



Accessory Dwelling Unit



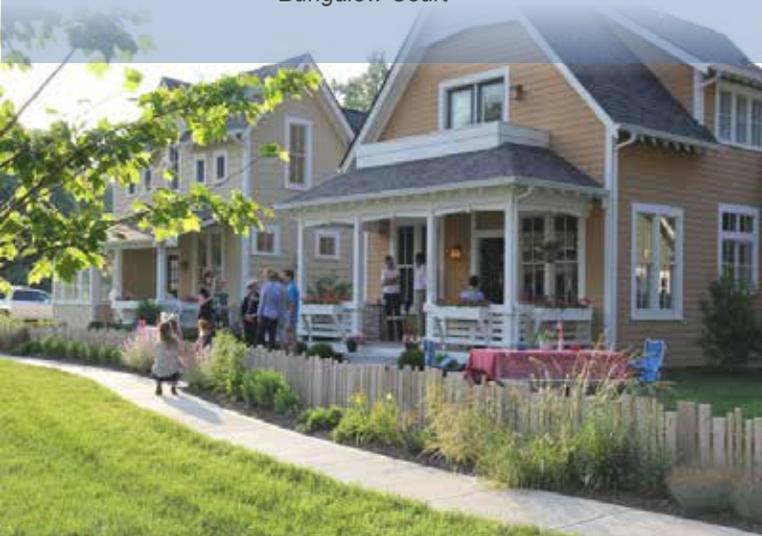
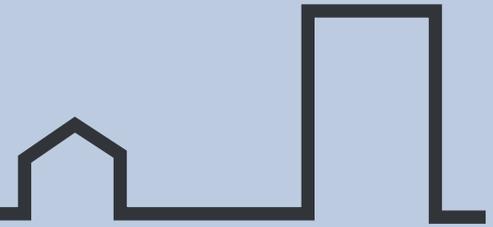
Fourplex



