RESIDENTIAL DEVELOPMENT PATTERNS

City of Beaverton, 1900s-Present

PROJECT HOUSING OPTIONS

June 2020 (DRAFT 1)

Beaverton OREGON

EXECUTIVE SUMMARY

By studying residential development patterns, city staff can develop context-sensitive solutions for how new housing types can be integrated into existing neighborhoods.

Most residential neighborhoods in Beaverton limit new housing to detached single-family homes. However, this was not the case until the 1970s.

Research conducted as part of the Housing Options Project, which seeks to determine where and how other housing types will be allowed in Beaverton's residential zones, has found that Beaverton's zoning allowed duplexes, triplexes, quadplexes and apartments throughout Beaverton in the 1940s and 1950s, and to a lesser extent, in the 1960s and 1970s.

In 1960, the city created its first residential zone for detached single-family homes only. And in 1978, the city further reduced allowed housing variety by creating eight new residential zones, reserving five zones for detached single-family homes only.

These findings are important because a 2019 state law requires Beaverton to allow: (1) duplexes on all lots that allow the development of detached single-family homes, and (2) triplexes, quadplexes, townhomes and cottage clusters (small homes on small lots that share a garden or lawn) in all residential areas where detached single-family homes are allowed.

Staff is developing alternative ways that Beaverton can comply with the new law, starting with insights into the history, design and context of each neighborhood. Existing residential development patterns reveal opportunities or challenges that the city should be aware of as staff works with the community on how to allow a variety of housing types in residential neighborhoods with unique characteristics.

After calculating peaks in homebuilding construction, staff classified patterns into three areas. Within each boundary, at least three of four homes were built in that time period. The development periods include:

- Homes built before 1964 (RED text in this report)
- Homes built between 1965 and 1984 (ORANGE text)
- Homes built between 1985 and 2004 (GREEN text)

Staff analyzed each area to explore residential development patterns that change with time, including average lot size and coverage, average building footprint and height, housing mix, plex shapes, entrances, off-street parking, yard types, actual setbacks and street network patterns.

This report covers all housing types in each period, but places a greater emphasis on plexes – duplexes, triplexes and quadplexes – since few have been built since the 1970s, and this may change as a result of the state law mentioned above.

Below are the major takeaways by category:

- **Lot size.** Homes built before 1964 have the highest average lot size at 10,900 sq. ft. (Table 1) Detached single-family homes are on lots that are at least 25 percent on average larger than lots for all other plexes.

  By 1965 to 1984, the average lot size for all detached single-family homes and plexes decreased to 9,100 sq. ft. In this period, detached single-family homes and duplexes are on similarly sized lots.

  And by 1985 to 2004, the average lot size for detached single-family homes and all plexes decreased by 10 percent to about 8,300 sq. ft.
- **Lot coverage.** For detached single-family homes and duplexes, lot coverage is lowest for homes built before 1964 and climbs steadily with each decade, which makes sense since average lot size decreased and average building footprint usually increased over time.

  Triplex and quadplex lot coverage calculations were less reliable. For triplexes, the data set is too small. And for quadplexes, the development patterns and building configurations vary widely (unlike those for detached single-family homes and duplexes which are typically one building on one lot).
- **Building footprint.** For detached single-family homes and plexes built before 1964, duplexes have the smallest building footprint (1,800-1,900 sq. ft. combined for both units) Detached single-family homes, triplexes and quadplexes are similarly sized with a 2,200-2,300 sq. ft. building footprint (except for the L-shaped quadplex at 2,700 sq. ft.)

  By 1965-1984, detached single-family homes and duplexes have the largest and similarly sized building footprints at about 2,400 sq. ft. (a 10 percent increase for detached single-family homes and a 25 percent increase for duplexes). Interestingly, the average building footprint for quadplexes decreased by 30 percent during this period because quadplexes increased in height to two stories.

  By 1985-2004, the building footprint for detached single-family homes decreased slightly, but homes became much taller, appearing bulkier next to homes from earlier eras.
- **Building height.** Most detached single-family homes and plexes built before 1964 are single-story, with detached single-family homes and duplexes slightly taller than triplexes and quadplexes.

  By 1965-1984, most quadplexes are two stories, moderately taller than detached single-family homes, duplexes and triplexes (all roughly the same height). For homes built from 1985-2004, most detached single-family homes and duplexes (rarely built) were two stories.
- **Housing mix.** Housing mix looks differently in each period depending upon how it is evaluated. Plexes built before 1964 (90 buildings) are often next door to detached single-family homes in residential neighborhoods. For homes built from 1965-1984, the existing plexes (303 buildings) were often grouped with other plexes. Duplexes are next to duplexes. Quadplexes are next to quadplexes. Only 18 plexes were built from 1985-2004.

For homes built before 1964, duplexes were smaller than all other housing types.

And detached single-family homes, triplexes and quadplexes were roughly the same size.

A Comparison of Duplexes in each Development Period. The duplex built before 1964 is a smaller, single-story Ranch that is placed close to the street. By 1965-1984, duplexes were larger and wider, with one or two driveways that led to a one or two car garage. Most duplexes were single-story, but two-story duplexes were becoming more common. And by 1985-2004, duplexes were significantly taller, with even larger garages becoming the dominant feature in most street-facing facades.

Built before 1964

Built between 1965 and 1984

Built between 1985 and 2004

TABLE 1. Housing Types and Development Patterns

HOUSING TYPE		BEFORE 1964		1965-1984		1985-2004	
DETACHED SINGLE-FAMILY	Lot Size	10.900 sq. ft.		9,150 sq. ft.		8,280 sq. ft.	
	Lot Coverage	0.23		0.29		0.31	
	Height	1.3 floors		1.4 floors		1.9 floors	
	Footprint	2,210 sq. ft.		2,430 sq. ft.		2,300 sq. ft.	
DUPLEX	**All Types**						
	Lot Size	8,700 sq. ft.		9,100 sq. ft.		*N/A. Many were builts with access and parking on separate lots.*	
	Lot Coverage	0.21		0.26			
	Height	1.2 floors		1.3 floors		1.8 floors	
	Subtypes (Major)	**Rectangular**	**L-shaped**	**T-shaped**	**U-shaped**	**T-shaped**	**U-shaped**
	Footprint	1,900 sq. ft.	1,800 sq. ft.	2,500 sq. ft.	2,300 sq. ft.	*Subtype pattern weak because only (16) duplexes were built, though a majority appear to be T-shaped and U-shaped.*	
	Entrances	Mostly individual entrances that face the street.	Individual. Most face the street, but some are inset.	Individual and shared. Mostly street-facing.	Indvidual and shared. Mostly inset or hidden.		
	Parking	Combination of surface parking, attached & detached 1-2 car garages.	Surface parking (major), 1-car garage (minor).	(2) 1-car garages or (1) 2-car garage	(2) 1-car garages, (1) 2-car garage, and (2) 2-car garages		
	Yard types	Medium to large front and rear yards common.	Multiple driveways & walkways divide front yards into small segments. Some have medium rear yards.	Medium side yards if 2-car garage in center of house, medium front yard if 1-car garage at edge of house.	Some have medium to large rear yards, but front and side yards are rare with wide driveways.		
TRIPLEX	**All Types**						
	Lot Size	8,100 sq. ft.		10,400 sq. ft		12,000 sq. ft	
	Lot Coverage	0.31		0.29		0.19	
	Height	1.1 floors		1.3 floors		1 floor	
	Subtypes (Major)	**Rectangular**	**L-shaped**				
	Footprint	2,300 sq. ft.	2,300 sq. ft.	*No subtypes. Only (3) triplexes built.*		*No subtypes. Only (1) triplex built.*	
	Entrances	Individual and shared. Most not visible from the street. Either inset or far back from the property line.					
	Parking	Mostly surface parking for 4-10 cars. Garages rare.	Surface parking for 4-8 cars.				
	Yard types	Mostly small side yards that are not too usable.	Small side yards, medium front yards if on corner lot.				
QUADPLEX	**All Types**						
	Lot Size	*N/A. Lot configurations vary by development type.*		*N/A. Some lots have multiple buildings, as well as access and parking on separate lots.*		16,000 sq. ft.	
	Lot Coverage					0.28	
	Height	1 floor		1.8 floors		2 floors	
	Subtypes (Major)	**Rectangular**	**L-shaped**	**Rectangular**	**U-shaped**	*No subtypes. Only (1) quadplex built.*	
	Footprint	2,300 sq. ft.	2,700 sq. ft.	2,000 sq. ft.	1,800 sq. ft.		
	Entrances	Individual and shared. All inset and/or hidden.	Individual and shared. Most are street-facing.	Individual or shared. Some have one street-facing entry.	Individual or shared. All inset or hidden.		
	Parking	Mostly surface parking for 4-8 cars. Garages rare.	Surface parking for 8-12 cars. No garages.	Either access to a rear alley that provides surface parking and 4-car garages, or shared parking lots.	(2) 2-car attached garages or (1) detached 4-car garage, both scenarios also provide surface parking		
	Yard types	Mostly small side yards, medium if parking reduced.	Medium front yards if building is pushed to corner.	Front and side yards common. Rear yards rare.	Front and side yards in some cases. Rear yards rare.		

- **Plex shapes.** Most plexes built before 1964 are rectangular or L-shaped. By 1965-1984, the desire for 1-2 car attached garages marks a shift from simple to compound forms – T-shaped and U-shaped duplexes and quadplexes, which support multi-car garages, emerged as the predominant building form.
- **Entrances.** Rectangular, L-shaped and T-shaped duplexes were more likely to have at least one street-facing entrance. U-shaped duplexes typically have inset or hidden entrances. Rectangular and L-shaped quadplexes often had at least one street-facing entry. As with duplexes, U-shaped quadplexes were also more likely to have inset or hidden entrances.
- **Off-street parking.** Homes built before 1964 might have a driveway only or an attached or detached 1-2 car garage. Rectangular duplexes were more likely have a garage than an L-shaped duplex. Triplexes and quadplexes typically had surface parking with lots that held 4-12 cars.

  By 1965-1984, T-shaped duplexes offered additional on-site parking through (2) 1-car garages or (1) 2-car garage. U-shaped duplexes displayed the same range, and in addition, (2) 2-car garages.

  Off-street parking options were more complex with quadplexes. Many rectangular quadplexes were on blocks with mid-block alleys that provided additional surface parking or led to a 4-car garage tucked behind the quadplex. Other rectangular quadplexes utilized a shared parking lot with another quadplex. U-shaped quadplexes relied on (2) 2-car garages or (1) detached 4-car garage.
- **Yard types.** Lots with simple forms (such as rectangular duplexes or quadplexes) with one driveway allowed for medium to large yards. Compound forms (such as T-shaped or U-shaped homes) with multiple driveways divided the site into smaller segments that made it difficult to have a usable yard in the front or the back.
- **Setbacks.** Actual setbacks were calculated for all plexes in all periods. However, they are not reported here because the results varied significantly for all types and development eras.
- **Street patterns.** Rectilinear and curvilinear street grids are the predominant network pattern in neighborhoods with homes built before 1964. Neighborhoods closer to Downtown were more likely to have rectilinear grids, providing more opportunities for corner lots with plexes that have entrances on both streets.

  By 1965-1984, some neighborhoods were still built with curvilinear grids, but these would eventually give way to curvilinear neighborhoods with cul-de-sacs that reduced walkability and connectivity. Neighborhoods with cul-de-sacs continued to be the predominant form through the 1980s-2000s.

By 1965-1984, the desire for attached garages marks a shift from simple, rectangular forms to compound forms, such as T-shaped and U-shaped plexes.

Every housing type has its benefits.

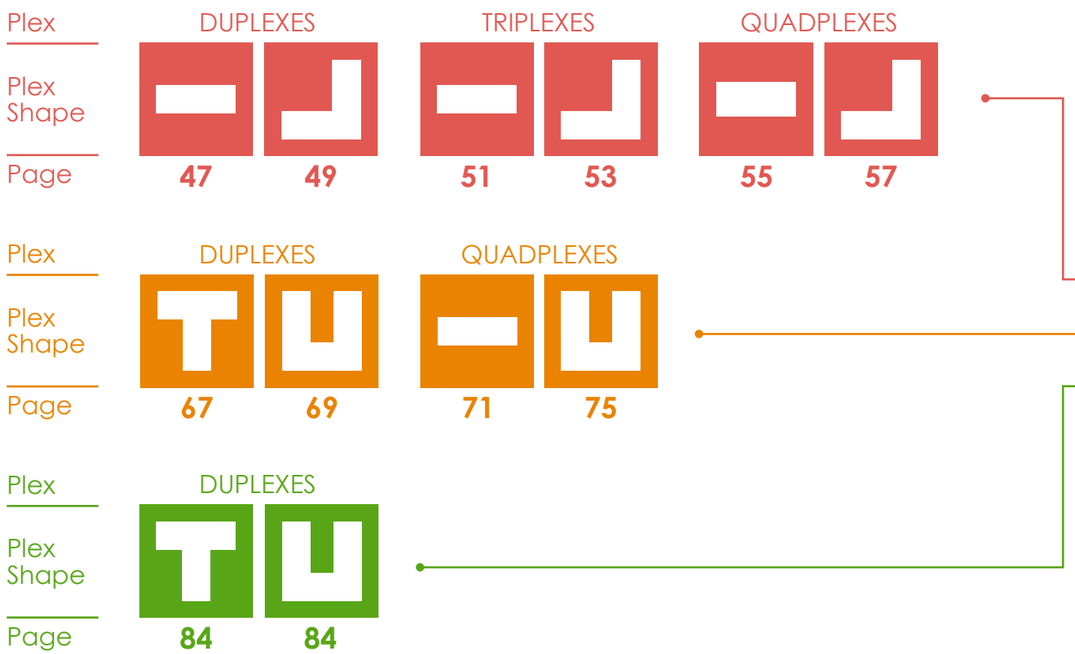
But they differ in their ability to support diverse living arrangements, provide smaller or larger home sizes, connect with the street, protect green space or supply parking.

Studying these patterns provides proof that development rules, homebuilding trends and technological changes collectively influence the look and feel of neighborhoods over time. And comparing them allows the reader to reflect on the benefits and tradeoffs of different housing types and forms. For example:

- Which housing options are more or less suitable for residents with mobility issues? Young families looking for a starter home? Or multigenerational families that all want to live under one roof?
- Is it important for each housing type to have at least one street-facing entry? If so, what housing types and configuration encourage one-street facing entry? What housing types have entrances that are difficult to see from the street?
- How do off-street parking requirements (driveways, garages and parking lots) affect street presence and the potential for different types of yards?
- What site variations allow a greater opportunity for yards, gardens and trees? And what qualities are most important for a high-quality green space?
- What housing shapes might be the best candidates for internal conversions (for example, converting a detached single-family home into a duplex)?
- Could properties with low lot coverage support the addition of one or two accessory dwelling units (a small, self-contained home, attached or detached, on the same property as a principal home)? Or on larger lots, even a new detached single-family home or duplex?

Every housing type has its benefits. But they differ in their ability to support diverse living arrangements, provide smaller or larger home sizes, connect with the street, protect green space or supply parking. As the city considers how to bring back housing variety into residential neighborhoods, learning from the past can help everyone make more informed choices about the future of residential neighborhoods in Beaverton.

Soon, the city will host events where the public can share insights about what works well and what could be improved. Staff will use this feedback to develop potential housing strategies that will be reviewed by City Council and the public at every stage in the process.



For more information on the Housing Options Project, please contact:

Rob Zoeller
City of Beaverton
Community Development Department
Planning Division
rzoeller@BeavertonOregon.gov
503.526.3730

www.beavertonoregon.gov/2197/Housing-Options-Project

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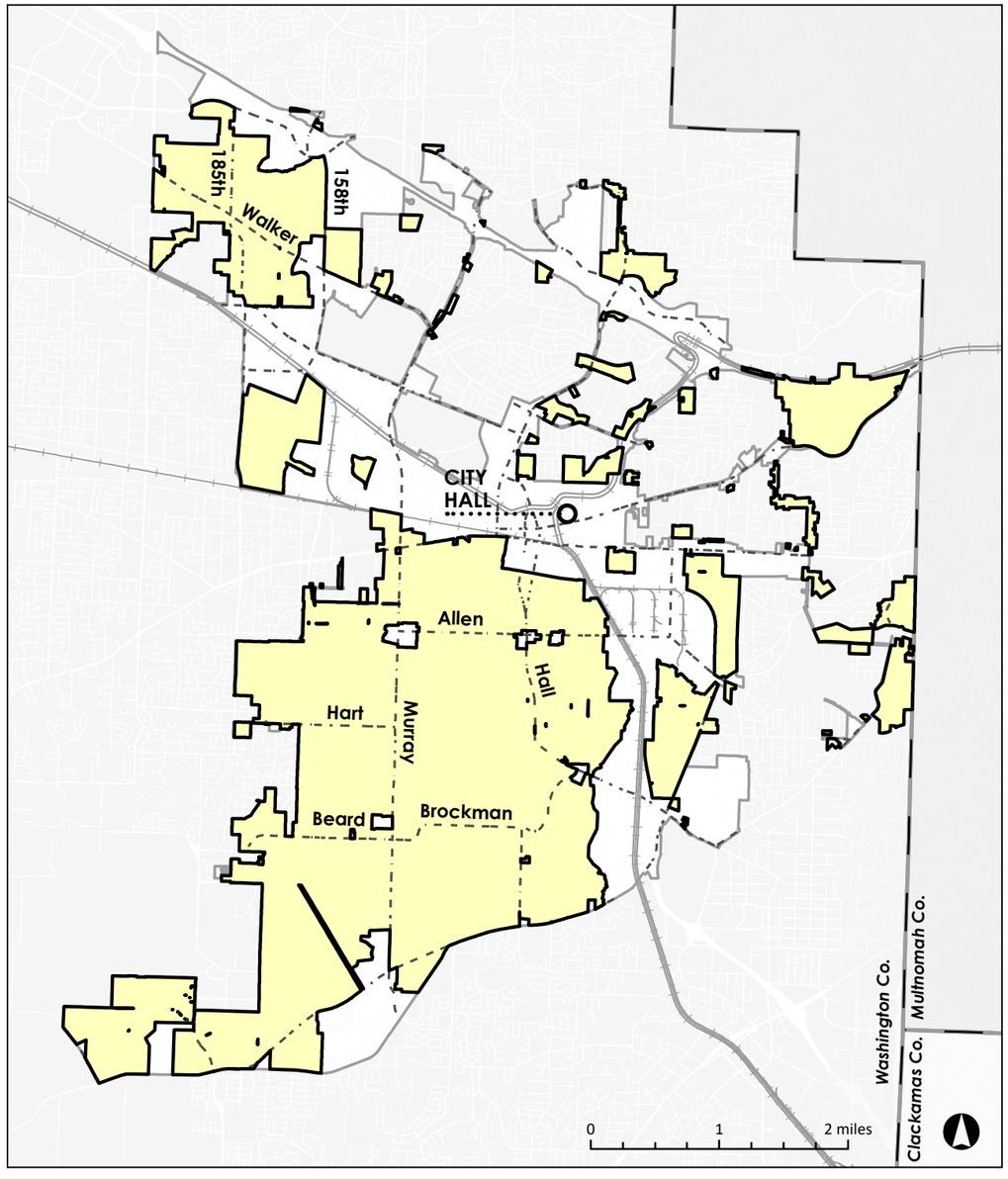


Study Area (All Residential Zones)

Outside Study Area, Inside City Limits (All Non-Residential Zones)

City Limits

County Limits

Railroads

Light Rail Lines

Major Roads

The study area includes all residential zones. To see a breakdown by zone, reference the zoning map in the appendix.

Changes in state law require that a duplex must be allowed on every lot in residential areas.

Other middle housing types must be allowed in all residential areas of cities and counties.

PROJECT OVERVIEW

The region, like most of the country, is experiencing a shift in the type and location of desired housing. People that want to age in their neighborhood, move closer to job centers, or start a family are just a few trends affecting housing needs and preferences. Beaverton is trying to meet the growing demand for more housing options.

However, in many parts of Beaverton, only single-family homes are allowed. The Housing Options Project is considering where and how other types of homes might be allowed in the city's residential areas in a way that considers the size and shape of homes already in the neighborhood (Figure 1). This project is designed to implement Beaverton's Community Vision, Comprehensive Plan and Housing Five Year Action Plan which collectively establish the need for a wider variety of housing choices.

