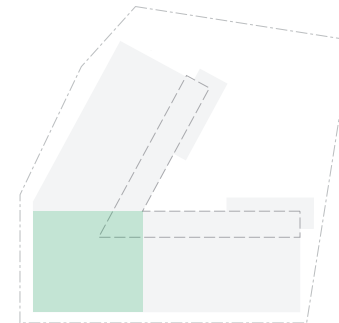
Figure 42
Residential Floor Strategies



Connect to Wetland through Porous Screen



Add Porch to Allow Residents to Interact



Make Common Gathering Space Connected to Porch

Figure 43
Second, Fourth Floor Programming

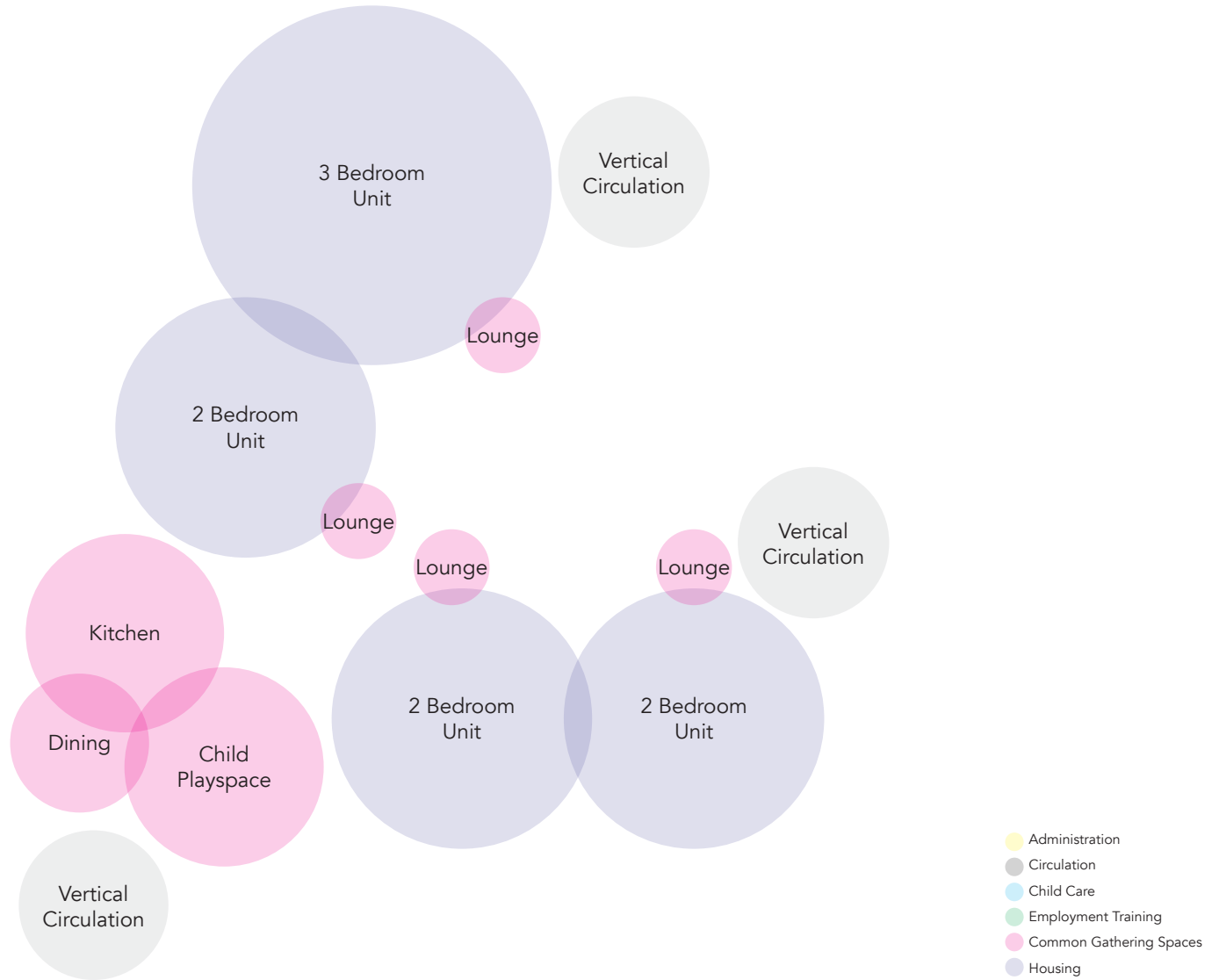


Figure 44
Second, Fourth Floor Plan



Figure 45
Third, Fifth Floor Programming

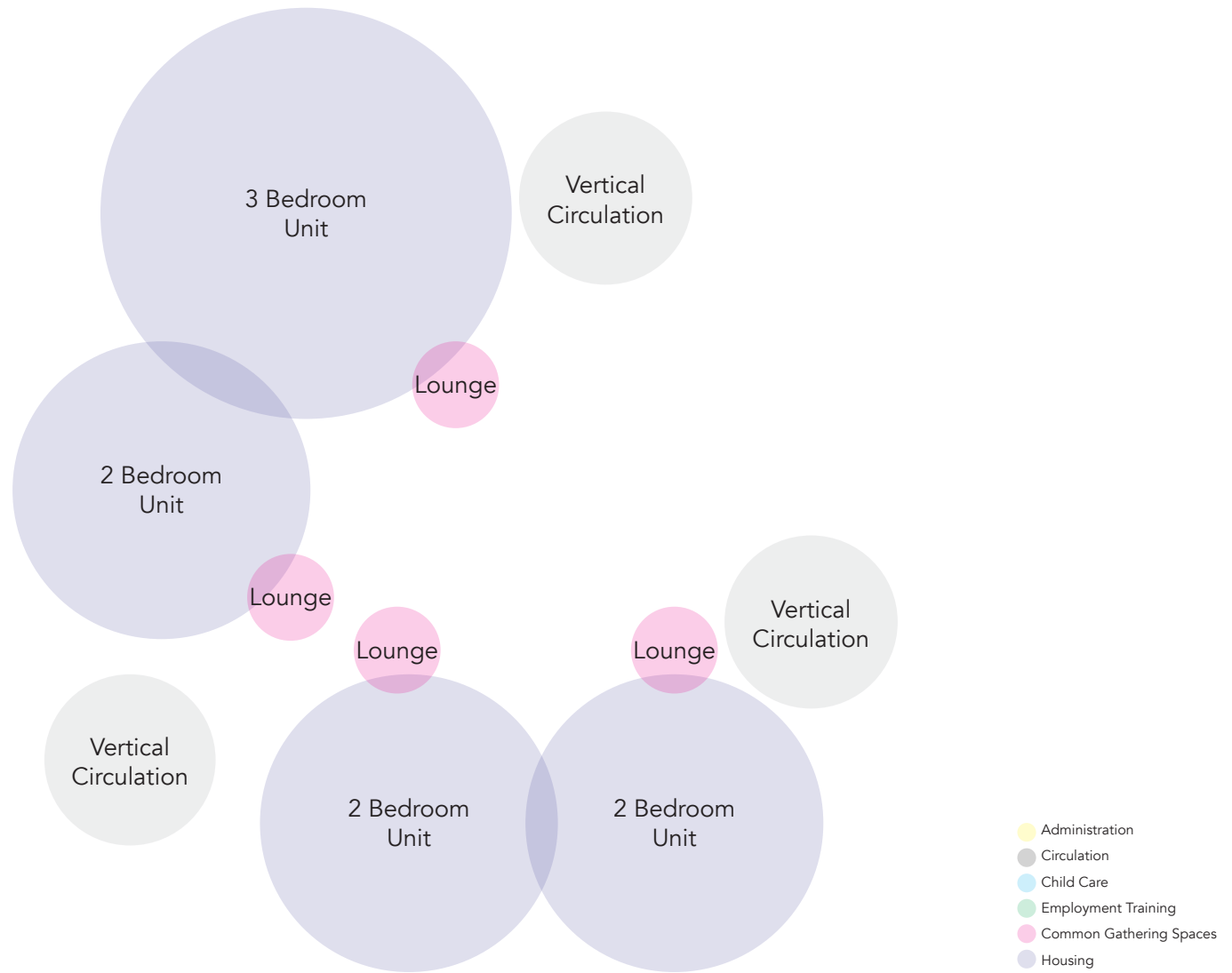


Figure 46