Courtyard Housing

THE MISSING MIDDLE HOUSING STUDY

SEPTEMBER 2018



Bungalow Court



Townhouses



Courtyard Apartment



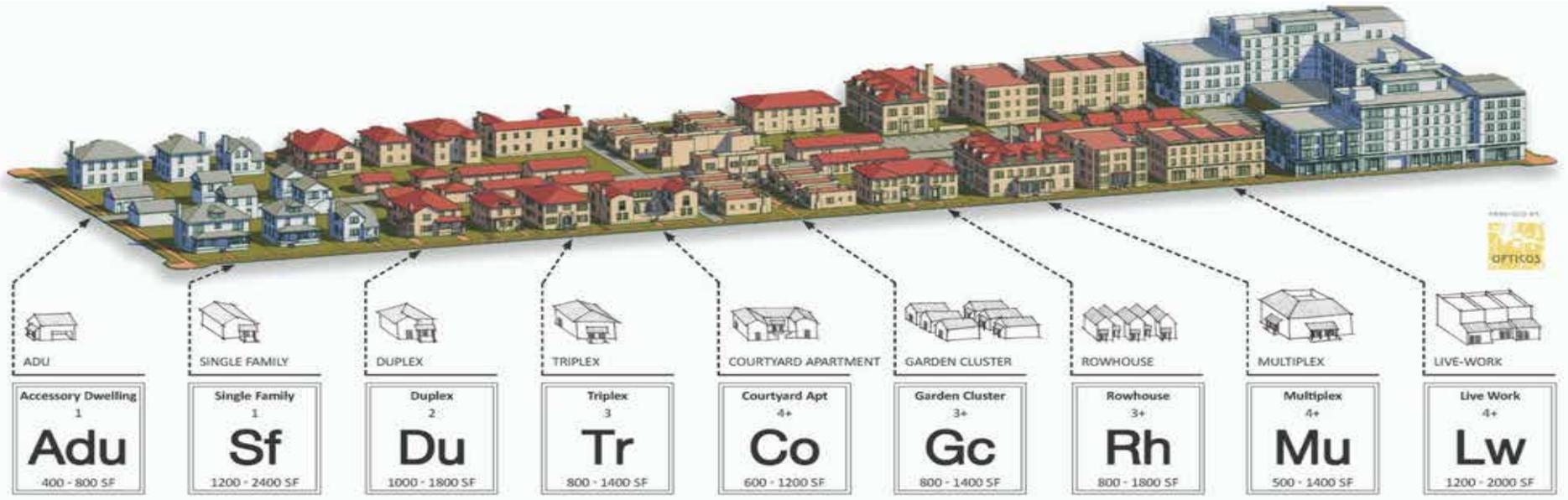


Diagram by Opticos Architects
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TABLE OF CONTENTS

I. INTRODUCTION	4
METRICS OF CHARACTER	5
HOUSING TYPOLOGIES	5
CHALLENGES	.....	9
MISSING MIDDLE FEATURES	.....	10
BENEFITS	.....	11
NATIONAL PRECEDENTS	.....	12
-Case Study: Minneapolis, MN		
-Case Study: Olympia, WA		
-Case Study: Seattle, WA		
-Case Study: Portland, OR		
-Case Study: Austin, TX		
II. ECONOMIC ANALYSIS	.....	18
-Methodology		
-Step One: Focus Groups And Discussion		
-Step Two: Case Study Results And Discussion		
III. ZONING ANALYSIS	.....	24
IV. CONCLUSION	.....	30



*Bungalow Court
Seattle, WA*



*Accessory Dwelling Unit
Vancouver, BC*



*Duplex
Richmond, VA*

I. INTRODUCTION

Missing Middle housing is a residential typology spanning the range of densities between single-family detached homes and mid-rise to high-rise apartment buildings. Missing Middle housing types were common in the United States through the first half of the 20th century but have largely disappeared from development over the past 70 years. With current and future projected regional demographics and with an enormous need for more housing within Montgomery County, Missing Middle can provide needed additional housing options.

This report summarizes Planning Department research and the work of a Developer Working Group regarding the history and typologies of the Missing Middle housing, a review of other Missing Middle efforts within the country, the economic feasibility of Missing Middle and ideas for adjusting zoning and the development review process to encourage more of these typologies.

Missing Middle building types help create a moderate density that can support public transit, services and amenities within walking distance. Missing Middle represents housing types that fill an unmet need and has sparked a national conversation, spearheaded in large part by architect Daniel Parolek of Opticos Design in Berkeley, CA, and the Congress for New Urbanism (CNU).

The return of the Missing Middle is important today as a way to solve the housing problems in Montgomery County and many jurisdictions across the nation. Demand for homes is persistent and space for new dwellings is limited, forcing families to consider too many trade offs, such as paying higher housing costs or selecting homes in communities far from their employment. This problem is especially acute in our more walkable, densely populated suburban neighborhoods. Today, we have

limited land left for large developments. With an expected increase of 87,100 households in Montgomery County over the next 20 to 30 years, we must consider where and how to build so that our future neighbors, children and parents will be able to afford to live here.

There is not a single solution to this housing and affordability issue. Solving the problem must involve multiple housing types to meet the needs of existing and future demographics. This is a problem that cannot be solved with 200-unit, 5-story apartment buildings or 2,500 square-foot townhouses alone. Finding ways to fit new housing into existing areas while maintaining the desired character of Montgomery County neighborhoods will be a challenge for residents, planners and architects. Embracing the various types of Missing Middle housing is a way to meet that challenge.

Missing Middle housing types range from small lot bungalows and bungalow courts to duplexes, tri and quadplexes, and from townhouses and stacked flats, to small-scale apartment buildings. These diverse housing types can provide a way for communities to bridge between low and high densities and develop more character-rich, walkable neighborhoods that appeal to a broad range of residents.