Related to this effort, the state passed a law in 2019 (known as House Bill 2001 or HB2001) that requires "middle housing" to be allowed in residential areas of cities and counties. Middle housing types include duplexes, triplexes, quadplexes, townhouses and cottage clusters, small homes on one lot that share a garden or lawn. HB2001 requires that cities and counties allow:

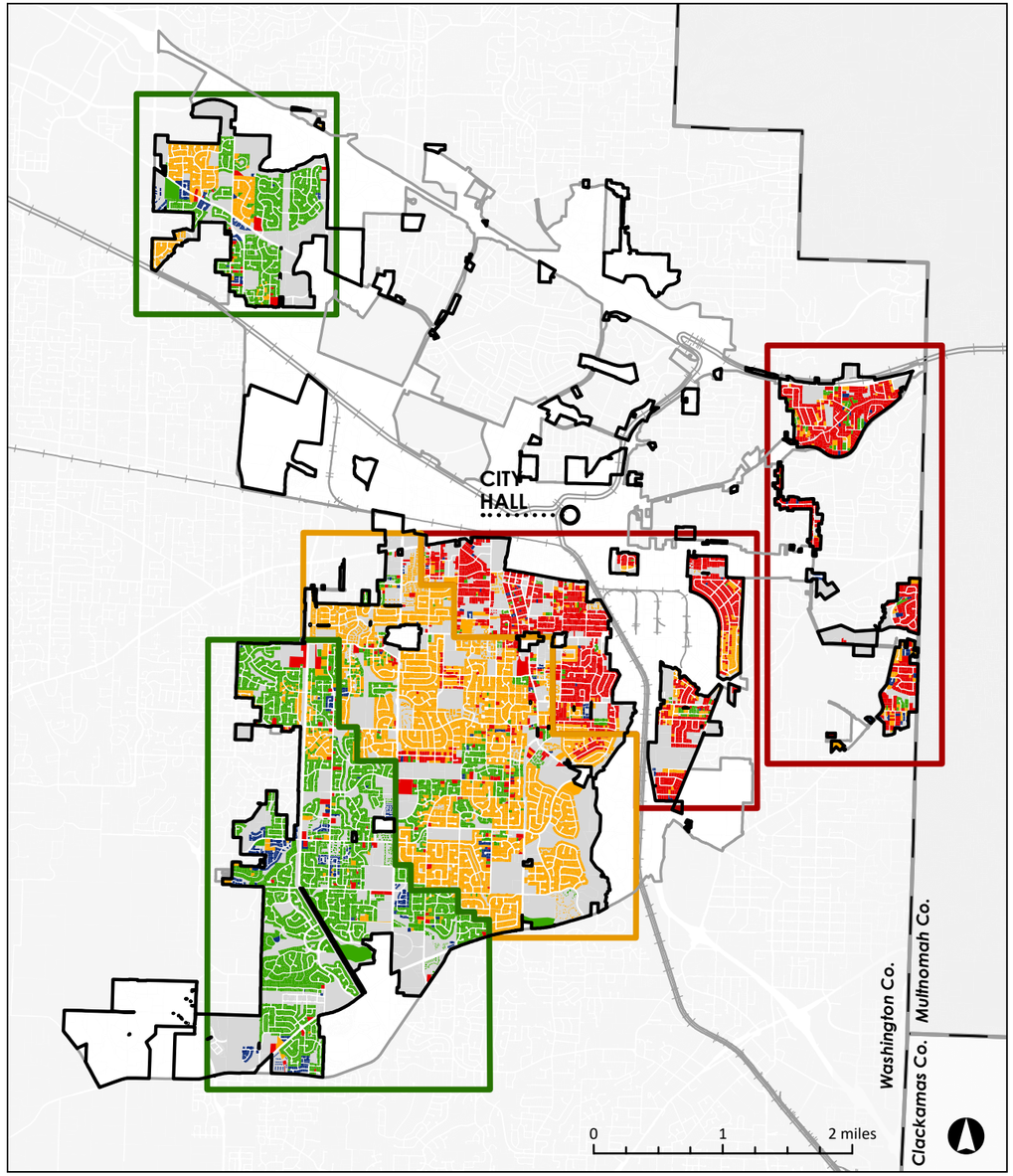
- All middle housing types in areas zoned for residential use that allow for the development of detached single-family dwellings; and
- A duplex on each lot or parcel zoned for residential use that allows for the development of detached single-family dwellings.

Through this project, staff are currently developing alternative ways that Beaverton can comply with the new law and allow more housing variety to meet the needs of current and future community members.

To start, staff are looking into the past to help develop new housing rules for the future. This is because, historically, the city allowed a mix of housing types in all residential neighborhoods. Research conducted as part of this project has found that Beaverton's zoning allowed duplexes, triplexes, quadplexes and apartments throughout Beaverton in the 1940s and 1950s. The city changed the code over time to reduce allowed housing variety.

The intent of this report is to prompt readers to think about existing residential development patterns and consider what works well or what could be improved. In the near future, the city will conduct public engagement events where people can share their thoughts, feelings and stores about housing variety in their neighborhood. This feedback will be used to draft a strategy for where and how a wider range of housing types will be allowed in residential areas of the city.

FIGURE 2. Development Era Boundaries and Residential Buildings, 1900s-Present



Residential Buildings (Year Built)
- Before 1964
- 1965-1984
- 1985-2004
- 2005-Present
- Non-residential

Development Era Boundaries
- Before 1964
- 1965-1984
- 1985-2004

Reference Information
- Study Area
- City Limits
- County Limits
- Railroads
- Light Rail Lines

Residential buildings built after 2005 are not in a separate development era because they are primarily residentail infill projects.

BACKGROUND

Residential development patterns are classified into three distinct eras that are color-coded throughout this report.

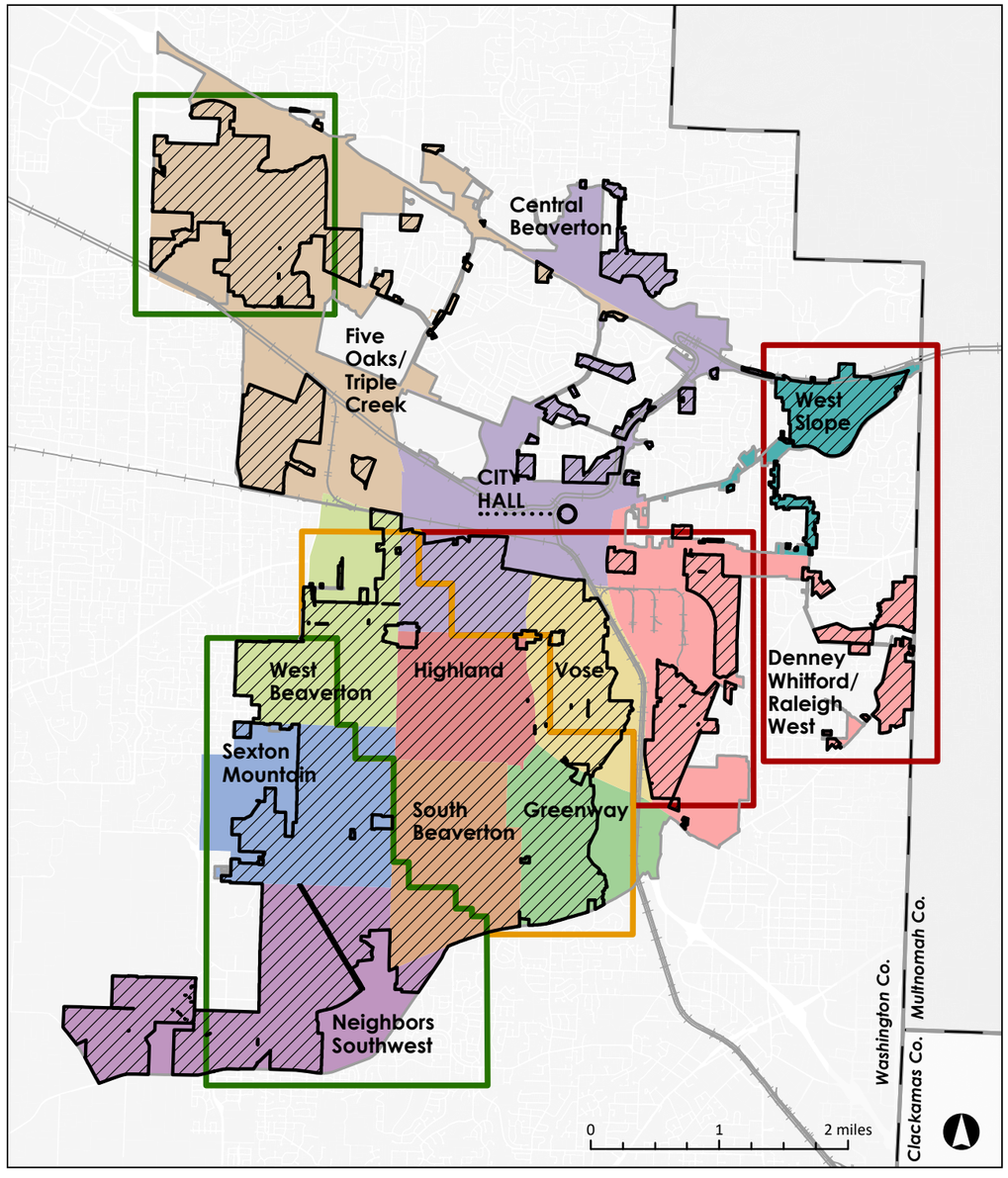
Residential neighborhoods look and feel different for many reasons. What makes a neighborhood seem memorable might be the shapes and sizes of homes, the width or curves of streets, the variety of trees or slopes of hills, or perhaps the people who live in them. While all are important, this report focuses on the residential development patterns that emerge as the shapes and sizes of homes vary with time.

Exploring these patterns reveals insights into the history, design, and context of each neighborhood. It also highlights the opportunities or challenges that the city should be aware of as staff works with the community on how to allow a variety of housing types in Beaverton's residential neighborhoods.

After studying peaks in homebuilding construction in the project study area (Figure 1), staff classified residential development patterns into three eras – Homes built before 1964, homes built between 1965 and 1984, and homes built between 1985 and 2004 (Figure 2). Visually, this wave of construction activity moves across the city like a pendulum swinging from east to west. Staff did not identify homes built after 2005 as a fourth period because these homes are mostly residential infill projects, accounting for less than 6 percent of the city's housing supply. Residential infill projects involve the construction of a new home or redevelopment of an existing property in an area that is mostly built-out.

A Row of Split-level Ranches Typical of 1960s Suburban Development

FIGURE 3. Development Era Boundaries and Neighborhood Association Committees, 2019



This report places a greater emphasis on the patterns of duplexes, triplexes and quadplexes.

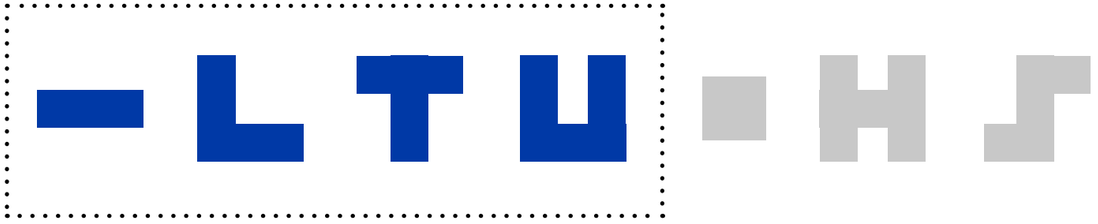
Each development era covers all housing types built in that period. However, there is a deeper focus on plexes – duplexes, triplexes, and quadplexes. First, plexes represent a range of housing types that were once prevalent, integrated with single-family detached homes, but are now quite rare. Few have been built in the past 40 years because many cities started separating housing by type, creating separate zones for single-family detached homes and other zones for all other housing types. In Beaverton, plexes were commonly built throughout the city, especially from the 1940s through the 1970s. In 1978, the Development Code was updated, significantly restricting where they could be built. This is why some residential neighborhoods, especially newer ones, are made up entirely of single-family detached homes.

Second, plexes represent a housing type that can be created by the internal conversion of a single-family detached home, which represents 88 percent of taxlots in Beaverton's residential zones. This is especially relevant for duplexes since the new state law indicates that cities must allow "a duplex on each lot or parcel zoned for residential use that allows for the development of detached single-family dwellings." Other housing types, such as townhouses and cottage clusters, are typically new construction projects by nature of their construction.

Each plex type is organized into typologies based on the most commonly observed shapes – Rectangular, L-shaped, T-shaped, and U-shaped (Figure 4). The intent is to focus on the most predominant forms of that era, knowing that there will be variations and omissions. In other words, the report is not intended to be a comprehensive review of all plexes in all neighborhoods.

FIGURE 4. Predominant Building Forms for All Plexes, 1930s-1990s

Predominant Building Forms (All Plexes)



Duplexes, triplexes and quadplexes are built in a range of shapes and sizes. This report focuses on the most predominant forms for each housing type, typically Rectangular, L-shaped, T-shaped and U-shaped.

Examples of Square, H-shaped, and S-shaped plexes were observed in the field. However, these are not studied since they appear less frequently.

Architectural style is discussed only when it is relevant. For example, a traditional home is more likely to be a square or compact rectangle, centered on a lot, with an entrance on the central axis of a house. On the contrary, a "modern" home, such as a 1950s Ranch, is an elongated rectangle, sometimes with arms or extensions, which may be centered or pushed to the edge of a lot. The relative size, shapes, and placement of these homes on a similarly sized lot has unique implications for yard sizes and types, as well as the ability to accommodate off-street parking.

Traditional. In this example of a 1954 Minimal Traditional home in Central Beaverton, commonly built in the 1930s-1950s, the form is a compact square. This allows for spacious side yards that can be used to access the property rear or provide parking. Common features are a low or intermediate roof pitch with shallow eaves, the overhanging lower edge of a roof, and rakes, the inclined, usually projecting edge of a sloped roof, and a front-facing gable that covers the main entrance in the center of the house.

Modern. In this example of a 1960 Ranch in Vose, commonly built in the 1940s-1970s, the form is an elongated rectangle that pushes the house closer to the property edges. This allows for built-in garages, reflecting the influence of the automobile. Common features are a low pitched roof pitch with moderate eaves and an asymmetrical facade that does not center the main entrance and windows (though some facades are symmetrical).

A Comparison of Traditional and Modern Midcentury Homes

Before 1960, duplexes and small apartment buildings were allowed in all residential neighborhoods.

Last, staff acknowledge that there are many other variables that affect the look and feel of neighborhoods. To name a few:

- A history of inequitable lending practices in which banks denied mortgages to Black homeowners or white developers that aspired to build integrated housing, a common practice from the 1940s through the 1960s (go to page 22 for more info),
- The requirements of state and federal transportation agencies, especially after The Federal Aid Highway Act passed in 1956, authorizing the construction of a national highway system, and in doing so, the division or demolition of existing neighborhoods to make room for new highways,
- Minimum lot sizes, a requirement of local governments that gained prominence in the 1960s. Larger lots typically cost more to buy and develop, placing them out of reach for many homebuyers, thereby limiting access to "better" neighborhoods and schools, and
- The state land use planning program, created in 1973, which employs tools such as the urban growth boundary (UGB), a line to control urban expansion into farm and forest lands and promote the efficient use of land, public facilities and services inside the boundary, and buildable land inventories, which require local governments to ensure that there is enough land inside the UGB for housing.

For over a hundred years, these mostly invisible factors have influenced the design and occupation of neighborhoods, some more so than others. They deserve a more in-depth critical analysis, but that is not the purview of this report. This report is a formal exploration that catalogs existing housing types, and asks readers to consider what they value about these homes and what can be improved going forward.

That said, the city is exploring a potential research project that would provide a clearer picture of inequitable housing practices in Beaverton, and possibly the Portland metro area (a brief preview is on page 22). The results of this work would be shared with the public in future publications and public events.

Before launching into a visual exploration of each development era, an overview of the development rules and homebuilding trends associated with each era is provided, starting on page 24.

A BRIEF HISTORY OF INEQUITABLE HOUSING PRACTICES

While this report is on the physical design of neighborhoods, it can be hard to untangle this issue from the social aspect of neighborhoods. In other words, who lives in each neighborhood, what opportunities made it possible for people to move into that neighborhood, and what barriers may have kept some people out? Although city staff do not yet have thorough, documented answers to these questions for Beaverton, the history of racist planning practices in the United States, state of Oregon and the region is more thoroughly documented.

Oregon has a history of Black exclusion laws, mostly established between 1844-1857, that collectively kept Black people from living in the state. These state-based exclusion laws were repealed by 1926; however, other racist practices remained in place.

For example, people of color have been denied access to living in certain neighborhoods, and by association, access to schools and jobs within or close to these neighborhoods. This may have been through overt acts of segregation, such as redlining, the denial of loans to African Americans that lived outside a geographic boundary. Or it may be through subversive methods that, individually or collectively, make it difficult for people of color to live in or access these neighborhoods. Below is a brief discussion of local planning tactics that were historically used to keep people of color, especially African Americans, out of white neighborhoods.

From the 1940s through the 1960s, the United States experienced a postwar housing boom, fueled by the return of troops from abroad and access to low-interest federal housing loans guaranteed by the Veteran's Administration (VA) and insured by the Federal Housing Administration (FHA).[1] In some new subdivisions, developers created deed restrictions, also known as restrictive covenants or racial covenants, which excluded people of color from buying or renting in a new subdivision.[2] In 1948, the U.S. Supreme Court ruled that racist deed restrictions were unenforceable. However, some local governments, developers, and lending institutions employed other means to keep people of color out of white subdivisions, if not entire areas of the city.

For example, if a developer wished to build a new subdivision with the intent to sell or rent these homes to African Americans, regardless of whether it was a segregated or integrated community, a bank could deny the construction loan.[3] Even if a construction loan were approved by a bank, a local government could employ other planning tools to thwart a project. These might include re-zoning a potential project site from residential to industrial, condemning a potential project site under the auspices of building a new park, denying access to a public street, denying access to utilities or increasing fees for utility connections, requiring engineer's drawings for African American projects only (thereby increasing project costs), or increasing minimum lot sizes, and in doing so, again increasing project costs.[4]

In 1960, 1 of 500 people in Beaverton identifed as a person of color.

In 1980, 1 of 14 people identifed as a person of color.

Today, 1 of 3 people in Beaverton identify as a person of color.

Joseph Lee and Barbara Jo Jones. In 1965, the Joneses' sued a developer that would not sell them a home because Mr. Jones was black. The case made it all the way to the U.S. Supreme Court, which declared that housing discrimination violates the Thirteenth Amendment, passed in 1865 to abolish slavery. That same year, Congress passed the Fair Housing Act.

In 1968, Congress passed the Fair Housing Act to prohibit housing discrimination. But by this point in time, neighborhood patterns were well-established across the nation. People living in these suburban neighborhoods, mostly white homeowners, benefited from rising home values, proximity to jobs, and access to schools.[5] These benefits are passed down to future generations, reinforcing patterns that were established decades ago. According to Richard Rothstein, author of *The Color of Law: A Forgotten History of How our Government Segregated America*:

> *The Fair Housing Act of 1968 prohibited future discrimination, but it was not primarily discrimination (although this still contributed) that kept African Americans out of most white suburbs after the law passed. It was primarily unaffordability. The right that was unconstitutionally denied to African Americans in the late 1940s cannot be restored by passing a Fair Housing Law that tells their descendants they can now buy homes in the suburbs, if only they can afford it. The advantage that FHA and VA loans gave the white lower-middle class in the 1940s and '50s has become permanent.*[6]

Nearly 50 years after the Fair Housing Act passed, the United States has become even more diverse, but the nation struggles with its legacy of racism. In 1960, only one out of 500 people identified as a person of color in Beaverton.[7] By 1980, one out of 14 people identified as a person of color.[8] But today, one out of three people in Beaverton identifies as a person of color.[9] Beaverton has also changed remarkably in the last century, welcoming people of color, immigrants and refugees from all over the world.

As staff develops housing strategies for current and future residents, it is important to remember that allowing new housing types in established neighborhoods provides access to opportunities that have been historically denied to people who are not white. That is why expanding housing options is a core indicator of the Council-approved 2019 Diversity, Equity and Inclusion Plan, a blueprint for how to create a more welcoming and successful city for all.

Expanding housing options is a key priority of the Council-approved Diversity, Equity and Inclusion Plan, a blueprint for how to create a more welcoming and successful city for all.

BEFORE 1964

Residential neighborhoods in which the majority of single-family homes and plexes were built before 1964 include parts of present-day Central Beaverton, most of Vose and Denney Whitford/Raleigh West, and all of West Slope (Figure 3). In these areas, approximately 3,600 homes were built and 76 percent of homes were built before 1964.

In Beaverton, early 20th century neighborhoods in or near Downtown were designed with short, walkable blocks. A mix of small, single-story homes, often close to the street, line each block. Some homes might have a detached or attached one-car garage; others may simply park in a driveway. In areas with steep terrain, such as West Slope, neighborhoods were more likely to have curvilinear grids that followed natural contours in the terrain.

In 1946, the city created its first zoning ordinance, which restricted the size and height of buildings, as well as the size of yards, courts, and open space. There were two residential districts – all housing types were allowed in both districts (Table 2). The key difference between the two is that one district permitted slightly taller buildings with greater lot coverage.

At this point in time, the city was much smaller at about 640 acres (Figure 5). Beaverton was still a small suburb with most of the city's land located near the railroad, which is typical of early 20th century development since few people had cars. By the mid-1960s, the city increased in size to 3,800 acres, and neighborhood patterns reflected a growing dependency on the automobile. Depending upon when land was annexed into the city, some of the homes in this book may have developed according to Washington County standards instead of City of Beaverton standards. For example, West Slope was annexed into the city in the late 1990s. Therefore, any homes built prior to annexation would have followed development rules established by Washington County.

The city created its first zoning ordinance in 1946.

Building height, lot coverage and setbacks were regulated.

Lot size, width and depth were not regulated.

In 1960, the city updated the Development Code again. The new code doubled the city's residential zones from two to four, marking the beginning of a trend to separate housing types (Table 2). Detached single-family homes were still allowed everywhere, whereas duplexes were only allowed in three of four zones (although duplexes were a Conditional Use in one of these zones.

Multifamily homes, allowed in both districts in the 1940s and 1950s, were now only allowed in one of four zones. In addition, the new code increased front setbacks; added lot size minimums, widths and depths; and required off-street parking minimums as new regulatory tools to regulate neighborhood design.

From the early 1900s onward, changes in homebuilding and the architectural profession affected the look and feel of neighborhoods. Industry advancements, such as material standardization and midcentury home plan catalogs, provided small-scale homebuilders and contractors with the means to mass-produce homes.

This is why early 20th-century neighborhoods include a variety of housing types and architectural styles, whereas midcentury developments often consisted of homes that look similar. To be specific, the lot size, house shape, yard types, and construction methods might have been the same for a row of houses

In 1960, the city created a new zoning district that resulted in the first exclusively single-family neighborhood.

A Typical Street in Vose with Homes Built in the Early 1960s

In 1960, the city created off-street parking requirements. Dwellings with one to three units were required to provide one parking space per unit. Dwellings with four or more units were required to provide three spaces per two dwelling units. Above is a 1963 home, built by Robert Rummer in Denney Whitford/Raleigh West, that would have required one parking space. Instead, four parking spaces are provided, exceeding the minimum off-street parking requirements.