Third, Fifth Floor Plan

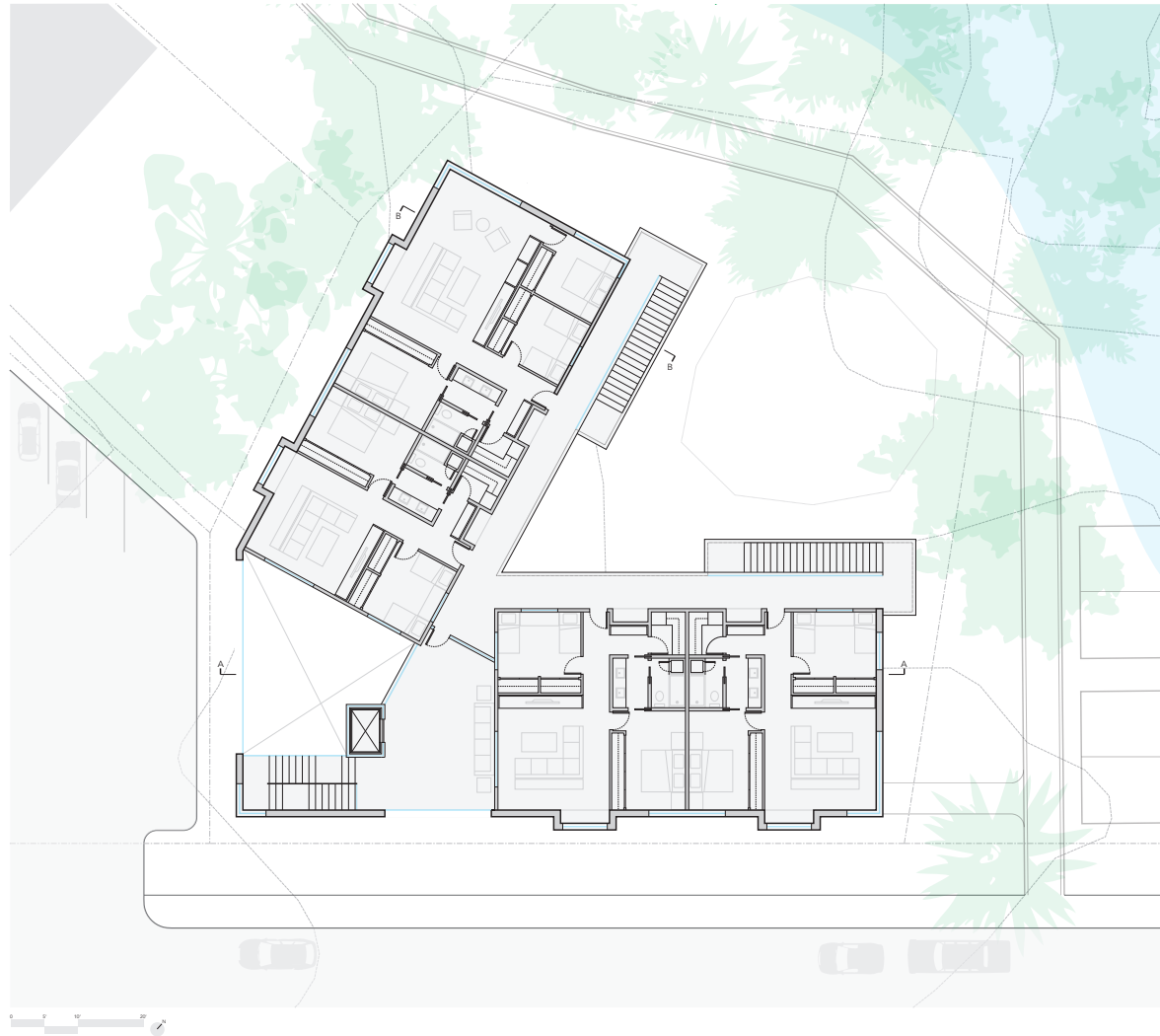


Figure 47
Section A



This shows the sections of building through the living space and bedrooms, porch area, and then showing the screen and playground beyond.