Each of these types meets its own demographic need with its own financial pressures, from empty nesters to young families, individuals just joining the work force to the elderly and disabled residents who want to stay in a family neighborhood. Specifically, Missing Middle housing types benefit a wide range of potential homeowners and renters, including single-parent families, aging-in-community seniors, recent college graduates, couples entering the housing market and adults with disabilities.

METRICS AND CHARACTERISTICS

The differences in Missing Middle typologies can be measured and compared to their more prevailing counterparts to better understand the benefits of each type. A proposed range of types and their metrics and characteristics are illustrated in a chart on the following pages provided by the architectural consultant, Torti Gallas + Partners. The metrics include density, lot size and configuration, parking strategy, height, building dimension, unit type and unit size.

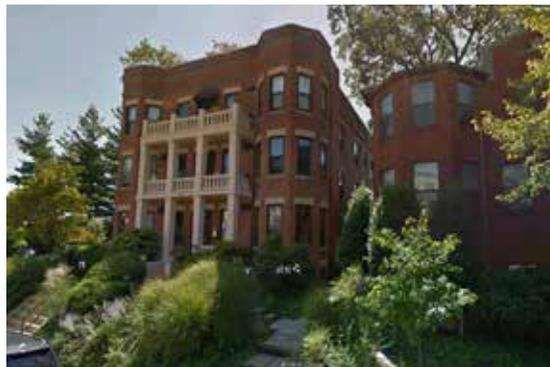
A particularly notable metric is density. Missing Middle housing can incrementally increase densities in order to increase unit supply in a land-constrained market. Density is the measurement that tells this story, and densities of three to 10 times that of a single-family detached house on a quarter acre lot are represented in the Missing Middle home alternatives illustrated in the chart.

Unit types and sizes are other key metrics. Creative design of one and two-bedroom units of comparably smaller square footage are key to meeting missing market demand and delivering the increased density cited above.

Because the Missing Middle housing typologies consist of multi-unit and clustered housing that are compatible in scale with single-family homes, this housing trend is gaining more traction across the country. Many cities and counties, including ours, are beginning to conduct studies to see how they can reinvigorate and expand the Missing Middle, and foster a wider range of housing choices.



*Courtyard Housing
Richmond, VA*



*Sixplex, Takoma Park, MD
Credit: Google Maps*



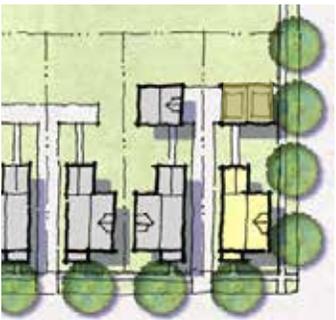
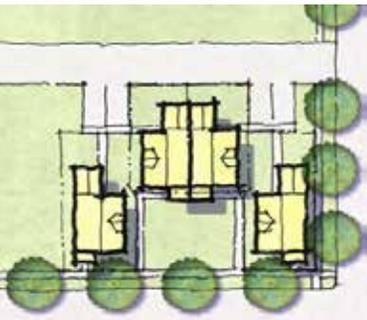
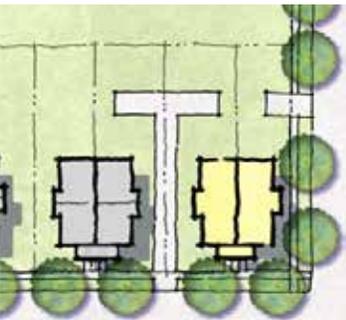
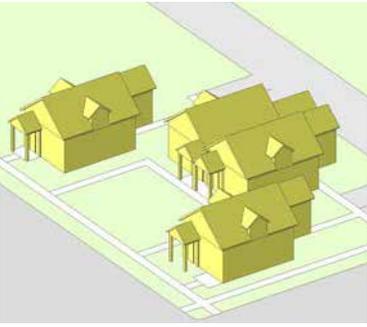
*Duplex - Cathedral Heights
Washington, DC*