TABLE 2. Zoning and Site Development Requirement Updates (1940s-1970s)

1946

ZONE	ALLOWED HOUSING TYPES	MIN. LOT SIZE (SQ. FT.)		LOT DIMENSIONS			
				WIDTH		DEPTH	
		I	C	I	C	I	C
RESIDENTIAL DISTRICT 1	SF	Not Created Yet (NCY)		NCY			
	DP						
	APT (1.5 story)						
RESIDENTIAL DISTRICT 2	SF						
	DP						
	APT (2+ stories)						

LOT COVERAGE		HEIGHT MAX.	SETBACKS (FT) [5]					ZONE
I	C		F	S1	S2	R	G	
30%	40%	2.5 stories; 35 ft.	15	8	5	10	20	RESIDENTIAL DISTRICT 1
70%	80%	3.5 stories; 45 ft.	15	4	4	10	20	RESIDENTIAL DISTRICT 2

1946

1960

R-M MULTIFAMILY (MF) RESIDENTIAL	SF	5,000		50		100	45%	35 ft. (CU allows increase)	20	4(I) 20(I)	4(C) 20(C)	10	25	R-M MULTIFAMILY (MF) RESIDENTIAL
	DP	6,000												
	MF	7,000 or 2,000 sf/DU [1]												
R-S SINGLE-FAMILY (SF) RESIDENTIAL	SF	6,000	6,500	60	65	100	30%	2.5 stories; 35 ft.	20	8(I) 20(I)	5(C) 20(C)	10	25	R-S SINGLE-FAMILY (SF) RESIDENTIAL
	DP (CU)													
R-SD SF AND DUPLEX RESIDENTIAL	SF	5,000		50		100	35%	2.5 stories; 35 ft.	20	8(I) 20(I)	5(C) 20(C)	10	25	R-SD SF RESIDENTIAL AND DUPLEX RESIDENTIAL
	DU	8,000												
RESIDENTIAL AGRICULTURAL	SF	10,000		100		100	30%	35 ft	25	25	25	25	25	RESIDENTIAL AGRICULTURAL

1960

1978

R-1 URBAN HIGH DENSITY	APT (3+ units)	20,000 and 1,000/DU [2]	70	75	100		NA	60	20	10	10	20	25	R-1 URBAN HIGH DENSITY
	DP													
	SF													
R-2 URBAN MEDIUM DENSITY	APT (3+ units)	10,000 and 2,000/DU [3]	75	70	100		NA	35	20	10	10	20	25	R-2 URBAN MEDIUM DENSITY
	DP													
	SF													
	MBL (CU)													
R-3.5 URBAN MEDIUM DENSITY	DP	7,000 and 3,500/DU [4]	110		100		NA [6]	30	20	10	8	20	25	R-3.5 URBAN MEDIUM DENSITY
	SF													
	APT & MBL (CU)													
R-7 URBAN STANDARD DENSITY	SF	7,000	70	75	100	90	NA	30	20	9	8	25	25	R-7 URBAN STANDARD DENSITY
R-10 URBAN LOW DENSITY	SF	10,000	80	90	120	110	NA	30	25	10	8	25	25	R-10 URBAN LOW DENSITY
R-20 SUBURBAN DENSITY	SF	20,000	100		150		NA	30	30	10	8	25	30	R-20 SUBURBAN DENSITY
R-40 SUBURBAN DENSITY	SF	40,000	150				NA	30	35	10	8	25	35	R-40 SUBURBAN DENSITY
RESIDENTIAL AGRICULTURAL	SF	5 acres	300		NA		15%	30	50	20	20	100	NA	RESIDENTIAL AGRICULTURAL

1978

Notes

1. *Whichever value is greater.*
2. *A lot with an area less than 7,000 sq. ft. may be used for a two-family dwelling.*
3. *A lot between 7,000 sq. ft. - 10,000 sq. ft. may be used for a three-family dwelling.*
4. *A lot with an area less than 7,000 sq. ft. may be used for a single-family dwelling*
5. *For the 1978 code only, if two side setback values are provided, the larger value applies to the side next to a garage if the house includes a garage.*
6. *Lot coverage not provided, but a minimum open space and recreation area applies.*

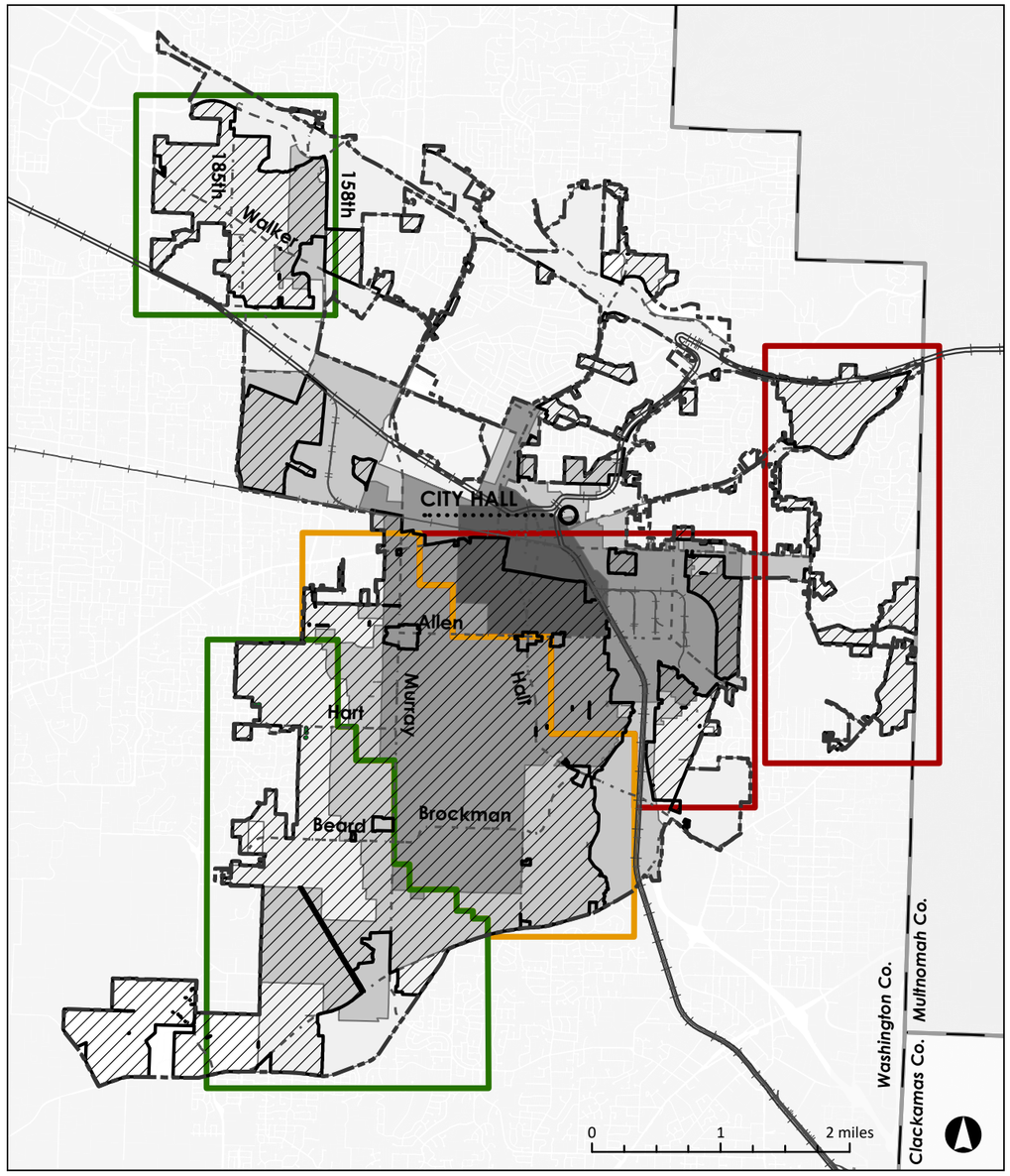
Legend

Housing Types
APT = Apartment
DP = Duplex
SF = Single-family
MF = Multifamily
MBL = Mobile home park

Setbacks
F= Front
S1 = Side 1
S2 = Side 2
R = Rear
G = Garage

Miscellaneous
I = Interior
C = Corner
CU = Conditional Use
DU = Dwelling Unit
NCY = Not Created Yet

FIGURE 5. Development Era Boundaries and City Limits from 1948 to 2019



City Limits (By Year)

- 1948
- 1965
- 1985
- 2005
- 2019

Development Era Boundaries

- Before 1964
- 1965-1984
- 1985-2004

Reference Information

- Study Area
- County Limits
- Railroads
- Light Rail Lines

Clarify boundaries. Maybe West Slope.

in a new subdivision. However, a homebuilder might have introduced variety through small moves such as façade material changes, or the placement of entrances, porches, stoops, gables, garages, and carports.

Mass producing homes also made them more affordable to homebuyers. This practice was more popular with homebuilders and small-scale contractors, as opposed to architects who typically designed custom homes (go to page 30 for more info). As architectural fees increased, and likewise, the cost of skilled craftsmen, the cost of custom homes became increasingly out of reach to the average homebuyer. This allowed homebuilders and small scale contractors to take a bigger share of the market.

1965-1984

Development from the mid-1960s to the mid-1980s moved westward across the city. Residential neighborhoods in which the majority of detached single-family homes and plexes were built between 1965 and 1984 include small parts of present-day Central Beaverton and Vose, all of Highland, most of Greenway and South Beaverton, half of West Beaverton, and the northeast portion of Sexton Mountain (Figure 3). In these areas, approximately 5,900 homes were built and 80 percent of homes were built between 1965 and 1984.

Midcentury residential development was still the domain of small scale homebuilders and contractors. This meant that neighborhoods were more likely to have architectural variety since houses might be built one at a time or in smaller

A Single-family Split-level Ranch in Highland

A LOOK AT MID-CENTURY DESIGN CATALOGS AND PLAN BOOKS

Manufacturing advancements in the mid-19th century made it possible to mass produce building components, leading to the growth of new industries within design and construction. From the late 1800s to the early 1960s, these new industries promoted design catalogs that made it easier and cheaper to build new homes.

Architectural trade catalogs provided architects with off-the-shelf products from manufacturers. House plan books enabled consumers and local builders to select from hundreds of house plans that catered to different lifestyles and aspirations. And technical kit books, complete with instructions and materials lists, empowered do-it-yourself builders to construct their own home.

Below is a sample of the catalogs available in historical archives.# These few examples echo the types, scale and patterns of houses found throughout early- and mid-20th century Beaverton.

Design catalogs and material standardization made it easier and cheaper to build new homes.

The homes in this 1950s plan book resemble the one and a half-story homes in and near Central Beaverton.

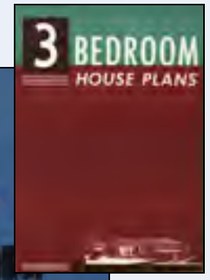
Design D-416

This plan has two bedrooms, kitchen, living room and vestibule on the first floor, with attic space to finish a large dormitory room. There is a full basement.

All rooms are connected to the small central hall for excellent circulation.

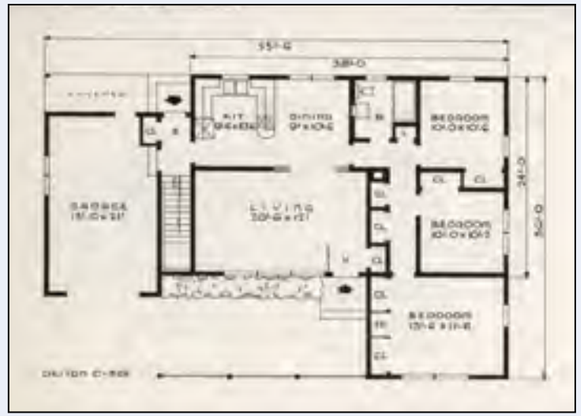
Kitchen and bathroom are adjoining and, with the laundry below, plumbing installation costs are reduced to a minimum.

Many L-shaped ranches in Beaverton built between the 1940s and 1970s resemble examples in this book. The interior layout would be different for duplexes.

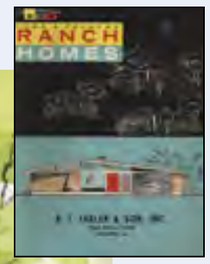


Design C-329 1,194 sq. ft. 23,522 cu. ft.
(Not including garage)

The floor plan shows three bedrooms grouped in one end of the house, bathroom, comfortable living room, combination kitchen-dining room, attached garage and full basement. Folding doors connect the living and dining room which can be thrown into one room. There is a liberal amount of storage space in the numerous bedroom and hall closets. Exterior finish consists of wide bevel and vertical siding, plywood gable end and asphalt shingles.



The Split-level Ranch, most common from the 1950s to the 1970s, symbolized a new way of interior living by separating sleeping areas from relaxed living areas and noisy service areas.



clusters. However, this would soon change. On a national level, the Federal Housing Administration, which insured home mortgages, created minimum property standards for subdivisions that suggested minimum lot shapes, street widths and neighborhood designs with cul-de-sacs to reduce through traffic in neighborhoods.[10] On a local level, cities continued to increase regulations through zoning updates and new site development standards.

Collectively, these factors, among others, contributed to a development process that became complex, time-consuming, and therefore, expensive. This is where bigger companies, such as real estate development firms and large scale contractors, compete with and gradually diminish the role of homebuilders, contractors, and architects.[11]

Larger companies were in a better position to hire staff who could navigate the complexities of the local, state and federal regulatory environment. On a financial level, they could not only outbid smaller parties due to efficiences of scale, but also carry construction debt for longer periods of time if land use review or construction took longer than expected.

As larger companies entered the field of residential construction, likewise, subdivisions grew larger, and the homes inside them started to look even more alike. To ensure uniformity, developers created deed restrictions, and homeowner's associations enforced them. Deed restrictions often regulated physical factors such as home size, landscaping, setbacks, and building materials, and in some cases, social factors such as who is allowed to live in the neighborhood (go to page 22 to learn more about other inequitable housing practices).

For most of the 1960s and 1970s, new homes were built under the rules established by the 1960 Development Code. Duplexes and, to a lesser extent, quadplexes were built steadily, but this would change soon after 1978.

Deed restrictions became more common in the 1960s and 1970s.

Developers created them when creating new subdivisions.

Homeowner's associations enforced the rules.

The 1978 Development Code update reserved five of eight residential zones for single-family homes only.

In 1978 , the city updated the Development Code again, creating exclusively single-family neighborhoods. A movement to separate housing by type was a national trend in the planning community, not a practice unique to the City of Beaverton. Nevertheless, the city again doubled the residential zones from four to eight, reserving five of eight low density zones for detached single-family homes only (Table 1).

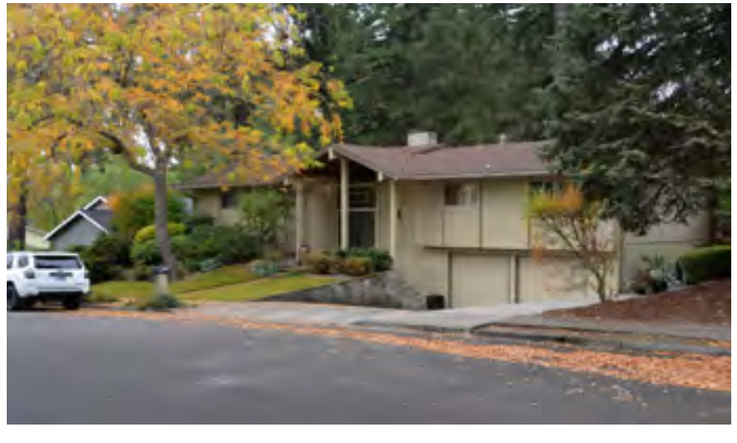
The new regulations also increased minimum lot sizes and front, side and rear setbacks; reduced height maximums in lower density districts; and restricted lot coverage maximums to multifamily zones only. Combined, these new planning tools resulted in lower density neighborhoods, made up of mostly detached single-family homes, with more space between the homes.

In addition, the new regulations also added new tools such as access standards for multifamily properties; landscaping standards; minimum open space and recreation area requirements based on total dwelling units; and Planned Unit Developments (PUDs), a tool to develop a large area of land that provides flexibility in locating buildings and combining various land uses, while respecting the original intent of the zoning district (go to page 38 to learn more about PUDs).

Duplexes, mobile home parks, and apartments with three or more units were now only allowed in three residential districts (one medium density and two high density). With these restrictions, significantly reducing where plexes can be built, the construction of plexes plummets after 1980. Throughout the early 1980s, city staff released additional Development Code updates, reinforcing the trend to separate neighborhoods with detached single-family homes from those with more diverse housing options.

1970s duplexes in Beaverton. Duplexes were built throughout the city until the 1978 code update limited where they could be built. In this Highland example, this L-shaped duplex with iinset entrances has a building footprint similar in size and shape to many other L-shaped single-family Ranches built in the same period.

A typical suburban development of single-family homes. When the city updated the code to limit many neighborhoods to detached single-family homes only, it reinforced low density development throughout the city. However, the average size of the detached single-family home continued to increase, eclipsing the size of plexes, which often had a smaller building footprint.



1985-2004

The construction of detached single-family homes dominates this last period. Residential neighborhoods in which the majority of detached single-family homes were built between 1985 and 2004 include parts of present-day West Beaverton, all of Five Oaks/Triple Creek, most of Sexton Mountain and Neighbors Southwest, and the southern portion of South Beaverton (Figure 3). Most of the land inside of this development boundary was annexed into the city after 1985. Within this area, approximately 5,300 homes were built and 77 percent of homes were built between 1985 and 2004.

By the mid-1980s, real estate developers eclipsed small scale builders as they continued to build subdivisions with even larger homes. As the size and height of homes increased, and two car garages became three car garages, the bulk of detached single-family homes became noticeably larger. Interestingly, as homes became bigger, lots became smaller, resulting in blocks where homes appear much closer together than in earlier periods.

In 1985, the city created the Neighborhood Association Committees (NACs) program, which provided a way for people who live in or work in neighborhoods to identify community needs and address them, such as sharing feedback on the land use review for potential development projects.This report focuses on the present-day boundaries of NACs for clarity, but acknowledges that the number and boundaries of NACs has changed over 35 years as Beaverton expanded its city limits.

Homes increased in size as lot sizes decreased, resulting in neighborhoods where the homes appear much closer together.

Accessory dwelling units provided a way for mostly single-family neighborhoods to allow a greater housing mix.

The Development Code was continually updated throughout this period. However, the allowed uses (in this case, housing types) and site development standards for residential construction did not change much. In 1986, the R40 zone was removed from the Code, and solar access protection and historical preservation were added as new tools. In 1992, the R20 zone was also removed the Code.

In 1997, Metro, the regional government, required all jurisdictions in its boundary to allow one accessory dwelling unit (ADU) per detached single-family home within the next two years. An ADU is a small, self-contained home on the same property as a principal home. It can be attached or detached from the principal home.

In 1999, Beaverton updated the Code to allow ADUs in all residential zones, limiting the size of an ADU to 800 sq. ft. Only one permitted ADU was actually built in this period.

Even with these changes, one fact remained the same – most of the city's residential land was still reserved for detached single-family homes in the R-10, R-7, R-5 and R-A zones.

With barriers still in place, very few plexes were built in this period since they were still not allowed in most areas. However, there are some examples (16 duplexes, one triplex, and one quadplex). This report briefly covers duplexes in this period, but does not address triplexes and quadplexes since there was only one of each.

A Streetscape in Sexton Mountain on the Western Edge of the City

A Single-Family Home in Five Oaks/Triple Creek with a Three-Car Garage

2005-2019

Between 2005 and 2019, 1,200 detached single-family homes were built throughout the city, evenly dispersed with the exception of Greenway, which experienced very little development. These calculations do not take into account anticipated development in South Cooper Mountain since these homes had not been built at the time of data collection.

As stated earlier, this report does not distinguish homes built after 2005 as a fourth area because these homes are mostly residential infill projects as opposed to greenfield development. Residential infill involves the construction of a new home or redevelopment of an existing property in an area that is mostly built-out. Greenfield development is on undeveloped parcels not surrounded by existing development, or on large parcels surrounding partially developed areas or undeveloped areas.

Smaller homes on smaller lots. The top image is a group of detached single-family homes, similar in scale to cottages. The bottom image is also a group of detached single-family homes on small lots, only these buildings are significantly taller. Both types are on smaller lots, relatively close to their neighbors, with homes arranged around a common green, but their proportions and height are quite different.

Homes built between 2005 and 2019 are mostly residential infill projects built in areas that are mostly built-out.

With the residential infill projects, there is one trend that signals a shift from the previous era – smaller homes on smaller lots – and it shows up in two different ways. In some projects, detached single-family homes (with a 1,000 – 1,500 sq. ft. building footprint) are built on 4,000-6,000 sq. ft. lots. These homes are modest in scale, as a cottage would be, and sited very close to each other, sometimes around a common green.

In other cases, detached single-family homes with a 700-1,000 sq. ft. building footprint are built on 1,500 sq. ft. lots. They are typically three stories. These homes may be as close as six feet apart, and sited around a common green as in the previous example. Their proportions and height resemble townhouses, but unlike townhouses, they do not share a common wall since they are detached structures.

One way to accomplish either of these projects might be through a Planned Unit Development (PUD), a tool to develop a large area of land that provides flexibility in locating buildings and combining various land uses, while respecting the original intent of the zoning district. Most of South Cooper Mountain will be developed through PUDs, and the same option will be available to property owners in Cooper Mountain. (Go to page 38 to learn more about PUDs)

Aside from detached single-family homes, other housing types built in residential areas between 2005 and 2019 included nine permitted ADUs; 550 apartment units (4 percent of the citywide total), mostly four-story buildings; and 280 townhouses (23% of the citywide total), mostly three-story buildings. No duplexes, triplexes or quadplexes were built between 2005 and 2019.

NEXT STEPS

Across the country, duplexes, triplexes, and quadplexes accounted for 22 percent of housing in 1940 before dropping to 10 percent in 1990. In Beaverton, the decline is even steeper given the 1978 Development Code update which restricted the construction of new plexes to very few areas. However, this will change as the city develops alternatives for the Housing Options Project, which determines where and how new housing types will be allowed in historically single-family neighborhoods.

The intent of this report is to start a conversation about the history of residential development patterns in the city, and prompt readers to think about works well, or could be improved, in the most common examples. In the near future, city staff will host public engagement events where people can share their insights. This feedback will be used to draft alternatives that again will be shared with the public before developing a preferred alternative and development code updates.

WHAT IS A PLANNED UNIT DEVELOPMENT?