Figure 48
Section B



This section is through the bedrooms and bathrooms, the double-height gathering space, as well as the skills kitchen and the performance kitchen on the ground floor.



Figure 49
Exterior Front Rendering

Along the sidewalk, a passerby notices the projected reading nooks expressed on the facade of the new housing complex. Some days, he sees a woman curled up, enjoying her latest book. As he is walking, he sees a boardwalk emerge from the wetland that he didn't even know existed. He takes a stroll along the boardwalk, observing the beauty of the natural wildlife.



Figure 50
Exterior Back Rendering

From the wetland boardwalk, a couple sees children joyously playing outside, while the residents can be seen conversing and mingling on their “back porch.” From the South, they can hear the sounds of teenagers gardening, gathering their first harvest of the season.



Figure 51
Living Room Unit
Rendering

Two families come together for a playdate. One mother takes advantage of a quiet, intimate moment with her infant in the reading nook, while the other mother plays with her toddler on the couch. They happily watch as their children imagine a beautiful new architecture out of blocks or observe their thriving neighborhood just outside the window.

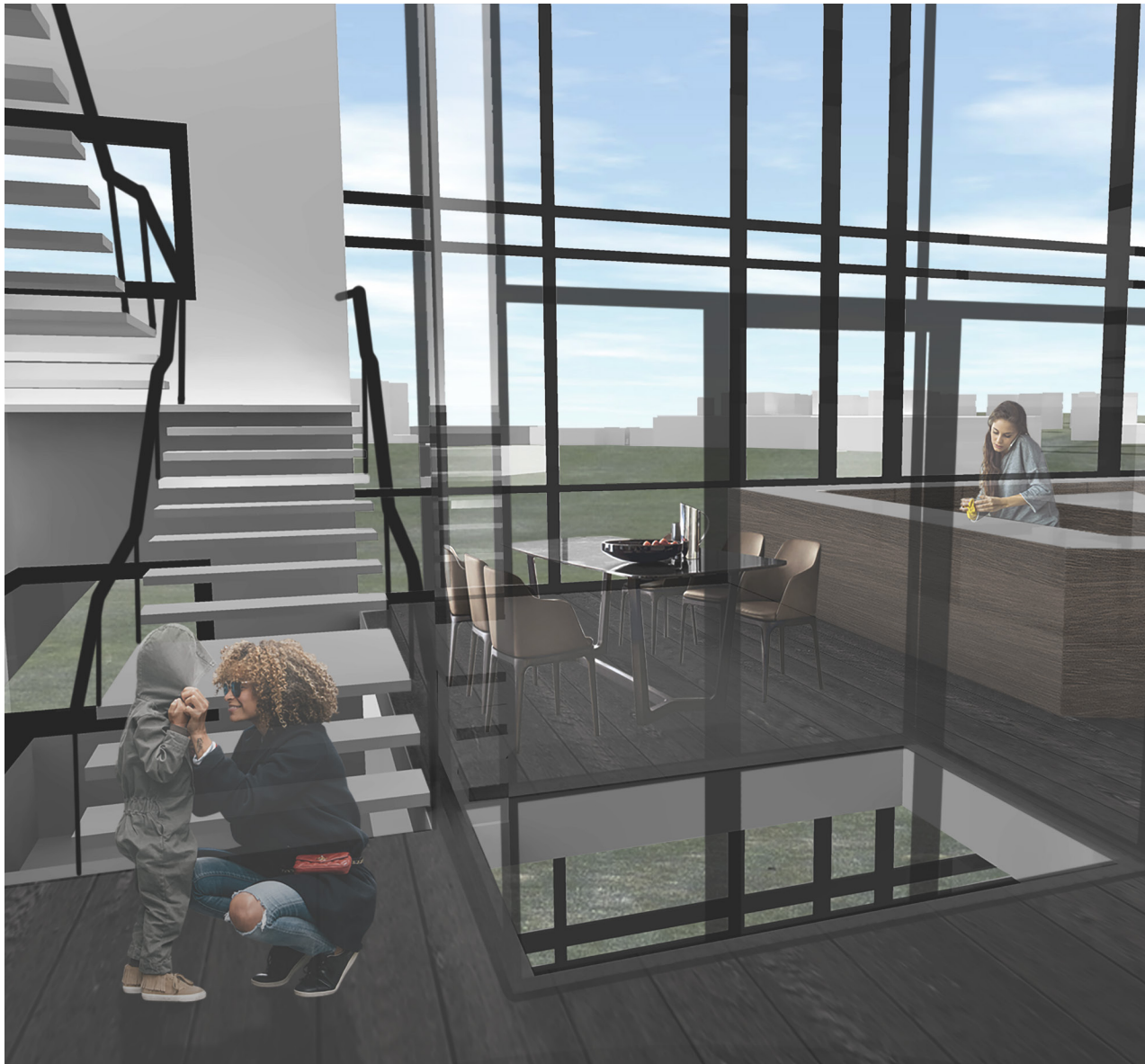


Figure 52
Common Gathering Space
Rendering

In the early morning, a mother gets her child ready for a day of school, while a student prepares breakfast in the shared kitchen. Later that morning, the student asks the mother for advice on her job search. At the dining table, the wise mother mentors the young woman just as someone mentored her years before.



Figure 53
Ground Floor Rendering

An afternoon jogger glances into the ground floor of the new housing complex. It seems so full of life! Children run to their mother at the end of the day, while some of her neighbors are practicing their cooking skills as a chef looks on. In the windows of the floor above, she sees a woman reading a magazine and people hanging out in a common area. The jogger vows to rethink her stance on homeless people: they are just as wonderful and human as she is.

5 Conclusion