HOUSING TYPOLOGIES

Missing Middle housing was the fundamental building type in pre-1940s neighborhoods that met the social and economic needs of a wide array of growing families. Missing Middle typologies are most likely present today on residential blocks in more historical and picturesque neighborhoods in our region, such as in Takoma Park, Chevy Chase, Kensington, Washington, DC, and Rockville. Combined together and with small or large single-family homes, Missing Middle building types create a moderate density that can support transit, as well as services and amenities within walking distance. These types make up some of the most popular up-and-coming communities in Norfolk, Denver, Cincinnati, Austin and San Francisco, and we even see new examples within Montgomery County at the recently built developments of King Farm and Kentlands where developers chose a wide variety of housing types.

Both baby boomers and millennials “want something that the U.S. housing market is not currently providing: small, one-to-two-bedroom homes in walkable, transit-oriented, economically dynamic and job-rich neighborhoods.”

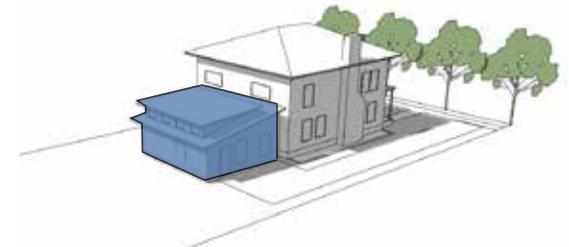
Chris Leinberger – Brookings Institution

	Accessory Dwelling Units		Bungalow Court		Duplex	
IMAGE						
LOT CONFIGURATION						
AXONOMETRIC						
NET DENSITY	7-14 units/acre		15 units/acre		8-14 units/acre	
PARKING TYPE	Shared Drive or Alley accessed Garage		Shared Drive or Alley accessed Garage		Shared Drive or Alley accessed Garage	
MIN. LOT DIMENSIONS	30ft x 110ft		30ft x 64ft		24ft x 100ft	
BUILDING HEIGHT	1 to 1-1/2 Story		1 to 1- 1/2 Story		2- Story	
APPROX. UNIT SIZE | TYPE	800 to 1,200 sqft	1-BR unit	650 to 1,075 sqft	2 to 3-BR unit	1,280 sqft	2 to 3- BR unit

Diagrams by Torti Gallas + Partners



Detached Accessory Dwelling Unit
Kentlands, MD



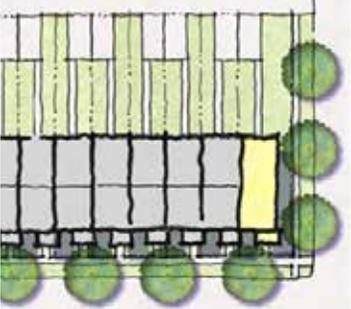
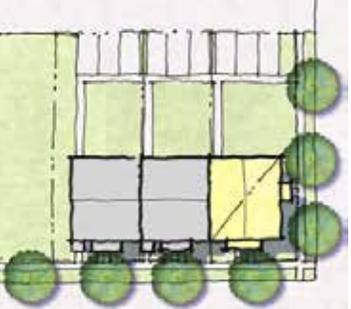
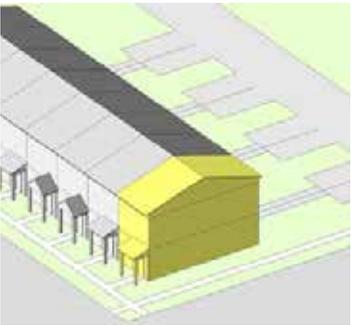
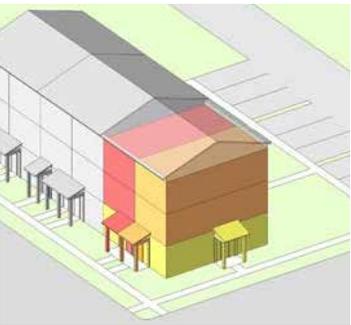
Attached Accessory Dwelling Unit