A Planned Unit Development (PUD) is a tool to develop a large area of land that provides flexibility in locating buildings and combining various land uses, while respecting the original intent of the zoning district. The goal is to improve upon traditional subdivision development by encouraging innovative and creative approaches for developing land.

The city added this tool to the Development Code in 1978 (the same year that the city was rezoned to reserve a majority of residential land for detached single-family homes only).

If an applicant wishes to pursue a PUD, they must submit a Conditional Use (CU) application, which is a Type 3 application, and likely a Tree Plan application and Land Division application. All proposed developments subject to a Type 3 review must be presented at a neighborhood review meeting before they can be approved by the Planning Commission. To be approved, the development must demonstrate compliance with the city's *Comprehensive Plan*, which is a legal document that describes the city's long-range land use and transportation goals and policies.

In Beaverton, a PUD must also adhere to the following development and design principles:

- Provide setbacks and buffering through landscape or building design so that the perimeter of the PUD respects the scale and context of surrounding land,
- Cluster buildings to create open space and protect natural resources,
- Provide for active recreation space (such as playgrounds, swimming pools and plazas) and passive open space (such as habitat benefit areas, view corridors or tree groves where people can walk, run or bike),
- Employ green building practices (for example, orienting buildings to maximize solar exposure for passive solar gain or adding a green roof), and
- Promote a pedestrian-friendly streetscape

If the above is followed, then an applicant has the ability to:

- Transfer density within the PUD (for example, if a site has significant trees or steep slopes, an applicant could build additional housing in a flat portion of the site in exchange for protecting the environmentally sensitive areas),
- Modify residential lot sizes (reduce minimum lot size to 25% or increase to 195% depending upon the housing type and zone), and
- Reduce front, rear or side setbacks (with exceptions)

Even with the flexibility to modify certain development standards, the buildings in a PUD must follow design standards

A Planned Unit Development is a tool to develop a large area of land that provides flexibility in locating buildings and combining various land uses, while respecting the original intent of the zoning district.

Most of South Cooper Mountain will be developed through PUDs, and the same option will be available to property owners in Cooper Mountain.

Progress Ridge. This project is a 110-acre development that combines 746 multi-family residential dwellings (townhouses, apartments and carriage flats) with a 20-acre commercial area.

for building orientation, building height and architectural details. Interestingly, detached single-family homes outside of a PUD do not have to follow design standards, but detached single-family homes inside a PUD must always follow them. This is an example of how the PUD approach balances flexibility with prescription to ensure the project meets the intent of the zoning district.

Progress Ridge, between SW Scholls Ferry Rd and SW Barrows Rd, is a PUD. The project is a 110-acre development that combines 746 multi-family residential dwellings with a 20-acre commercial area. Housing types include townhouses, apartment buildings and carriage flats (two-story buildings with six condominium units). The site design places the highest density development around an easily accessible town center and lower density development around the perimeter of the site.

South Cooper Mountain, a 544-acre area in the southwestern portion of the city, is currently being developed through multiple PUDs initiated by each property owner. In addition to the standard PUD requirements, South Cooper Mountain PUDs must also follow the *South Cooper Mountain Community Plan*, which is a part of the Comprehensive Plan and the Development Code. All developments in this area must include a mix of housing types that facilitate both renting and home ownership, so that families at a variety of household incomes can live in the same neighborhood.

After Cooper Mountain, a 1,200 acre area directly north of South Cooper Mountain, is annexed into the city, all future development will also need to provide a mix of housing types according to the *South Cooper Mountain Community Plan* and conditions established by Metro, the regional government for the Portland metropolitan area.

BEFORE 1964

Single-family homes
Duplexes
Triplexes
Quadplexes
Apartments
Mobile home parks

BEFORE 1964

By 1960, Beaverton was still a small town of 6,000 people. Homes closer to Downtown were built on rectilinear or curvilinear street grids with short blocks (when compared to subsequent periods), prioritizing connectivity over speed. Neighborhoods include a mix of housing types.

Lot size peaks in this period at an average of 10,900 sq. ft. for detached single-family homes (14,400 sq. if in West Slope and 10,500 sq. ft. for all other areas inside this boundary). and 8,700 sq. ft. for duplexes. Single-family homes are the dominant housing type in this period, as they will be in every other era. Interestingly, single-family homes are larger than duplexes, and nearly the same size as triplexes and quadplexes. Most plexes are rectangular or L-shaped one-story Ranches, though few existing examples remain from this development era.

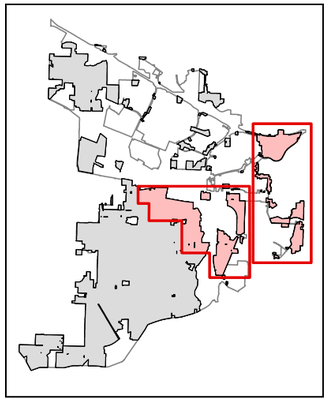


TABLE 3. Site Development Patterns for Homes Built Before 1964 [1]

TYPE	TOTAL	LOT SIZE	LOT COVERAGE [2]	AVG. HEIGHT
Single-family	2,600	10,900 sq. ft.	0.23	1.3 floors
Duplex [3]	43	8,700 sq. ft.	0.21	1.2 floors
Triplex	23	8,100 sq. ft.	0.31	1.1 floors
Quadplex	24	N/A [4]	N/A [4]	1 floor

TABLE 4. Building Patterns for Homes Built Before 1964

TYPE [5]	SUBTYPE	FOOTPRINT
Single-family	Various	2,210 sq. ft.
Duplex	Rectangular	1,900 sq. ft.
	L-shaped	1,800 sq. ft.
Triplex	Rectangular	2,300 sq. ft.
	L-shaped	2,300 sq. ft.
Quadplex	Rectangular	2,300 sq. ft.
	L-shaped	2,700 sq. ft.

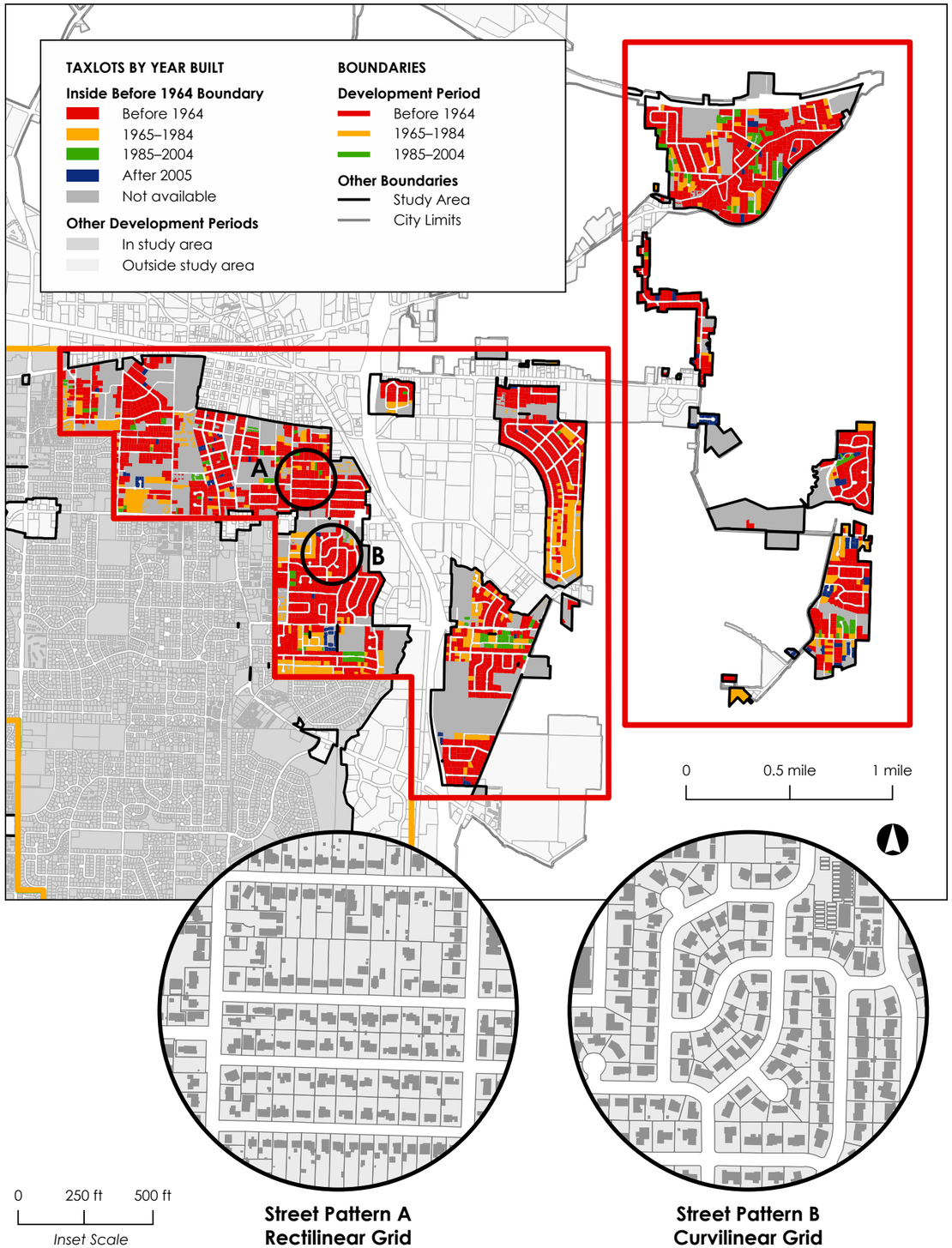
NOTES

1. Setbacks were evaluated for plexes, but removed from the table because the results varied significantly for all types and development eras.
2. Flaglots removed from lot coverage calculations.
3. If a duplex were also classified as a townhouse or condominium, it was removed from analysis since the lot size and coverage patterns vary.
4. Lot size and coverage not calculated for quadplexes since somes lot have multiple buildings, as well as access and parking on separate lots.
5. Footprint and unit size provided for predominant types only.

Takeaways:

- **Lot size.** Average lot size peaks in this era at 10,900 sq. ft. Lots with detached single-family homes are at least 25% larger than lots for all other plexes.
- **Lot coverage.** Low except for triplexes (higher because the average lot size is 8,100 sq. ft.)
- **Housing types.** Most plexes are rectangular or L-shaped one-story Ranches, common in the 1950s and 1960s.
- **Home size.** Triplexes and quadplexes have similarly sized footprints because quadplexes have smaller unit sizes.
- **Street patterns.** Rectilinear street grids provide more opportunities for corner lots with plexes that have entrances on both streets.
- **Off-street parking.** Surface parking is more common than garages. Duplexes mostly have driveways. Triplexes and quadplexes mostly have parking lots.
- **Development patterns.** Most plexes are standalone projects or shared court (an open area lined with buildings that can be paved or landscaped).

FIGURE 6. Development Era Boundaries for Areas with a Majority of Homes Built Before 1964



SINGLE-FAMILY HOMES

Building Patterns

The average building footprint for single-family homes built before 1964 is 2,210 sq. ft.

Most homes are still single-story.

Size. Compared to other periods, single-family home are still relatively small. The average building footprint is 2,210 sq. ft. (Table 4) Pre-war homes (home built before 1945) have an average building footprint of 1,900 sq. ft. Homes built in the postwar housing boom are closer to 2,300 sq. ft.

Height. Most homes are single-story, though two-story homes exist. Traditional homes, such as a Minimal Traditional or Neocolonial home, are easier to design as one- or two-stories. Ranches in this period are typically one-story.

Site Patterns

Setbacks and Yards. While not technically measured in this study, homes closer to Downtown have roughly 15 to 20 ft. front setbacks. This increases to roughly 20 to 25 ft. as homes are further from Downtown. This does not apply to West Slope which has a more challenging topography.

Off-Street Parking. By 1960, 22 percent of households across the country owned two cars. This could be accommodated by parking in the driveway, or a detached or attached one-car garage. Two-car garages exist in this period, but they are far more common in the next two periods.

DUPLEXES

Most duplexes built before 1964 were single-story duplexes integrated with detached single-family homes and other plexes in walkable neighborhoods, many close to Downtown. There were two dominant building forms: Linear and L-shaped. Both duplexes typically had a building footprint of 1,900 sq. ft. or less (or 950 sq. ft. per unit) (Table 4). Garages were rare, so most people parked in the driveway.

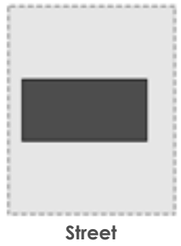
OBSERVATIONS

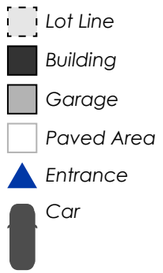
- **R1a.** This configuration includes a shared driveway and garage that provides four parking spaces. If built after 1960, the city would have required four parking spaces for a duplex. With a garage in the center, each unit has more privacy and access to their own small front yard.
- **R1b.** This configuration provides a separate driveway for each unit. Elongating each driveway results in six parking spaces, pushing the house further from the street and reducing the size of the rear yard.
- **R1c.** This duplex has access to a large, shared back yard since each unit has only one parking space (a sign that it may have been built before 1960 when off-street parking requirements were created).
- **R1d.** A shared front entrance is easily visible from the street. A shared driveway is tucked to the side, allowing more usable space in the front yard.
- **R2a.** Moving the duplex to the side property line creates more space for parking in this configuration, up to eight spaces. Neither entrance faces the street, resulting in a poor connection to the street. The area in front of the duplex may either be paved or have a small planting strip.
- **R2b.** Moving the duplex to the side property line results in a larger front yard and strong street presence for this corner lot. Parking is accommodated via a compact two-car garage in the lot corner.

Rectangular Duplexes

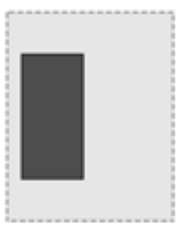
ORIENTATION

R1. Parallel to St.

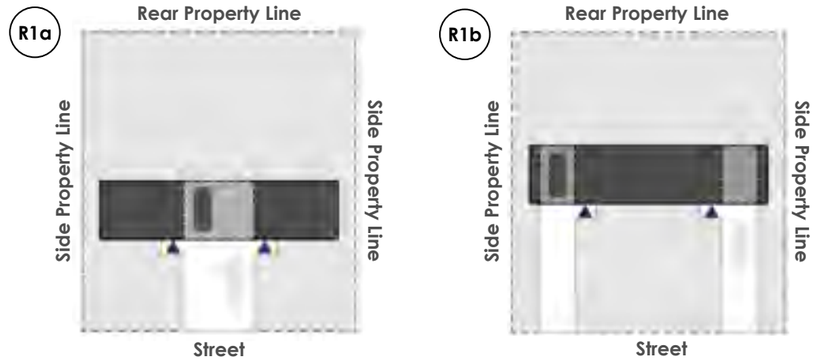


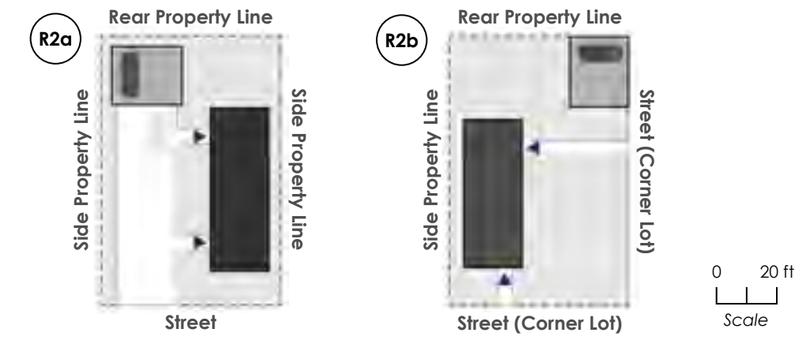


R2. Perpendicular to St.



VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)





L-shaped Duplexes

Depending upon the orientation on the lot, the L-shaped duplex provides a range of options to place entrances and accommodate off-street parking. More often than not, the interior of the L is used for surface parking. If the building is pushed closer to the rear property edge, driveways can be longer, facilitating even more parking.

Entrances are always inside the L-shape, but actual location varies

OBSERVATIONS

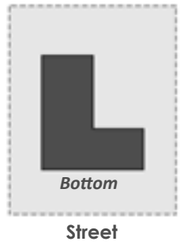
- **L1a.** L-shaped buildings work well on narrow lots that limit building width. The massing of the L-shape can facilitate a larger home size while remaining one-story. Moving the building to a side property line creates more usable space that can be used for a front yard or surface parking. L1a has a shared driveway with a one- or two-car garage.
- **L1b.** This version provides two driveways, one that provides one space and another that provides two spaces. With a narrow lot, separate driveways break up the front yard into three, small segments that function more like planting strips than a front yard. Both entrances face the street.
- **L1c.** Shortening the driveway to two parking spaces allows for a larger, shared front yard. If the duplex has one main entrance connected to the street by a pedestrian walkway, this greatly enhances street presence.
- **L2a.** Flipping the L-shape so that the L-bottom faces the street allows the main facade to be closer to the street, enhancing street presence. Parking is tucked behind the building.
- **L3a.** Moving the L-shape to the corner maximizes the usable space on-site, which can be used for a larger front yard, or as seen in L3a, two separate driveways that lead to separate entrances. Moving the L-shape to the corner also may preclude a rear yard.

L-shaped Duplexes

ORIENTATION

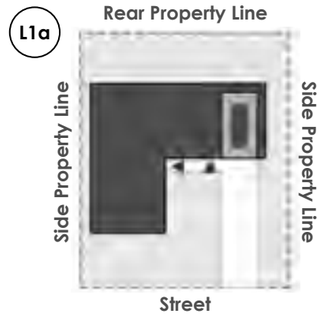
L1. L Perpendicular to St., top close to St.

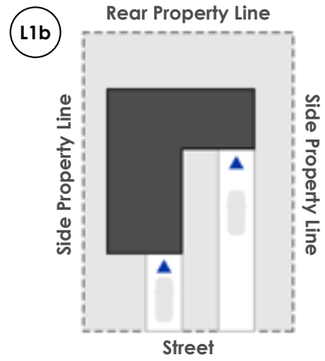
L2. L Perpendicular to St., bottom close to St.

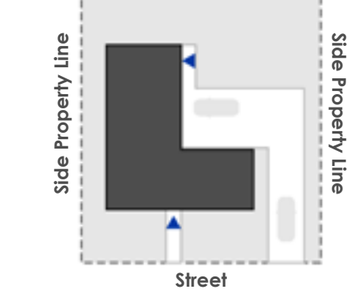


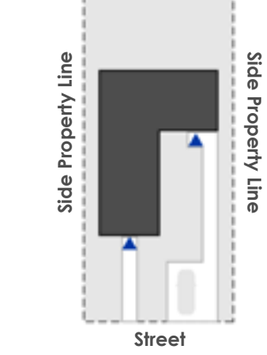
L3. L Parallel to St., in corner of property

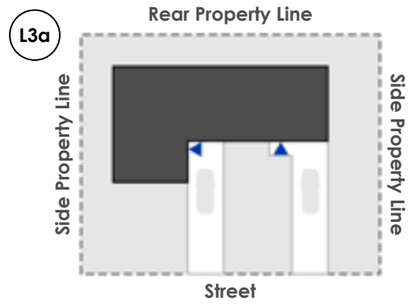
VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)

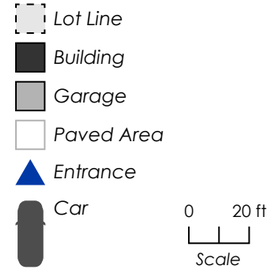












TRIPLEXES

Only 23 existing triplexes are within this development boundary, still more than any other period. Here, a triplex may be a single building with three units on one lot, or a detached single-family home and a duplex on one lot. A common trend with triplexes is that off-street parking is accommodated by a parking lot, as opposed to a duplex which typically has a one- to two-aisle driveway.

OBSERVATIONS

- **R3a.** If a lot is deep and narrow, rotating the building so that the main axis is perpendicular to the street creates more usable space on the side of the property. R3a is a corner lot triplex with one entrance on one street and two entrances on the other street, connected by interior walkways. Surface parking in the lot corner provides up to eight parking spaces.
- **R3b.** No on-site parking allows this small lot to support a triplex. However, street presence is limited if there is no entrance facing the street.
- **R3c.** Moving the building to the lot corner eliminates the rear yard but creates a larger front that, in this example, is used for two driveways and a small front yard.
- **R4a.** To accommodate a T-shaped parking lot, R4a reduces the rear yard to accommodate a large parking lot in front of the plex.
- **L5a.** This triplex consists of a detached single-family home and a duplex. A long driveway at the edge of the property line provides ample parking. Excess parking means there is almost no green space.
- **L5b.** Two triplexes, each on its own lot, face each other. A shared driveway on center with a shared property line leads to ample parking, 10 parking spaces per triplex.

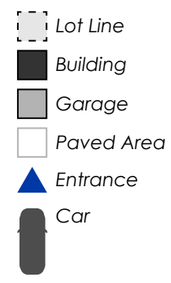
Rectangular Triplexes

ORIENTATION

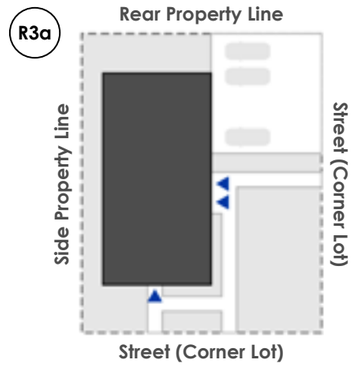
R3. Perpendicular to St.

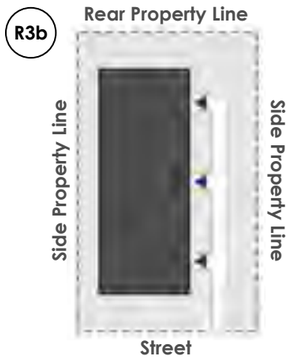
R4. Parallel to St.