My intent in this thesis was not necessarily to have the project be built tomorrow, next week, or even next year, but the intent was to open the eyes of policy makers and architects in Seattle who deal with homelessness. During the review, many jurors commented on the price of what I was proposing. Though it would be a great space to live, it costs too much; the amenity space is too much. I disagree. We need to stop designing homeless housing with the utmost "efficiency." If we give them the least with the least amount of materials, time, money, etc., then what is that solving? Providing living conditions where they use cheap paint, paint that contains lead or other harmful chemicals is not good in the long run. Providing living conditions with minimal beauty or connection with nature is not good in the

long run. As Mayor Ed Murray said, "We must shift to long-term solutions."¹

As part of this long term solution, I'm proposing integration across multiple scales which allows the residents and the neighborhood to thrive. By having access to public transportation in the area, the residents can easily commute throughout the whole city, not just the distance they can walk. By integrating the schools through the culinary arts program, it not only gives an "in" for the children living in the housing complex, it also benefits the other children and their families. Now everyone in the neighborhood can have

access to cooking demonstrations and gardens where they can grow and eat their own food. Even the immediate site provides benefits through integration. The wetland, turned into a public amenity, provides ample ways to connect the housing complex to the markets, community centers, and people throughout the neighborhood through the culinary arts implementation. Also, by using the adjacent empty parking lot, the residents can have ample parking without having to tear down trees. In the building scale, the complex offers transparency to the wetland and to its programmatic uses, letting the neighborhood in, not shutting them out. And lastly, within the building, the scales of the rooms reinforce integration. The common gathering space, with the kitchen, dining, and playspaces, is large

1 Murray, Homelessness Address to the City

enough to serve whole floors of people. Within the units, the living rooms are spacious to allow multiple families to get together for a social afternoon. Even the reading nooks facilitate interactions with the outside through the large windows.

I would never pretend that this thesis is a perfect solution, but with the additional funding from Seattle's State of Emergency and the proof from other cities that show housing the homeless saves money, why can't we dream a little?

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