Duplex - Side Units,
Washington, DC



Duplex - Stacked Unit

	Townhouse		Triplex/ Fourplex	
IMAGE				
LOT CONFIGURATION				
AXONOMETRIC				
NET DENSITY	7-14 units/acre		15 units/acre	
PARKING TYPE	Shared Drive or Alley accessed Garage		Shared Drive or Alley accessed Garage	
MIN. LOT DIMENSIONS	30ft x 110ft		30ft x 64ft	
BUILDING HEIGHT	1 to 1-1/2 Story		1 to 1- 1/2 Story	
APPROX. UNIT SIZE | TYPE	800 to 1,200 sqft	1-BR unit	650 to 1,075 sqft	2 to 3-BR unit

Diagrams by Torti Gallas + Partners



Street-front Townhouses
Silver Spring, MD

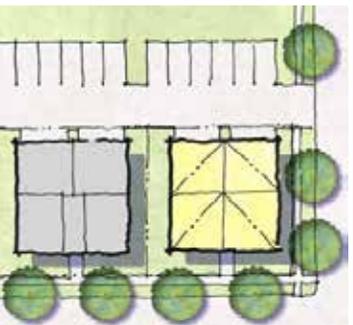
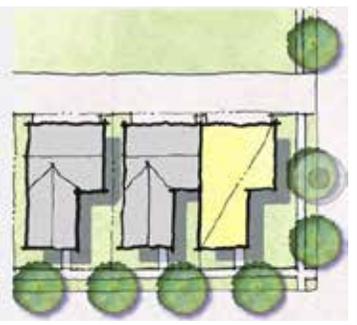
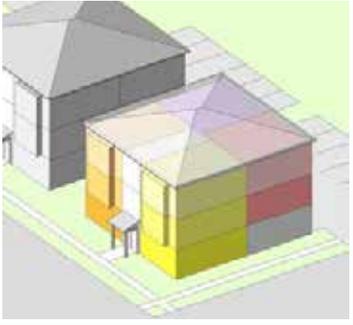


Mews- style Townhouse



Sixplex
Washington, DC



	Multiplex (5-12 units)	Courtyard Apartment
IMAGE		
LOT CONFIGURATION		
AXONOMETRIC		
NET DENSITY	36-70 units/acre	33 units/acre
PARKING TYPE	Alley accessed Garage	Alley accessed Parking
MIN. LOT DIMENSIONS	86ft x 92ft	72ft x 68ft
BUILDING HEIGHT	3- Story	2 to 3- Story
APPROX. UNIT SIZE | TYPE	800 to 1,250 sqft (6) 2- BR unit; (3) 1-BR unit	1,100 sqft 2- BR unit; 1- BR unit

Diagrams by Torti Gallas + Partners



Twelve-plex, King Farm, MD
Credit: Google Maps



Courtyard Apartment, King Farm, MD
Credit: Zillow.com



Courtyard Apartment

CHALLENGES

There are clear challenges to the application and delivery of Missing Middle types. Otherwise, they would not be “missing” but rather far more common. Many of those challenges are economic, based on the costs of building, land and the regulatory process. Some obstacles are design-related, pertaining to parking, building and zoning codes. Still others are due to concerns about the impact of increased density on existing neighborhoods.

Each of these challenges are strong but not insurmountable. This report tries to highlight these challenges with the hope of furthering the discussion about what can be done to encourage more of the Missing Middle housing types to be built in Montgomery County.

The application of these housing types to our region mirrors the national conversation and takes on a flavor of its own. Townhomes are a common type of Missing Middle housing and are common in our region and marketplace. However, many townhomes have succumbed to some of the size pressures seen in the single-family detached marketplace. Townhouses in the region are often 2,500-plus square feet and, frequently, larger than 3,000 square feet. Smaller townhouses have a part to play as a Missing Middle solution, even in a region that already accepts the typology more generally.