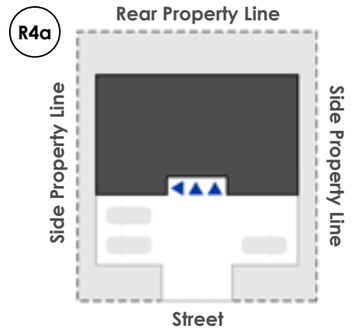
R5. Combines R3 + R4

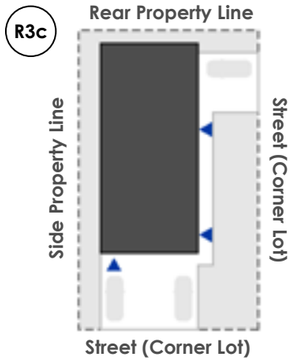


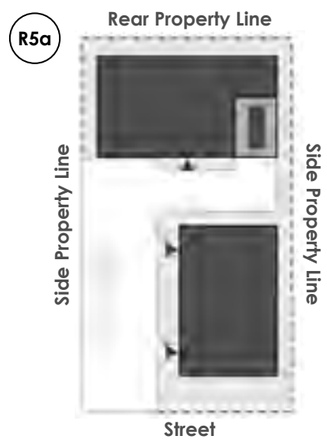
VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)

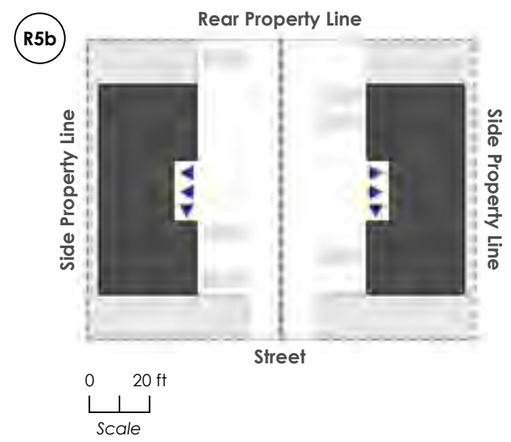












L-shaped Triplexes

The L-shaped triplex is often moved to the side or rear of the property line to create more usable space towards the front. In most cases observed in Beaverton, the usable space is dedicated to off-street parking. Front and side yards appear to be leftover space that is more small and narrow with a limited range of uses.

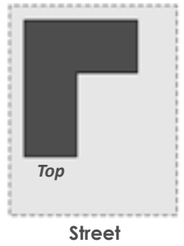
OBSERVATIONS

- **L4a.** Moving the L-shape triplex towards the rear property line results in more usable space in front that is used for surface parking, in this case, a three-aisle driveway, circulation area and eight parking spaces. In fact, the surface parking area exceeds the building footprint area.
- **L4b.** In this narrow lot example, the inset of the L-shape is used as a small side yard. A four-car parking lot connects to the building via a small walkway.
- **L5a.** In this corner lot example, one facade has a strong street presence with a front yard and walkway that leads to the main entrance. The opposite facade, with one entrance downstairs and another upstairs, is behind three parking spaces. Moving the L-shape to the lot rear results in a street-facing corner yard that functions as a larger green space that has more use potential.
- **L6a.** Unlike the previous corner lot example, this configuration moves all entrances to the interior of the L-shape. One facade directly faces the street. The other facade fronts a driveway that accommodates parking for up to six cars. Placing the building in the corner allows one small street-facing corner yard and one small side yard.

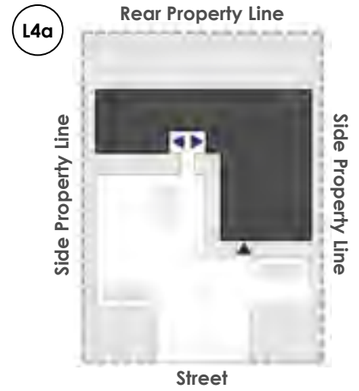
L-shaped Triplexes

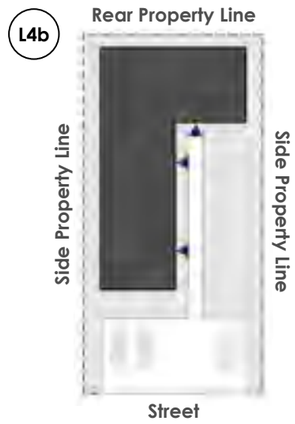
ORIENTATION

L4. L top faces st., base in rear corner

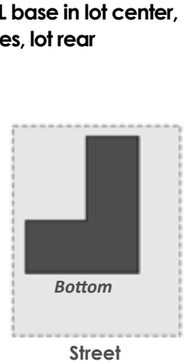


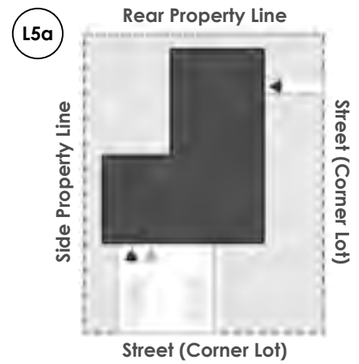
VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)

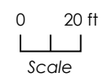




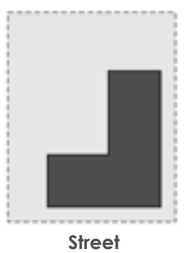
L5. L base in lot center, faces, lot rear

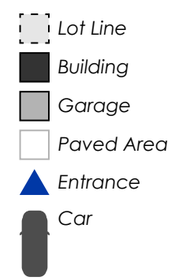






L6. L base in street corner, faces lot rear





QUADPLEXES

Quadplexes in this period display a range of configurations. Regardless, they are almost always single story. They may be a single building with four units on one lot; two duplexes on one lot; or two quadplexes, each on separate lots, which mirror each other and share open space or parking. As with triplexes, off-street parking is most often accommodated by a surface parking lot. At this point in time, garages in quadplexes are still rare.

OBSERVATIONS

- **R6a.** All four units in this quadplex are accessible via a covered breezeway that divides the building in half. Parking is accommodated via two driveways on each side of a walkway that connects the breezeway to the street and the rear yard (clearly visible from the street).
- **R6b.** Another example with a covered breezeway, only this one is not visible from the street. Instead, it is accessed by a narrow side yard. Most of the lot width is used to accommodate four parking spaces that obscure the front of the main facade.
- **R7a.** This quadplex consists of two duplexes on one site. A long, shared driveway separates both duplexes. Each duplex has a garage in the center, so each unit has significant privacy. Street presence is limited since one building is far from the street and both buildings have entrances that are difficult to see from the street.
- **R8a.** This is another quadplex example with two duplexes. Limiting parking to four spaces, and moving one building to the side and another to the rear, allows the site to have a large side yard that can be used by the residents in both duplexes.
- **R8b.** This corner lot example with two duplexes places a small parking lot on the street-facing corner. Both duplexes are close to the street. With good landscaping, this site can still have a strong street presence.

Rectangular Quadplexes

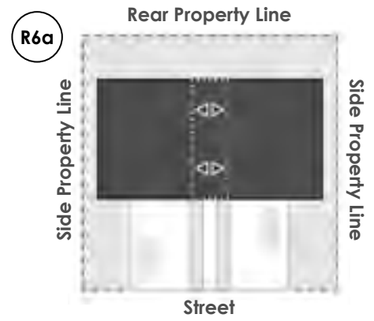
ORIENTATION

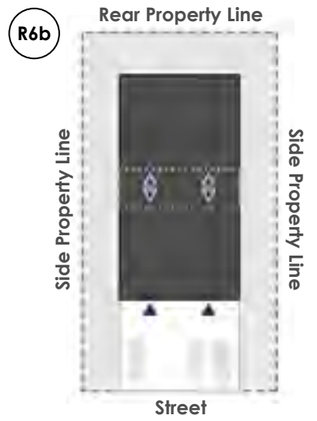
R6. One quadplex, perpendicular to St.

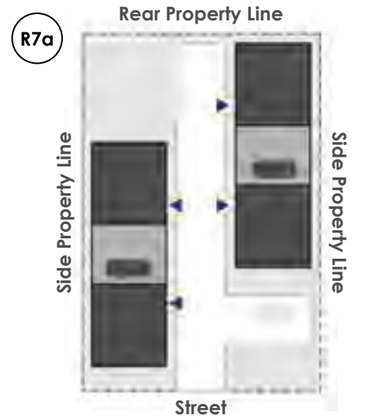
R7. Two duplexes, perpendicular to St.

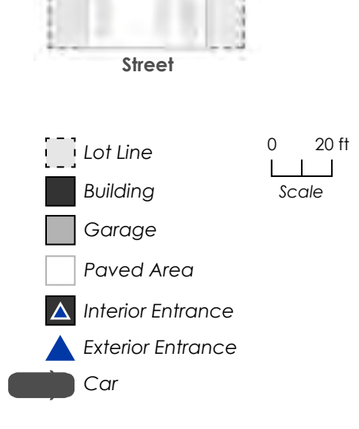
R8. Two duplexes at 90 degree angle

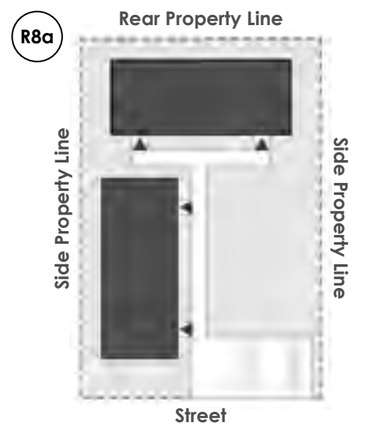
VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)

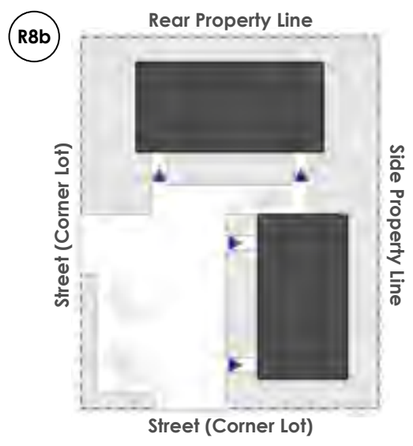












L-shaped Quadplexes

An L-shaped quadplex may be a single building. Other times, two L-shaped quadplexes, each on its own lot, are mirrored to create a U-shaped configuration. In this latter scenario, the interior of the configuration is almost always used to create a large surface parking lot.

OBSERVATIONS

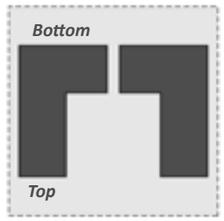
- **L7a.** Flipping the L-shape so the back faces the street results in a strong street presence. All four entrances to this single-story quadplex are within 10 ft. of the street. In the back of the building, a driveway for eight cars is tucked into the inside of the L.
- **L8a.** This quadplex consists of two L-shaped duplexes on one lot that mirror each other. Each duplex is pushed to the side property line, resulting in a large usable space in the center that is turned into a parking lot for 12 cars (three cars per unit). If parking were reduced from 12 cars, the site could still accommodate surface parking as well as a large front yard.
- **L9a.** This example consists of two L-shaped quadplexes on separate lots that mirror each other. As with L8a, the interior of the configuration is used to accommodate parking (up to 10 cars in this example). Unlike L8a, this configuration moves the base of each L-shaped building closer to the street, resulting in a strong street presence. A shared walkway between both quadplexes provides a way for people to walk from the sidewalk to other parts of the site, resulting in a more pedestrian-friendly environment.

L-shaped Quadplexes

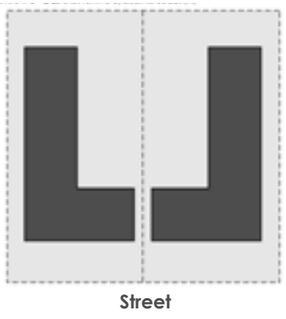
ORIENTATION

L7. One L-shaped quadplex with back to st.

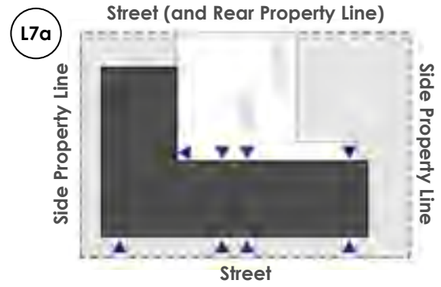
L8. Two L-shaped duplexes on one lot, in rear

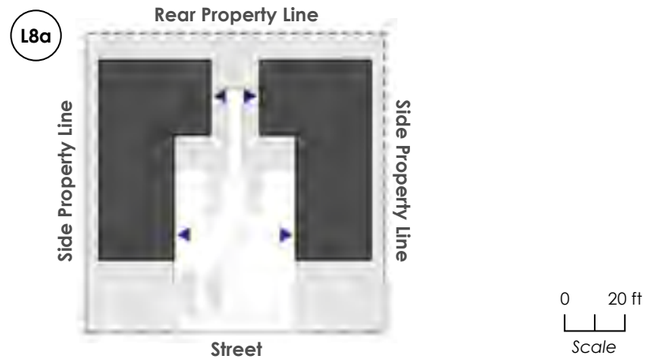


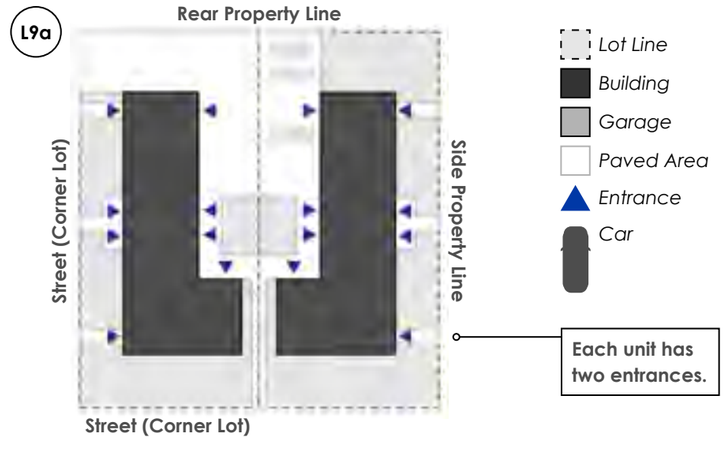
L9. Two L-shaped quadplexes on separate lots



VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)







APARTMENTS

In addition to detached single-family homes and a variety of plexes, apartments are also built in this period. Only one percent of existing apartments were built in this period, mostly between 1955 and 1964. The average floor count is 1.4 floors, indicating a mix of one- and two-floor apartment buildings.

MOBILE HOME PARKS

As of 2019, there were 330 mobile homes in the city, clustered in four mobile home parks (MHP). Of the four remaining MHPs, two are within this development boundary. According to newspaper records, other MHPs existed but many closed by the mid-1980s due to rising land costs, zoning changes, and design standards that were exclusionary and cost-prohibitive. (See pg. 39 for more info).

1965 – 1984

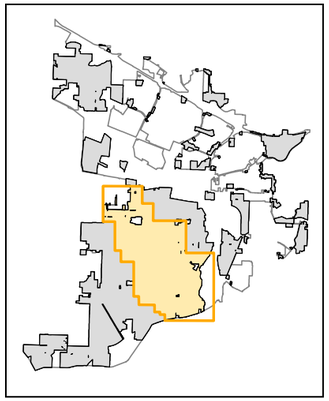
Single-family homes
Duplexes
Quadplexes
Townhouses
Apartments
Mobile home parks

1965-1984

Between 1960 and 1970, Beaverton's population grew by 212 percent – this is the decade with the fastest rate of population growth. As of 1970, the population was about 18,600 people.

Neighborhoods with curvilinear grids, such as Vose and Highland, became more common, eventually giving way to curvilinear streets with cul-de-sacs. Some neighborhoods had a mix of housing types; however, they are starting to separate types with duplexes concentrated in clusters or on entire blocks or subdivisions.

Many variables affect the size and shape of a home in this period, but none more so than the automobile. As car ownership rates increased, and more people desired covered or attached parking, homes became bigger to accommodate one, two, or even three vehicles. In 1960, 22 percent of households across the country owned two cars. By 1970, 29 percent owned two cars and six percent had three or more cars.



Takeaways:

- **Lot size.** Lot size decreases by nearly 30% to 9,100 sq. ft. Single-family homes and duplexes are on similarly sized lots.
- **Home size.** The footprint for single-family homes increases by 10% to 2,430 sq. ft., and for duplexes, by 25%. The footprint for quadplexes decreases by 30% (most are now two-story.)
- **Housing types.** The desire for 1-2 car attached garages marks a shift from simple to compound forms – T-shaped and U-shaped duplexes are most common. Quadplex production doubles. Triplex production decreases.
- **Duplex Development.** Duplex production increases significantly From 1967-1980, 76% of existing duplexes were built and 80% were built as subdivisions or smaller clusters.
- **Quadplex Development.** The standalone projects of the previous era are replaced by shared court projects, and quadplex clusters with alleys.
- **Street patterns.** Curvilinear grids emerge, then give give way to curvilinear neighborhoods with cul-de-sacs.

TABLE 5. Site Development Patterns (1965-1984 Homes) [1]

TYPE	TOTAL	LOT SIZE	LOT COVERAGE [2]	AVG. HEIGHT
Single-family	5,066	9,150 sq. ft.	0.29	1.4 floors
Duplex [3]	248	9,100 sq. ft.	0.26	1.3 floors
Triplex	3	10,400 sq. ft.	0.29	1.3 floors
Quadplex	52	N/A [4]	N/A [4]	1.8 floors

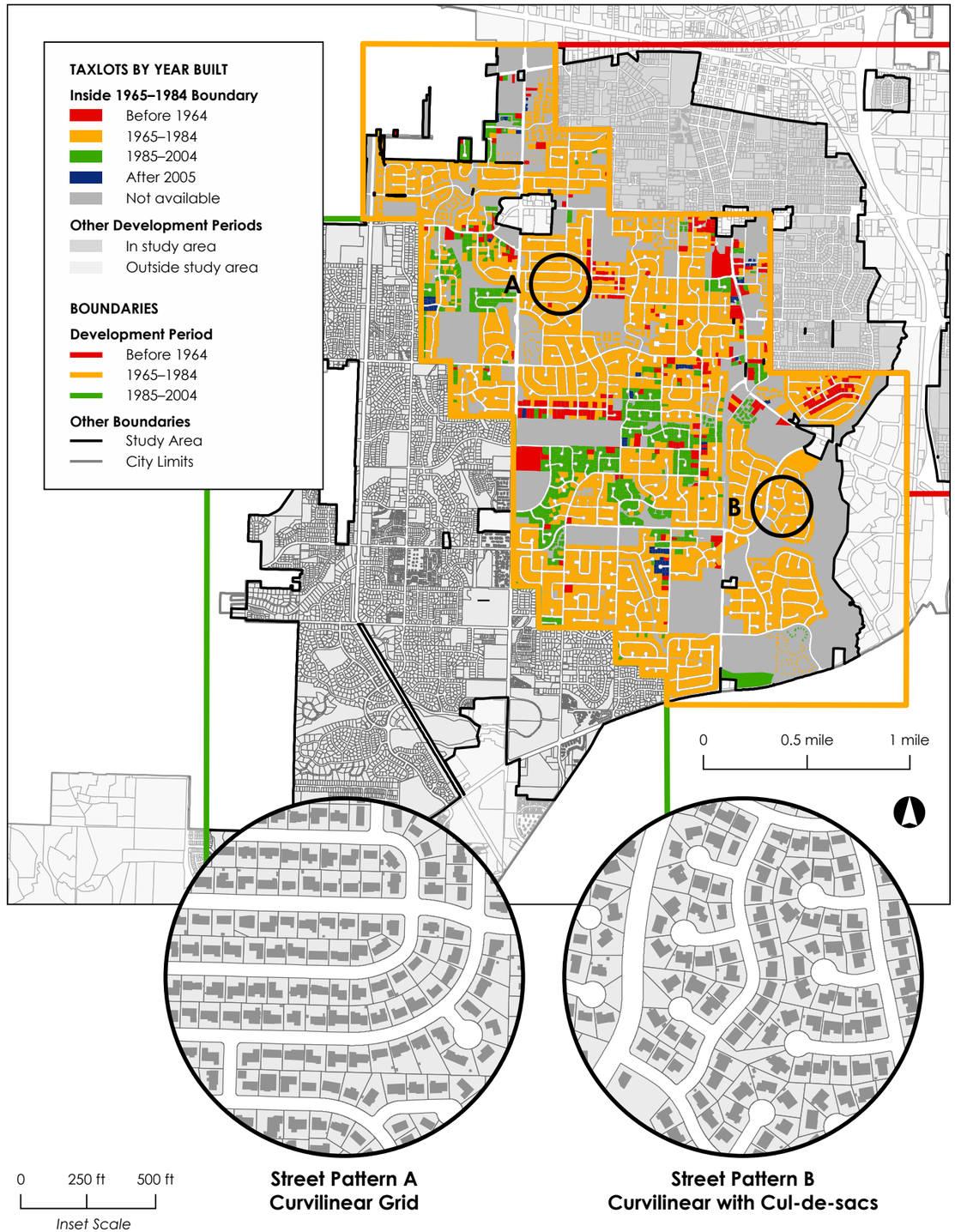
TABLE 6. Building Patterns (1965-1984 Homes)

TYPE	SUBTYPE	FOOTPRINT
Single-family	Various	2,430 sq. ft.
Duplex	T-shaped (major)	2,500 sq. ft.
	U-shaped (major)	2,300 sq. ft.
	Rectangular (minor)	2,300 sq. ft.
	L-shaped (minor)	1,900 sq. ft.
Quadplex [5]	Rectangular	2,000 sq. ft.
	U-shaped	1,800 sq. ft.

NOTES

1. Setbacks were evaluated for plexes, but removed from the table because the results varied significantly for all types and development eras.
2. Flaglots removed from lot coverage calculations.
3. If a duplex were also classified as a townhouse or condominium, it was removed from analysis since the lot size and coverage patterns vary.
4. Lot size and coverage not calculated for quadplexes since somes lot have multiple buildings, as well as access and parking on separate lots.
5. Footprint and unit size provided for predominant types only.

FIGURE 7. Development Era Boundary for the Area with a Majority of Homes Built from 1965 to 1984



SINGLE-FAMILY HOMES

Building Patterns

The average building footprint of single-family homes increases by 10 percent.

New styles influence the size and shape of homes such as the Split-level Ranch and Pacific Northwest Regionalism.