The major impediment to Missing Middle infill housing is Euclidean zoning where land use and building typologies are segregated into different zones. In many places, it is illegal to build dense housing types, e.g. duplex, quads, stacked-flat, or accessory dwelling units in most residential zones. When Missing Middle flourished in the early 20th century, housing was more nuanced and incremental to the next level of density. The next increment of density from a single-family house was a duplex, a duplex to a small apartment building, a small apartment building to a larger apartment building and so on. Those in-between increments have vanished.

The mix of types within a neighborhood allowed variety to meet the needs of a family or a community rather than the specifics of an exclusionary zone. Buildings were designed and built to fit within the form of a neighborhood. Duplexes, quads and small apartment buildings

looked like large single-family homes. In a similar way, the best Missing Middle developments today occur in communities using form-based codes that stipulate the size, shape, placement and design elements of buildings. Form-based codes are regulations (not guidelines) adopted into city, town or county law that fosters predictable built results and a high quality public realm through the use of physical form as the principle organizing element, rather than separate uses and floor area ratios (FARs).

Development standards often require a minimum lot sizes (both in area and dimension), setbacks in the front, side, and rear yard, and lot coverage rules that preclude building small-lot, single-family homes or bungalow courts where dwellings are arranged around a shared common space.

Bungalow courts and mews houses may further face difficulty if zoning requires all lots to face a public right of way. And although it is rare, some properties may have deed restrictions or covenants that would prohibit Missing Middle typologies, even if they would otherwise be allowed by zoning and development codes.

Rezoning or seeking variances are options, but the time and cost involved in the process is prohibitive to all but the largest developers, leaving individual homeowners and small-scale developers behind and unable to provide infill housing in the market. This difficulty is explained in greater detail in the economic analysis portion of this report.

1950 - 44% of all households in US had kids under age 18.
2015 - 22% of all households in US have kids under age 18.

By 2030, 1 in 5 people in the US will be older than 65.

1950 - Average size of US home was 980 square feet.
2016 - Average size of US homes are 2,422 square feet.

MISSING MIDDLE FEATURES

Smaller buildings than conventional houses

Missing Middle housing types are generally smaller and more efficient than single-family homes. They typically have smaller footprints in width, depth and height than a single-family home that allow a range of Missing Middle types to be blended into a neighborhood without disrupting the residential character surrounding them. This infill is not only compatible with single-family homes but can encourage socioeconomically diverse households where young singles or couples can buy into the housing market, or empty-nesters can downsize while remaining in a neighborhood. Missing Middle housing types are often situated in a walkable context and they promote pedestrian activity. Buyers and renters of these housing types are often trading square footage for proximity to services and amenities.

Lower perceived density

With smaller footprints, Missing Middle types are usually mixed with a variety of building types in an individual block, so the perceived density of these types is usually quite low. Missing Middle housing does not look like dense, multi-family apartment buildings. However, one of the primary benefits of Missing Middle is that densities are often higher than 16 dwelling units per acre and support transit and neighborhood-serving main streets.

Smaller, well-designed units

The small size of Missing Middle housing units create a challenge in making them as comfortable, usable and well designed as possible. The ultimate unit size will depend on the context, but smaller-sized units can help developers keep their costs down and attract a different buyer and renter who is not currently being recognized in Montgomery County. The simple wood construction (Type V) also makes them an attractive alternative for developers to achieve good densities without the challenge of more complex construction types and their costs. This possible increase in density has the added potential of generating more market-rate affordability within these types.

Fewer off-street parking spaces

Minimum parking requirements often result in wasted space, which can add significantly to the cost of a project. Ideally, Missing Middle housing should be located close to walkable centers near transit

services. Transit corridors that transition from heavy traffic use back to quieter single-family neighborhoods are ideal. Because of this proximity, Missing Middle housing types should not provide more than one parking space per unit. Providing more off-street parking makes the types inefficient from the perspective of development potential or yield standpoint, dropping them below thresholds that support transit at 16 dwelling units/acre (du/acre). In addition, large, unattractive paved parking areas are incompatible with a residential building context.