Size. Compared to the previous area, the building footprint for single-family homes increases by 10 percent to 2,430 sq. ft. (Table 6). This is expected as midcentury Ranches, known for horizontal forms that sprawl across the landscape, steadily gain in popularity through the 1960s and 1970s.

Height. The average floor count is 1.4 floors (Table 5), a slight uptick from the previous era. This suggests that more two-story homes are being built, such as the split-level Ranch pictured to the right on top. However, single-story homes are still more common.

Site Patterns

Setbacks and Yards. Average lot size decreases by 30 percent to 9,100 sq. ft. (Table 5) and building footprint increases by 10 percent. Together, this means that lot coverage is higher, and therefore, yards are smaller on all sides of the house. While not technically measured in this study, homes typically have 20-30 ft. front setbacks.

Off-Street Parking. Car ownership significantly increased during this period. In turn, attached garages have become more common, with many homes including two-car attached garages.

DUPLEXES

Most existing duplexes were built in this era (76 percent of existing duplexes are built from 1967-1980). In the previous era, duplexes were often standalone projects. In this period, they appear in larger numbers on long blocks or in subdivisions entirely comprised of plexes. Most duplexes are either T-shaped or U-shaped, though Rectangular and L-shaped examples exist in smaller numbers.

The average building footprint of a duplex also increases by 25 percent (Table 6). For duplexes built before 1964, the average is 1,900 sq. ft. For those built between 1965 and 1984, the average building footprint is 2,300 sq. ft.

OBSERVATIONS

- **T1a.** The transition from rectangular and L-shaped duplexes in the last period to T-shaped duplexes in this period reflect a growing trend to accommodate parking inside the building envelope. In this example, the T-shape is compressed. Each unit has a one-car garage at the side of the building, slightly recessed from the main facade. Each unit has an individual entrance directly adjacent to the driveway. A large front yard is prominently featured in front of the duplex.
- **T1b.** This example is similar to T1a, with the exception of the entrances and yard. A shared entrance in the center of the building connects the duplex with the street, resulting in a more pedestrian-friendly design, but also one that divides the front yard into smaller, less usable pieces.
- **T2a.** Unlike the previous example, the T- base in this example is used to accommodate parking through a two-car garage or mostly enclosed carport. With a wide driveway directly in front of the garage or carport, street presence is limited since the bulding is set back far from the property line and entrances are hidden.
- **T2b.** This example is similar to T2a, except it has individual entrances, clearly visible from the street, as opposed to the hidden shared entrance in T2a. Some variations widen the driveway, making the side yard less usable.

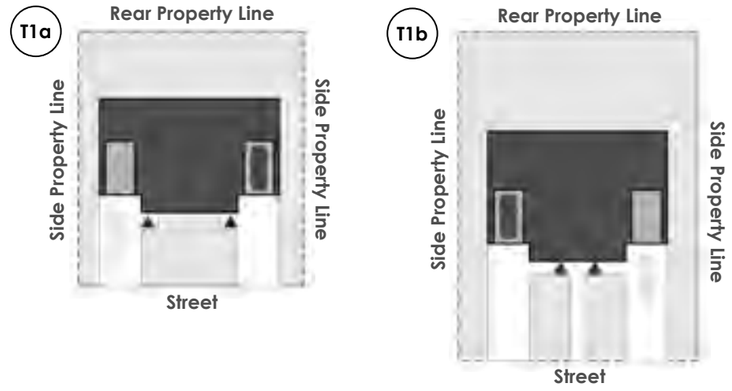
T-shaped Duplexes

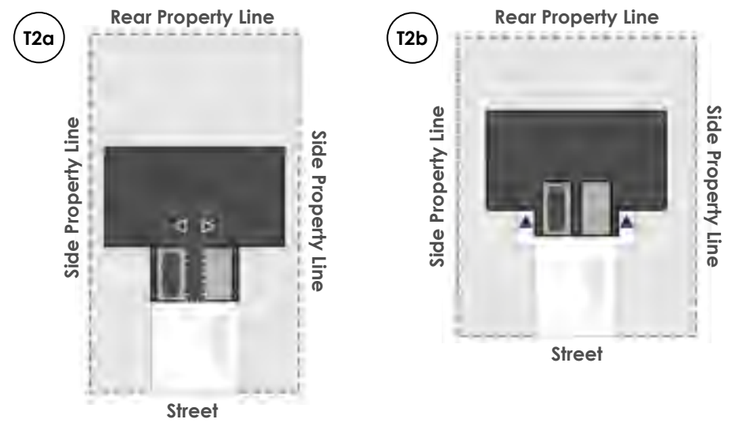
ORIENTATION

T1. T-bottom (wide) faces street.

T2. T-bottom (wide) faces street.

VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)





U-Shaped Duplexes

The average building footprint of a U-shaped duplex is 2,300 sq. ft. (Table 6), slightly smaller than the T-shaped duplex. With U-shaped duplexes, the arms of the U are often extended to accommodate a one- to two-car attached garage or a two-car detached carport in front of the main residence.

OBSERVATIONS

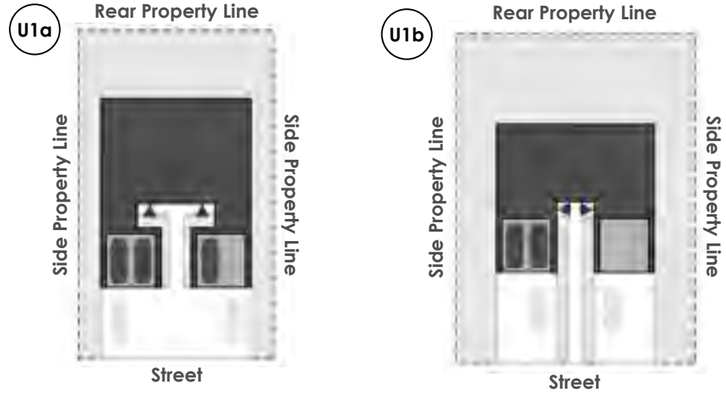
- **U1a.** Perhaps more than any other shape, U-shaped duplexes show considerable variation in how the building form accommodates cars. In this example, each arm of the U-shape holds a two-car garage. A shared entrance between the garage leads to individual entrances in a semi-enclosed courtyard. Additional parking is provided by a driveway that holds four additional cars.
- **U1b.** This example is similar to U1a, except the shared walkway divides the driveway in half and connects the entrances directly to the street. Both examples support a rear yard, but side yards function more like planting strips since the driveway is so wide.
- **U1c.** Moving the building near the rear property line and accommodating parking through a detached garage or carport results in much larger units for this duplex. Small rear and side yards are mostly leftover space that is not too usable.
- **U1d.** Tucking a two-car garage inside one arm of the U-shape results in one large and one medium green space for this site. This variation works well if landscaping and tree preservation are a priority.
- **U1e.** This compressed U-shape accommodates a one-car garage in each arm. The design makes it possible to have a mediurm or large front yard and rear yard.

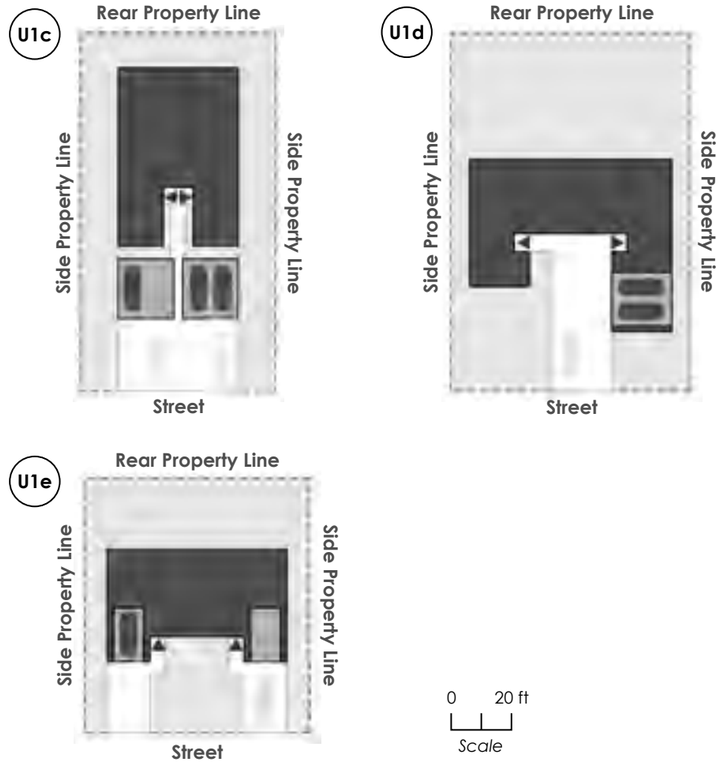
U-shaped Duplexes

ORIENTATION

U1. U-bottom faces St.

VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)





Lot Line
Building
Garage
Paved Area
Entrance
Car

0 20 ft
Scale

QUADPLEXES

Most quadplexes in this era are Rectangular or U-shaped. Shared court quadplexes, where multiple quadplexes share a driveway and parking, are common, as well as quadplexes with alley access that tuck parking behind the house.

The average footprint of a quadplex in this era decreases by 30 percent to 1,900 sq. ft. as the average floor count increases from 1 floor to 1.8 floors (Table 5) (nearly all quadplexes are two-story buildings in this period).

OBSERVATIONS

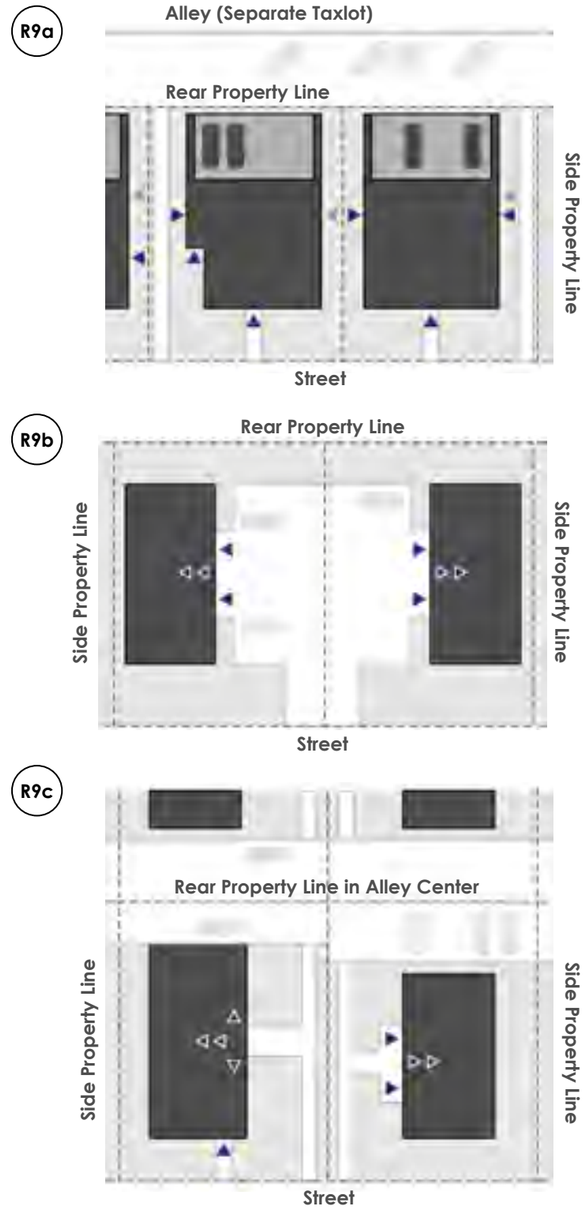
- **R9a.** This quadplex example is the one that most closely matches the look and feel of a single-family home. The variation is often two-story, but the front mass of the quadplex is gabled and single-story. Only one entrance is clearly visible from the street. Other entrances are on the side of the building, sometimes acccessible by stair. Parking is accommodated by a rear alley that connects to a four-car garage in back of the building. Interior walkways connect the street to the rear alley. Each quadplex has two modest front-side yards.
- **R9b.** In this example, two quadplexes, each on its own lot, mirror each other. They share a parking lot, which may accommodate up to 12 cars. Because the buildings are turned inward, the entrances are difficult to see. In many cases, the street-facing facades are mostly blank walls. Two units are downstairs and two units are upstairs.
- **R9c.** This example consists of rows of quadplexes, each on its own lot, that face a shared alley. Parking options vary, most often perpendicular or parallel parking in the alley. Interior walkways provide access from the street to the alley. The quadplexes are turned inward, so entrances are most often hidden. Two units are downstairs and two units are upstairs.

Rectangular Quadplexes

ORIENTATION

R9. Perpendicular to St.

VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)



Lot Line
Building
Garage
Paved Area
Interior Entrance
Exterior Entrance
Upstairs Entrance
Car

OBSERVATIONS

- **R10a.** In this example, four rectangular quadplexes, each on its own lot, face inward, two on corner lots and two on interior lots (a 2x2 configuration). A mid-block alley provides access to surface parking and a four-car carport in the center of each quadplex. Two units are upstairs and two units are downstairs. Each quadplex has one entrance that faces the street. Each corner lot quadplex provides a combined front and side yard that is spacious. Overall, the site planning for the 2x2 configuration results in a pedestrian-friendly design with a strong street presence.

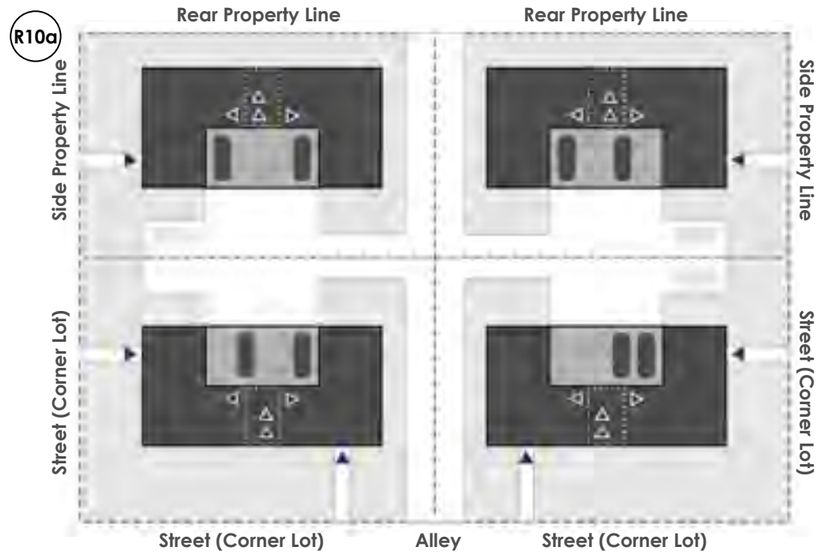
Rectangular Quadplexes

ORIENTATION

R10. Parallel to Street

Lot Line
Building
Garage
Paved Area
Interior Entrance
Exterior Entrance
Car

VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)



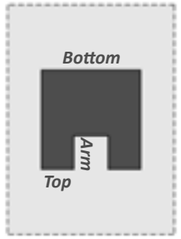
OBSERVATIONS

- **U2a.** U-shaped quadplexes may be oriented with their bottom or arms towards the street. In this example, the arms are oriented towards the street. The street view is attached parking, either two two-car garages side-by-side, facing the street, or two two-car garages tucked inside each arm. The entrances are accessible by an interior courtyard, which may be paved or landscaped. Two units are upstairs and two units are downstairs.
- **U3a.** This example shows a U-shaped quadplex with the bottom oriented towards the street. The street view is typically of two patios on the ground floor and two balconies on the upper floor. A shared driveway leads to a four-car detached garage and ample surface parking near the rear property line for each quadplex. The entrances are accessible via a narrow walkway that leads to an outdoor staircase. Two units are upstairs and two units are downstairs. Each quadplex has a spacious "front" yard near the street, keeping in mind that the the back of the building faces the street.

U-shaped Quadplexes

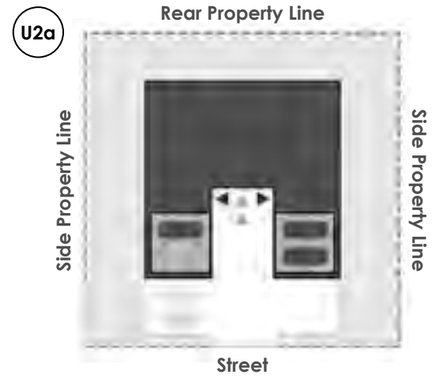
ORIENTATION

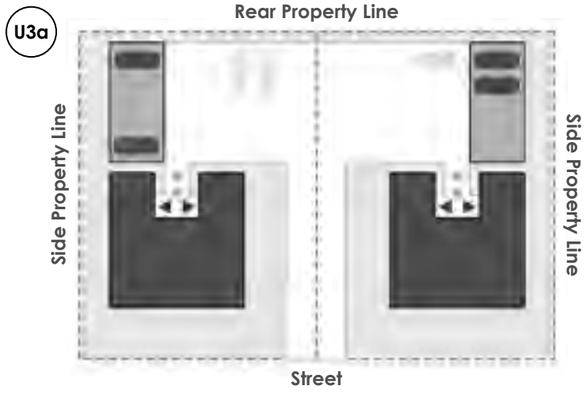
U2. U-top faces St.

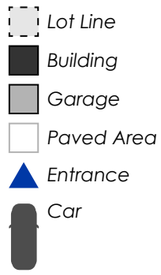


U3. U-bottom faces St.

VARIATIONS (Lot Size, Building Size, Entrances, and Off-street Parking)







TOWNHOUSES

Townhouses are dwelling units located on individual lots that share a common wall with at least one other dwelling unit. In this period, the average floor count of townhouses is 1.9 floors, indicating that most are two-story homes (taller than all other housing types, including quadplexes, with the exception of apartment buildings).

Of the nearly 2,300 townhouses that exist in Beaverton as of 2019, 13 percent were built between 1965 and 1984. Their shapes and configurations vary widely.

Below is an example of townhouses arranged around a shared courtyard (top), and another example of four-pair townhouses with attached parking (bottom). Each manages to preserve the existing evergreen trees on site.

Townhouses do not appear in Beaverton until 1968 when they are first built in Highland.

Of all existing townhouses in the city, 13 percent were built between 1965 and 1984.

Nationally, from 1940 to 1960, mobile homes accounted for one percent of all housing.

In 1970, they accounted for three percent, rising to five percent in 1980.

MOBILE HOME PARKS

There are no existing mobile home parks (MHPs) that can be traced back to this period. However, records indicate that there were MHPs in this area between 1965-1984.

Newspaper archives from the early- and mid- 1980s suggest that there were several development and financial barriers that led to their relocation or closure.

In 1982, the city added design regulations for MHPs to the Development Code. Many older models did not conform to newer design standards; therefore, only newer models might have been allowed in many MHPs.

In addition, MHPs were only permitted outright in the R5 zone, which accounted for a small percentage of the city's residential land inventory. MHPs were allowed in the R40, R20, R3.5 and R2 zones via a Conditional Use application, which is a barrier itself due to the extended review timeline, application fees, and uncertainty regarding the land use decision. They were prohibited in R-10, R-7 and R-1 zones.

Some commercial zones also allowed MHPs through a Conditional Use application, but this was a moot point for many since MHP owners could not compete with larger, commercial developers over the rising cost of land. By the mid-1980s, there were few MHPs in the Portland metro area because, according to one local developmer at the time, the public improvements were expensive but the return on investment was low, making MHPs too risky.

APARTMENTS

Apartments built between 1965 and 1984 account for 18 percent of existing apartment buildings in the city (3,200 units). The average floor count is 2.2 floors, indicating that most apartments are two-floor buildings.

1985 – 2004

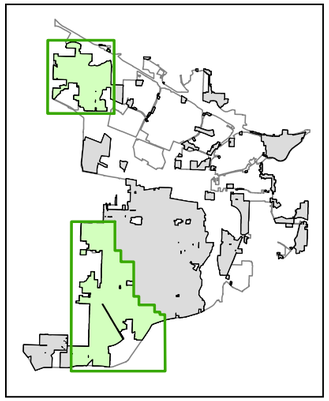
Single-family homes
Accessory dwelling units
Duplexes
Townhouses
Apartments

1985-2004

By 1980, Beaverton's population was about 32,000, and by 1990, 53,000. The city was expanding its boundary by annexing land, mostly in the western portion of the city in neighborhoods such as Five Oaks/Triple Creek, West Beaverton, Sexton Mountain and Neighbors Southwest.

Single-family homes dominate residential construction in this period, with nearly all built in subdivisions with curvilinear street with cul-de-sacs. Some streets are quite wide, with the ability to support on-street parking. Others are narrow and winding given the challenges of hilly terrain. The width of homes has slightly decreased, but they are significantly taller.

Duplex construction plummets by 94 percent considering that they are now only allowed in very few areas; only one triplex and one quadplex is built in this period. As plexes decrease, townhouses, condos, and apartments are built in larger numbers, revealing a different housing mix than seen in the previous era.



Takeaways:

- **Housing mix.** Single-family homes dominate homebuilding since the 1978 Development Code update restricted where plexes are allowed. From 1985-2004, about 6,500 single-family homes were built compared to 18 plexes (a 94% decrease from the previous era, excluding townhouses and condos),
- **Lot size and coverage.** The lot size for single-family homes decreases by 10% to about 8,300 sq. ft. Lot coverage. increases slightly to 31%.
- **Home size.** The building footprint for single-family homes decreases slightly, but homes becomes significantly taller, appearing bulkier next to homes from earlier eras.
- **Street patterns.** Curvilinear streets with cul-de-sacs are the predominant street network form in neighborhoods, especially in Western Beaverton.
- **Emerging trends.** Even though larger single-family homes are the norm, pocket neighborhoods with smaller homes on smaller lots emerge.

TABLE 7. Site Development Patterns (1985-2004 Homes) [1]

TYPE	TOTAL	LOT SIZE	LOT COVERAGE [2]	AVG. HEIGHT
Single-family	6,532	8,280 sq. ft.	0.31	1.9 floors
Duplex [3]	16	N/A [4]	N/A [4]	1.8 floors
Triplex	1	12,000 sq. ft.	0.19	1 floor
Quadplex	1	16,000 sq. ft,	0.28	2 floors

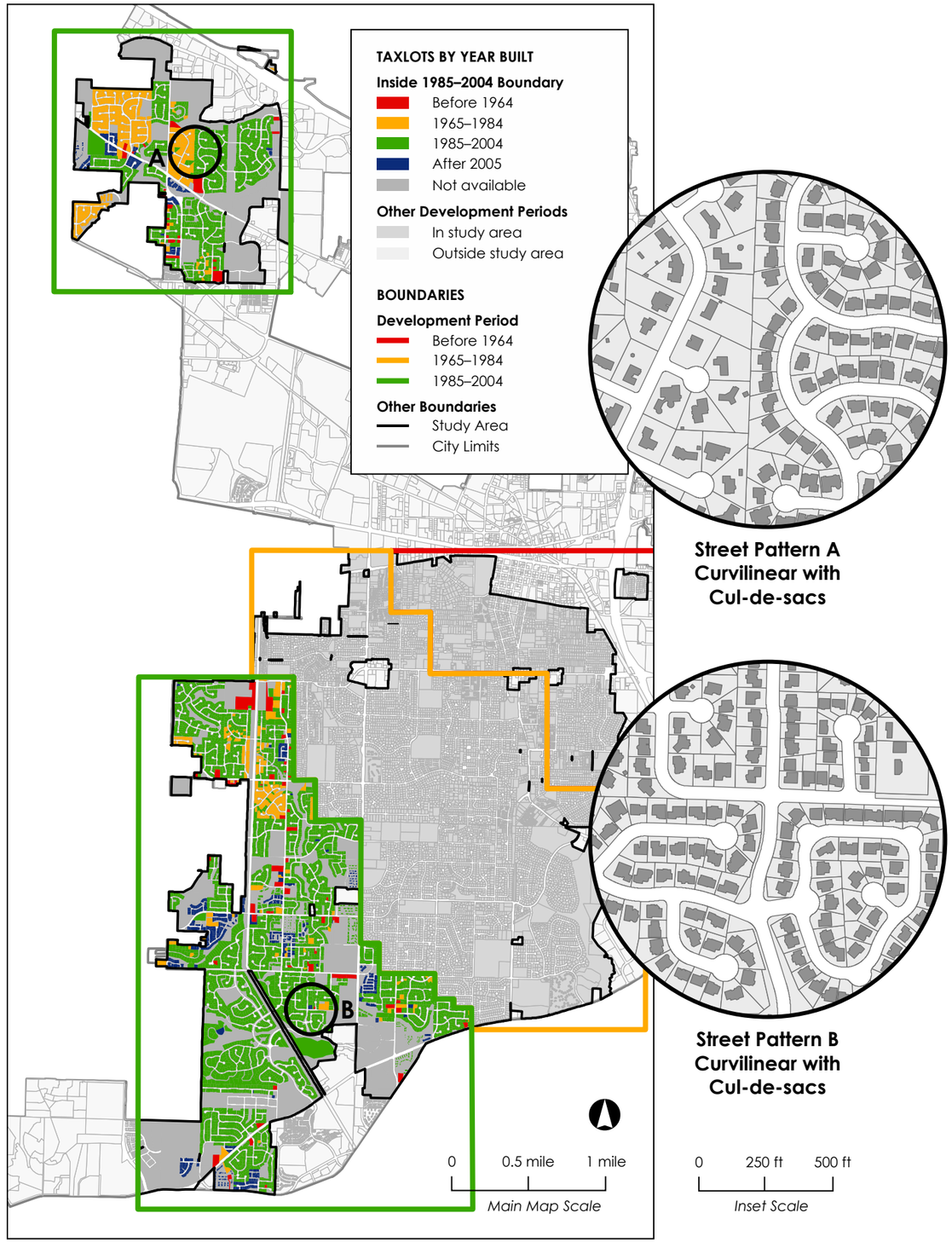
TABLE 8. Building Patterns (1985-2004 Homes)

TYPE	SUBTYPE	FOOTPRINT
Single-family	Various	2,300 sq. ft.
Duplex [5]	T-shaped	2,300 sq. ft.
	U-shaped	2,700 sq. ft.

NOTES

1. Setbacks were evaluated for plexes, but removed from the table because the results varied significantly for all types and development eras.
2. Flaglots removed from lot coverage calculations.
3. If a duplex were also classified as a townhouse or condominium, it was removed from analysis since the lot size and coverage patterns vary.
4. Lot size and coverage not calculated since somes lot have multiple buildings, as well as access and parking on separate lots.
5. Footprint and unit size provided for predominant types only.

FIGURE 8. Development Era Boundary for the Area with a Majority of Homes Built from 1985 to 2004



SINGLE-FAMILY HOMES

Building Patterns

The average building footprint for detached single-family homes decreases slightly, but homes becomes significantly taller, appearing bulkier next to homes from earlier eras.

Size. The average lot size decreases by 10 percent in this era and average building footprint decreases to 2,300 sq. ft. (Table 8). Given smaller lots, lot coverage increases to 31 percent for many homes. However, there is a niche building pattern of cottage-type homes on smaller lots (pictured top left).

Height. The average floor count is 1.9 floors (Table 7), indicating that nearly all homes are two floors, some even three floors. Developers accentuated the verticality of these homes through double-height gabled entrances and conical projections, common in Neo-Tudor, Neo-French, Neocolonial and Mansard homes built in the

Site Patterns

Setbacks and Yards. Since average lot size decreased and building footprint increased in this era, front, side, and rear yards are becoming increasingly smaller. A single pattern is not dominant in this era given the unique mix of topographies in each neighborhood.

Off-Street Parking. By 1980, 34 percent of households owned two cars and 18 percent owned 3 or more cars, nationally. This pattern is evident in single-family homes where two- and three-car garages are now quite common.

ACCESSORY DWELLING UNITS (ADU)

An ADU is a small, self-contained home on the same property as a principal home. It can be attached or detached from the principal home. In 1999, Beaverton updated the Code to allow ADUs in all residential zones, limiting the size of an ADU to 800 sq. ft. Only one permitted ADU was actually built in this period.

Only one ADU, pictured left in this single-family home, is permitted and built in this period.

DUPLEXES

Duplex construction plummeted by 94 percent considering that they were now only allowed in very few areas. In fact, only 16 duplexes were built in this development era (Table 7). The majority of duplexes in this development era are T-shaped and U-shaped, echoing the trend from the previous era. Pictured below is a T-shaped duplex in the forefront of the photograph.

Only 16 existing duplexes were built in this period, a combination of T-shaped and U-shaped duplexes.

TOWNHOUSES

Within this development boundary, 600 townhouses were added between 1985 and 2004, mostly in Sexton Mountain and, to a lesser extent, in South Beaverton and West Beaverton. The average floor count is 2.6 floors (citywide), higher than any other housing type, including apartment buildings.

Townhouses built in this period are taller than all other housing types, including apartment buildings.

APARTMENTS

Across the city, this period experienced the biggest boom in construction with nearly 50 percent of apartments (6,800 units) being built throughout the city between 1985 and 2004. Nearly 4,300 apartment units were built within this development boundary alone. The average floor count is 2.5 floors, indicating an even mix of two- and three-story buildings.

4,300 apartment units were built within this development boundary between 1985 and 2004.

CURRENT TRENDS

DUPLEXES

Shapes

Rectangular duplexes are box-like buildings that can sited in the center, a corner or near a side property line, resulting in front, side and rear yards that can be small or large depending upon the site configuration.

H-shaped duplexes maximize privacy by separating each unit with a single-story breezeway or common space. The design also includes individual entries and semi-private front-side and rear-side yards.

Architect: Pavonetti Architecture

L-shaped duplexes are typically placed in a corner or near a side property line to create more usable space inside the L-shape that can be used as an interior courtyard or parking.

Architect: OfAA

Shapes

T-shaped duplexes have a single projection in the center of the building, which is either used for the main living space or a two-car garage.

Architect: Turnbull Griffin Haesloop

Photo: David Wakely

S-shaped duplexes typically involve two rectangular or L-shaped volumes that are slightly offset from each other to create a zig-zag pattern. The shift in alignment results in more privacy for the front and rear yards.

Architect: Mark Odom Studio

U-shaped duplexes are most often associated with two prominent extensions that house a one- or two-car garage on the lower floor and living quarters on the upper floor.

Photo: Lucas Muro

Entrances

Ground floor individual entrances (both in front of house). This Passive House certified duplex in Portland, Oregon creates identical units that each have ground floor individual entrances next to one-car garages.

Architect: Robert Hawthorne

Raised individual entrances (both in front of house). To enter this duplex in Austin, Texas, a person walks through the front yard to a staircase that is a full floor above street level. Keeping each staircase integrated with the primary mass of the building allows the front yard to remain larger and uninterrupted.

Architect: Pavonetti Architecture

Individual entrances hidden behind front wall. A five foot brick wall with wooden doors at the property line provides additional privacy for the residents of this duplex, but disconnects it from the street.

Architect: 85 Design

Photos: To Huu Dung, Dang Gia Khanh, Nguyen Thao My Le

Ground floor individual entrances (one in front, one in rear). This narrow lot duplex in Austin, Texas addresses the limitations of its site by placing one entrance in the front of the house and one entrance in the rear, accessible by a pedestrian pathway in the side yard.

Architect: Salas Design Workshop

Photo: Allison Cartwright

Shared entrance. Taking advantage of the 66 ft. lot width, this sprawling, rectangular duplex in Vancouver, BC features a prominently centered shared entrance on the central axis of the building. Each unit is 1,800 sq. ft. and has four bedrooms.

Architect: David Nicolay of Evoke International Design

Photo: Averra Developments

Combined individual and shared entrances. Located in Kansas City, a mezzanine at the base of this duplex softens the impact of the main living level appearing so high above the street and provides a space where residents and guests can connect before walking into separate units.

Architect: Design+Make Studio

Yard Types

Open front / side yards. This corner lot duplex in San Jose, CA provides a combined front-side yard on the street corner for all of the building residents to enjoy.

Architect: Mayberry Workshop Architecture

Photo: Gregory Cortez

Fence divides <u>front</u> yard. This Australian-based duplex uses an approximately four foot interior wall to divide the entire front yard into two separate yards. From the sidewalk, a separate entrance leads into each fenced front yard.

Architect: SG2 Design

Photo: Michael Gazzola

Interior courtyard. With no side yards, this duplex in Vietnam relies on a narrow, interior courtyard with a single planted tree to bring fresh air and light into each unit facing the courtyard.

Architect: 85 Design

Photos: To Huu Dung, Dang Gia Khanh, Nguyen Thao My Le

Open rear yard. Situated on a corner lot in a hilly neighorhood, this duplex in New Hope, PA retains the existing trees to create a lush, spatious and heavily wooded rear yard.

Architect/Developer: Studio Hiller

Fence divides <u>rear</u> yard. In this duplex in Austin, Texas, the design employs an eight foot wall to divide the entire rear yard into two separate yards. Not pictured, the front yard remains an open, uninterrupted space.

Architect: Pavonetti Architecture

Gardens replace lawns. This Craftsman duplex in Los Angeles turns the small front yard into a garden on both sides of a pedestrian walkway that buffers the front porch from the street.

Single Family Conversions

Vancouver, Canada. This detached single-family home in Vancouver, Canada was converted into a duplex with equal-sized units. Retaining the historic heritage of the home involved raising the home and performing significant technical work.

Architect: Eric Stine

Photo: Averra Developments

Oakland, CA. To convert this 1907 single-family home into a duplex, the contractor lifted the house, built a new foundation and renovated the interior, similar to the Vancouver duplex. A long stairway places the one street-facing entry high above street level.

Designer: C. Tito Young

Toronto, Canada. This project converted student rental housing built between 1905 and 1910 into a 3,800 sq. ft. duplex (with the option for the property owner to convert back into a detached single-family home in the future).

Design Architect: Mehdi Marzyari

Photo: Sam Javanrouh

Green Building

Victoria, British Columbia, Canada. This duplex is certified as a Passive House project, using carefully placed windows that allow cross ventilation to flush the building, a tight buiding envelope and wide overhangs, among other tools, results in a building that requires minimal energy for heating and cooling.

Architect: Cascadia Architects

Camberwell, Australia. Rooftop solar panels, a breathable wall cladding that increases increase thermal performance, and carefully placed windows that facilitate cross-flow ventilation are the key green features in this duplex.

Architect: SG2 Design

Photo: Michael Gazzola

Pebble Beach, CA. This is another example of a Passive House certified duplex that relies on green building techniques to reduce monthly energy bills. The building is 4,800 sq. ft. total (2,400 sq. ft. per unit).

Architect: Turnbull Griffin Haesloop

Photo: David Wakely

TRIPLEXES

Entrances

Two side-by-side entrances visible from street. This 3,800 sq. ft. cube-like triplex on a 4,000 sq. ft. lot (40 ft. wide x 100 ft. deep) has three street-facing entrances. Two entrances are clearly visible from the street, and a third is accessible by a stairway into the basement unit.

Architect: workshop AD

Parking

Three attached one-car garages. This triplex provides one parking space per unit for this triplex in Portland. Maximizing parking and building multiple driveways leads to a site design that is mostly hardscape with minimal green space.

Photo: Sightline

Two stacked entrances visible from street. With this three-story triplex, there is an individual entrance on each floor. Two are street-facing, though concealed behind a perforated wall. The third entrance is accessible by walking down a stairway on the side of the property.

Detached three-car garage. Parking is tucked in the rear of this property, allowing the triplex to have a stronger street presence. The long driveway leading to the detached garage results in less usable space for a yard, but the driveway is mostly pervious, facilitating more efficient on-site drainage.

Architect: Yu2e

Photo: Taiyo Watanabe

Two entrances visible from street, one on each corner. This corner lot triplex has one entrance on each street corner. Based on the photograph, it is not known if one entrance is shared and/or the third entrance is concealed.

Multiple Building Configurations

A detached single-family and duplex on one lot. The developer kept the original detached single-family home and built a new freestanding duplex in the rear yard. The duplex is built according to the highest *Built Green* standards. Each unit in the duplex is 1,100 sq. ft. The driveway is entirely permeable, made of drivable grass and pavers.

Developer and Architect: b9 Architects

Single Family Conversions

A detached single-family converted to triplex. This building was reconfigured into a triplex without the need for a building addition. Two street-facing entrances are visible on one corner, and a third street-facing entrance is visible on the opposite street corner.

QUADPLEXES

Entrances

No street-facing entrances. There are two entries on each side of the building that are accessible by the side yard only. A pedestrian pathway connects each entry with the sidewalk.

One street-facing entrance. In this quadplex, the other three entrances are accessed by walking along a pathway on the side of the house to a central courtyard.

Architect: WC STUDIO

Photos: Steve Campagna

Two street-facing entrances. On this corner lot quadplex, two street-facing entrances are visible from the street corner. The other two entrances are not visible.

Parking

No off-street parking. Since no off-street parking is provided for this quadplex in Portland, the design accommodates a modest front yard and ample rear yard that can be shared by all residents.

Two rear alley surface parking spaces. In this quadplex (two duplexes on one site), there are two rear alley parking spaces total, meaning 0.5 spaces/unit.

Architect: WC STUDIO

Photos: Steve Campagna

Multiple Building Configurations

Two duplexes on one lot.
This quadplex in Tacoma is on a 25 ft. x 100 ft. infill lot with minimal setbacks. The design consists of two duplexes with a central courtyard that can be shared by all residents. The homes are intended to be rental units.

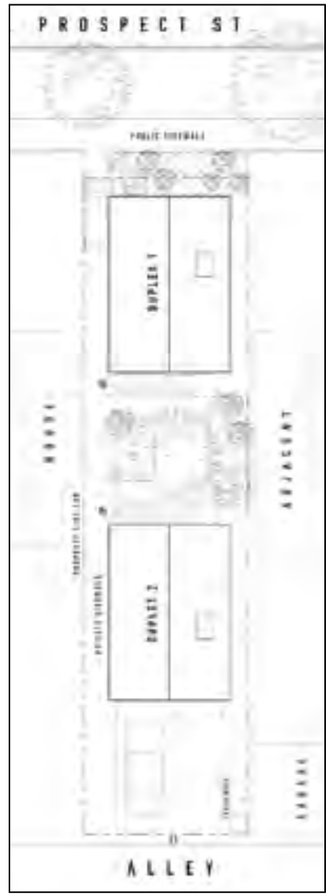
Architect: WC STUDIO

Photos: Steve Campagna

Two duplexes on one lot.
This quadplex in Tacoma is also built on a narrow and deep lot with minimal setbacks. As with the previous project, the design consists of two duplexes with a central courtyard that can be shared by all residents. The homes are intended to be rental units.

Architect: WC STUDIO

Photos: Steve Campagna



Single Family Conversions

A detached single-family converted to a quadplex. This quadplex in Seattle is a live/work building on a 3,600 sq. ft. lot (30 ft. wide x 120 ft. deep). The main floor is built out as commercial unit. The top floor is a two bedroom apartment, and the bottom floor has two basement studio apartments.

APPENDICES

APPENDIX A. Sources

Notes

1. Richard Rothstein, The Color of Law (New York: Liveright Publishing Corporation, 2017), 9.

2. Rothstein, *The Color of Law,* 78.

3. Rothstein, *The Color of Law,* 13.

4. Rothstein, *The Color of Law,* 122-3.

5. Rothstein, *The Color of Law,* 179.

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7. U.S. Department of Commerce: Bureau of the Census, *1960 Census of Population* [Data file]. Retrieved from https://www.census.gov/prod/www/decennial.html

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9. Coalition of Communities of Color, *Leading with Race: Research Justice in Washington County* (Portland, Oregon: Coalition of Communities of Color, 2018), 340.

10. Virginia & Lee McAlester, *A Field Guide to American Houses* (New York: Alfred E. Knopf, 2011), 68-69.

11. Carl E Kramer, "The Evolution of the Residential Land Subdivision Process in Louisville. 1772-2008," *The Register of the Kentucky Historical Society*, no. 1 (Vol 107), 72.

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APPENDIX B. Census Data

TABLE 9. Population, Percent Distribution by Race, 1940-2000 [1]

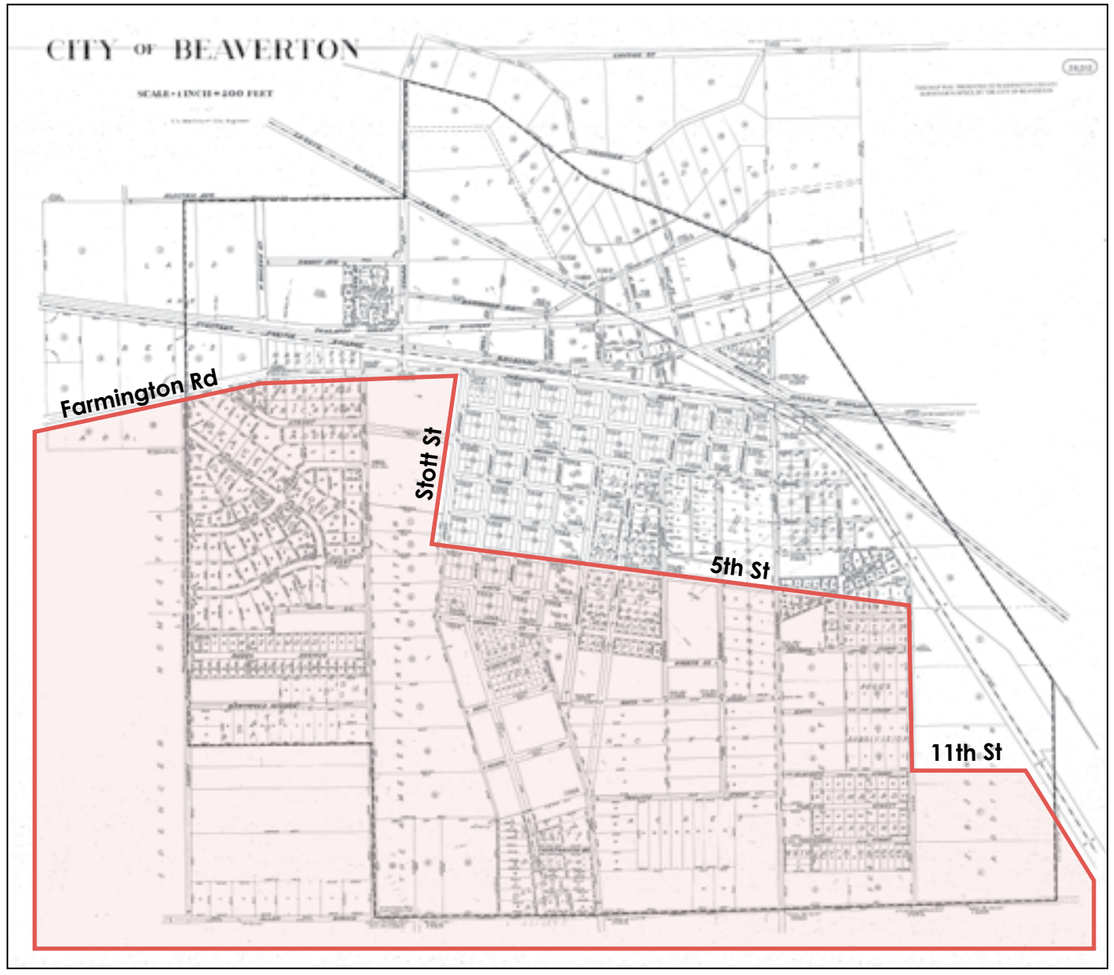
		POPULATION BY RACE			POPULATION BY ETHNICITY	
YEAR	AREA	TOTAL	WHITE	PEOPLE OF COLOR [1]	NOT OF HISPANIC ORIGIN	HISPANIC ORIGIN (ANY RACE)
1940	**Beaverton**		**Unavailable**			
	Washington County	39,194	99.2	0.8		
	Multnomah County	355,099	98.1	1.9		
1950	**Beaverton**	**2,512**	**> 99.9**	**< 0.1**		
	Washington County	61,269	99.7	0.3	Not Available	
	Multnomah County	471,537	97.0	3.0		
1960	**Beaverton**	**5,937**	**98.8**	**0.2**		
	Washington County	92,237	99.6	0.4		
	Multnomah County	522,813	95.7	4.3		
1970	**Beaverton**	**18,577**	**98.9**	**1.1**		
	Washington County	157,920	98.9	1.1	Not Reliable [2]	
	Multnomah County	556,667	94.0	6.0		
1980	**Beaverton**	**30,582**	**92.8**	**7.2**	**97.7**	**2.3**
	Washington County	245,808	95	5	97.4	2.6
	Multnomah County	562,640	90	10	98.0	2.0
1990	**Beaverton**	**53,310**	**89.4**	**10.6**	**97.6**	**2.4**
	Washington County	311,554	91.9	8.1	95.4	4.6
	Multnomah County	583,887	87	13	96.9	3.1
2000	**Beaverton**	**67,006**	**79.8**	**20.2**	**88.3**	**11.7**
	Washington County	445,342	82.2	17.8	88.8	11.2
	Multnomah County	660,486	79.2	20.8	92.5	7.5

NOTES

1. The U.S. Census did not historically define "person of color" or, in fact, use that language for past censuses. However, the term "white" is consistently used in past censuses. For the table aove, the following list describes how "person of color" is used in the census for that year;
   - 1940 and 1950: "Negro" and "Other races."
   - 1960 and 1970: "Negro, Indian, Japanese, Chinese, Filipino, and Other."
   - 1980: "Black, American Indian, Eskimo, Aleut, Japanese, Chinese, Filipino, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, Samoan, and Other,"
   - 1990: "Black; American Indian, Eskimo or Aleut; Asian or Pacific Islander (with subcategories), and Other."
   - 2000: "One Race: Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Some other race." and "Two or more races."
2. According to The Pew Research Center, the data collected in 1970 relating to ethnicity was only sent to a sample of the population and the data not match other estimates; therefore, it is not included in this table. In 1980, the question was presented to the entire population, and the data was more reliable; therefore, it is included in this table.

APPENDIX C. Historic Maps

FIGURE 9. City of Beaverton, City Limits and Street Patterns, 1946



A 1946 map with residentrial districts mapped is not available at the time of publication.

STUDY AREA

1946

FIGURE 10. City of Beaverton Zoning Map, 1978

FIGURE 11. City of Beaverton Zoning Map, 1981

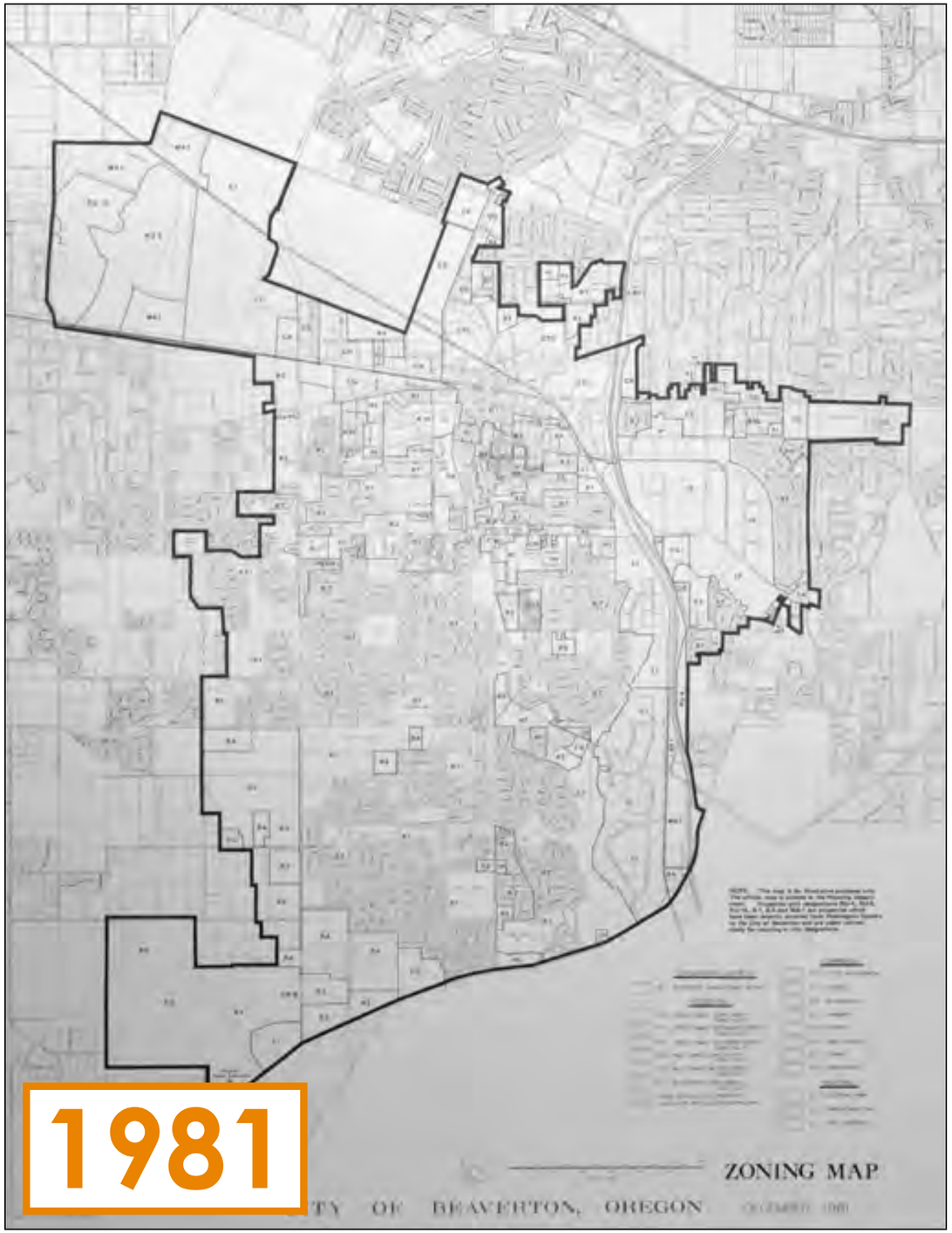


FIGURE 12. City of Beaverton Land Use Map, 1982

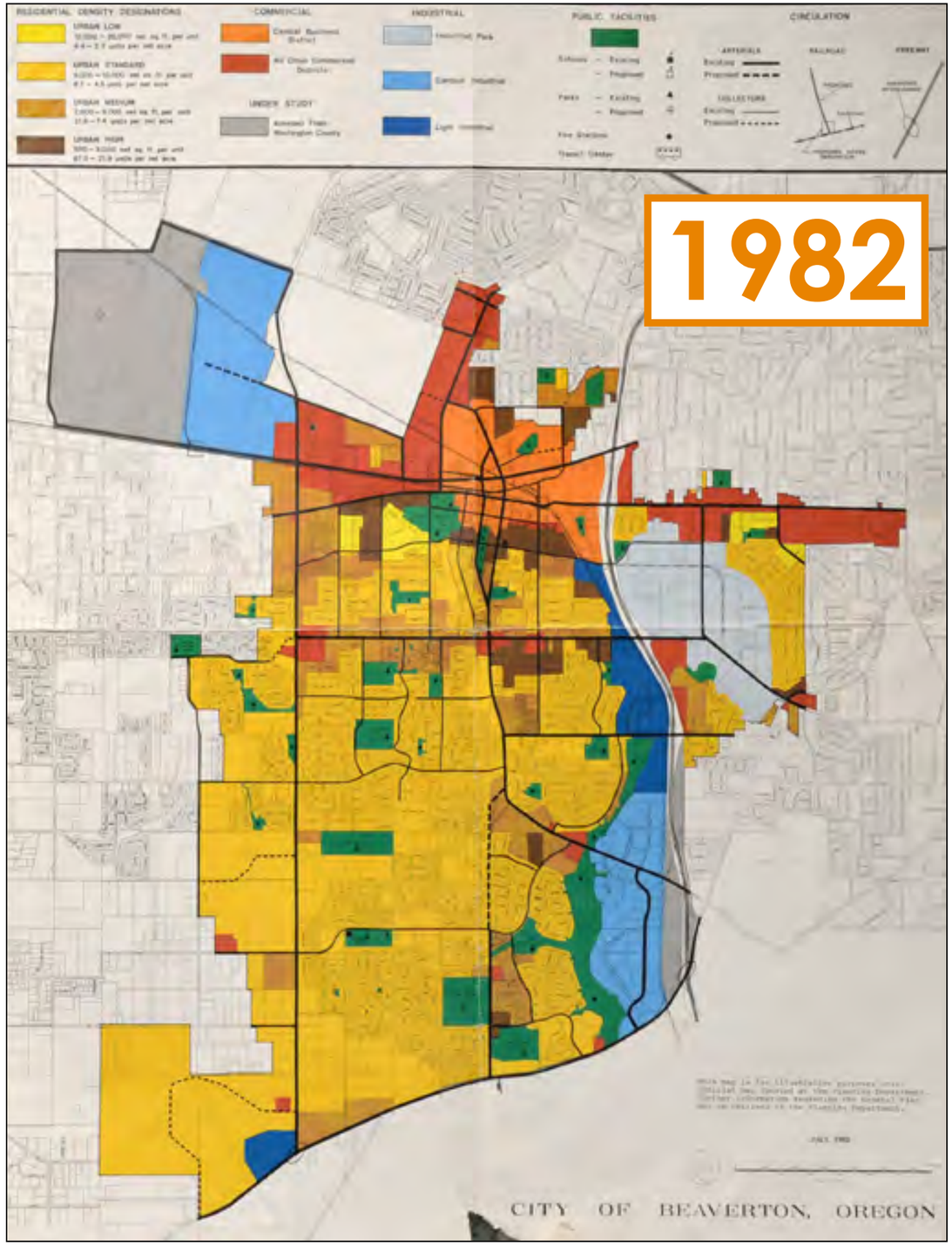


FIGURE 13. City of Beaverton Zoning Map, 1984

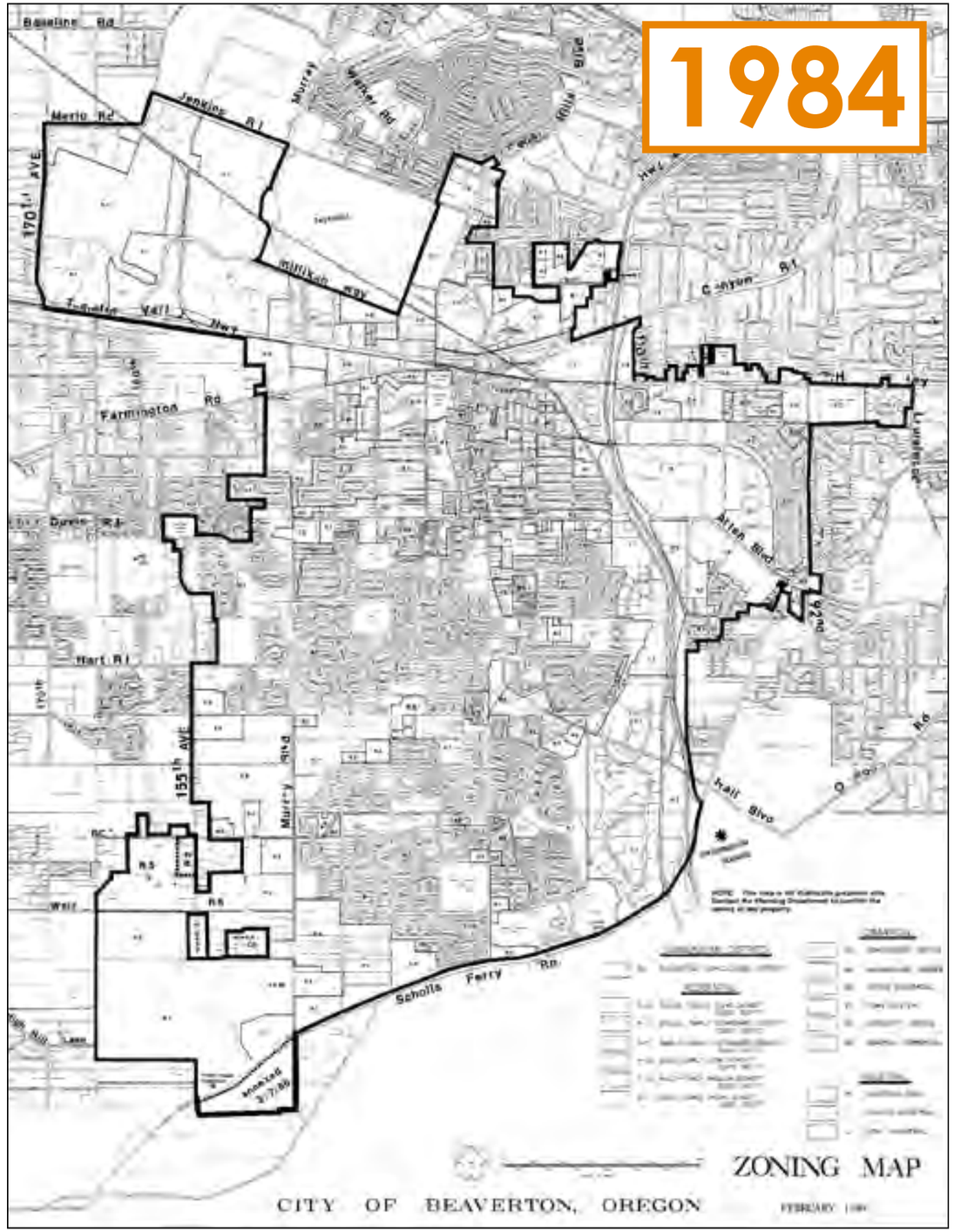
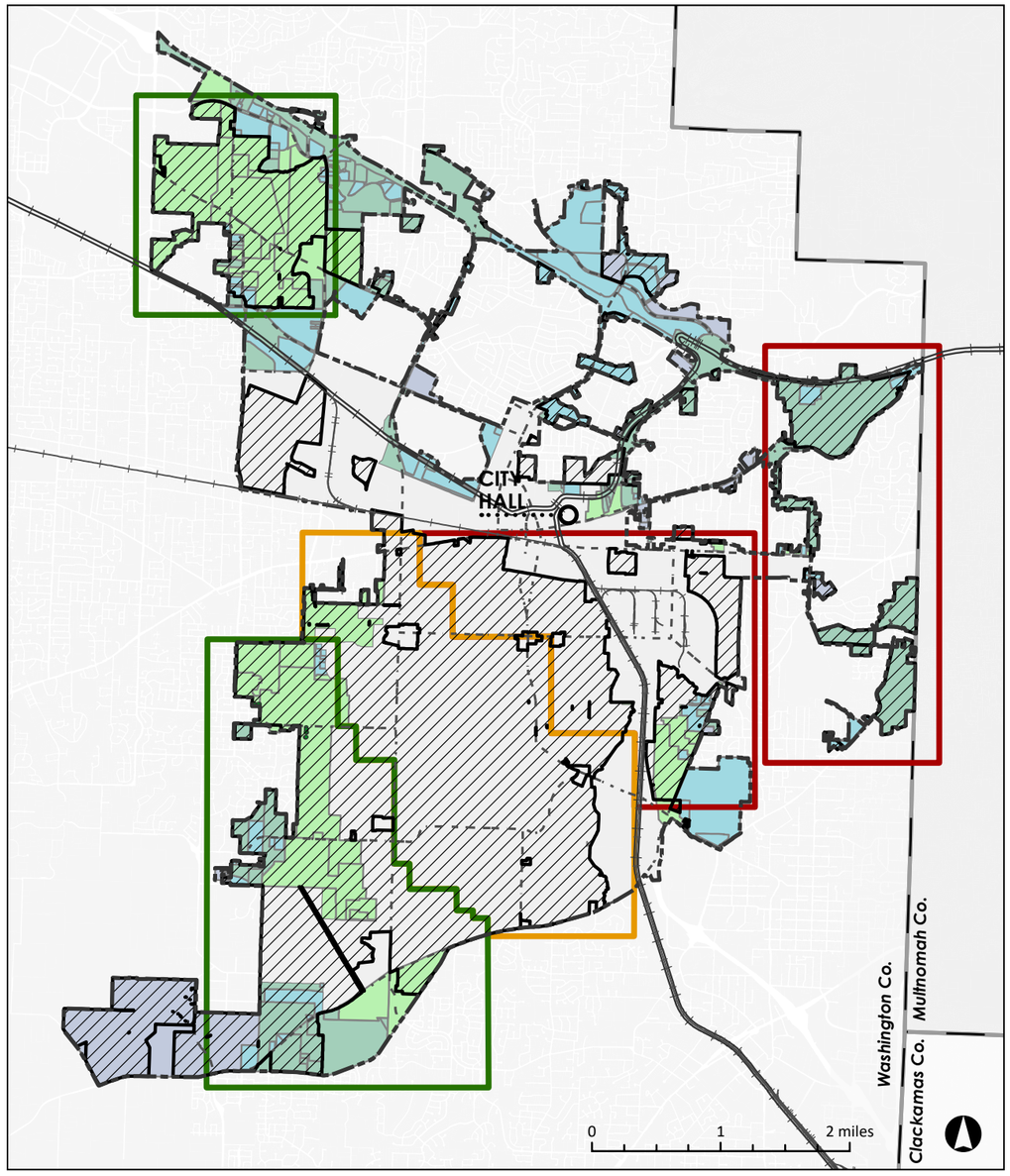


FIGURE 14. Development Era Boundaries and Annexation History, 1985-2019



Year Annexation Effective

- 2020 - 2024
- 2010 - 2019
- 2000 - 2009
- 1990 - 1999
- 1985 - 1989
- Pre-1985

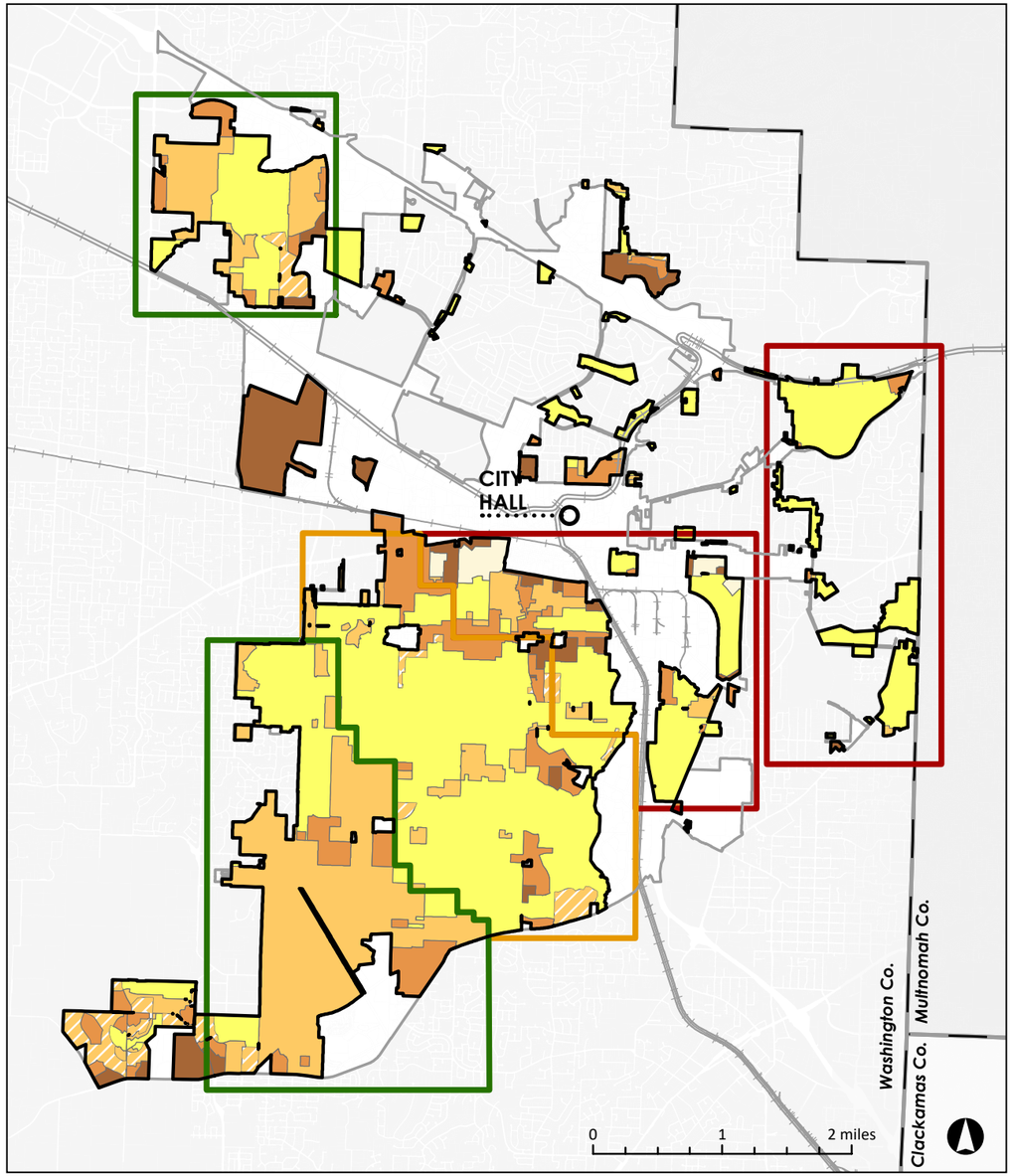
Development Era Boundaries

- Before 1964
- 1965-1984
- 1985-2004

Reference Information

- Study Area
- City Limits
- County Limits
- Railroads
- Light Rail Lines

FIGURE 15. Development Era Boundaries and Residential Zones, 2019



Residential Zones

- R1: Urban High Density (1,000 sq. ft. per unit)
- R2: Urban Medium Density (2,000 sq. ft. per unit)
- R4: Urban Medium Density (4,000 sq. ft. per unit)
- R5: Urban Standard Density (5,000 sq. ft. per unit)
- R7: Urban Standard Density (7,000 sq. ft. per unit)
- R10: Urban Low Density (10,000 sq. ft. per unit)

Development Era Boundaries

- Before 1964
- 1965-1984
- 1985-2004

Reference Information

- Study Area
- City Limits
- County Limits
- Railroads
- Light Rail Lines