Creation of community

Similar to characteristics seen in many Montgomery County townhouse developments, Missing Middle housing creates community through the integration of shared community spaces within the building types. Small plazas, courtyards, mews and larger shared spaces within these building types stimulate social interaction, promote safety and security, and create a sense of community for young and old alike. This social interaction is an important aspect of Missing Middle housing, particularly considering the growing national market of single-person households (nearly 30 percent of all households) and households without children (77 percent of households) that want to be part of a community.

Marketable

The built-up demand for smaller, alternative housing types, as well as shifting household demographics that should be spurring housing options other than what is being built in the county today are growing. Missing Middle housing types respond directly to this demand and provide an attractive alternative to the many renters and buyers who want to live in a walkable neighborhood but may not want or be able to afford a large townhouse, a condominium or an apartment.

58 percent of Americans prefer “a neighborhood with a mix of houses and stores and other businesses within an easy walk.”

National Association of Realtors Data

BENEFITS

Demographic and economic trends and pressures point to the relevance of Missing Middle types throughout the country. As family formation is delayed, the average family size declines, the baby boomers age and retire, and the millennial population grows, housing options that address those trends and pressures are required. Essentially, Missing Middle housing offers alternative options to meet demographic changes and promotes diversity in our communities.

Retirees and aging-in-place communities

Adults who have retired may want to downsize and reduce their expenses. Remaining in their neighborhoods near family, friends and familiar services is important for this demographic. Bungalow courts and accessory dwelling units are suitable alternatives for seniors in promoting supportive social networks, meeting income restrictions, and promoting more healthy, walkable alternatives.

A recent national housing study from Bethesda real estate consultant RCLCo reveals seniors and retirees with no children occupy 48 percent of single-family homes across the country. We might infer from this statistic that these empty nesters still enjoy the size and location of their homes. Or faced with a limited housing options, particularly in their neighborhoods, they can't find an attractive or affordable alternative to move to. The Missing Middle could offer a wider range of choices that might be more suitable for smaller families and empty nesters, thus increasing the supply of single-family homes for larger families.

Recent college graduates

With student loan debt on the rise, graduates are prioritizing paying those off with what could have been a down payment on a house. Townhouses, fourplexes, courtyard apartments are great options in providing house-like environments.

Single-parent families

Resources are often stretched thin for single-income households. A modest housing type like a fourplex or a duplex provides a single-family home at a more affordable price.

Young adults and couples

For first-time homeowners, starting a mortgage may require buying an inexpensive house with a small backyard. Smaller townhouses or duplexes are suitable for these buyers and their future plans to raise a young family.



Detached accessory dwelling units can provide housing for a recent college graduate or aging parents.



Bungalows around a courtyard creates community for both young and old.

NATIONAL PRECEDENTS

Current residential zoning codes in Montgomery County have limited housing typologies. Only single-family houses, large townhouses and multi-family apartments are being built. However, cities across the country are updating (or in some cases creating) zoning codes and requirements to spur the growth of Missing Middle housing. In some cases, the housing types are challenged by financial road blocks and require imaginative solutions to overcome them. Nonetheless, all precedents recognize that zoning codes and the regulation process must be updated to spur new growth of Missing Middle housing types.

Precedents of Missing Middle housing in American cities were studied to investigate their approaches to encouraging its development. Common procedures used to achieve these projects and address each housing type is by:

1. Formation of a developer focus group: A team comprising planners, architects, developers and builders collaborates to raise awareness of issues that discourage Missing Middle projects and discuss ways of solving them.
2. Documenting prototypes: Creating a catalogue of all possible Missing Middle housing types is significant to determine how they can be integrated into single-family neighborhoods. These types could be preferred so residents can easily envision a slight increase in density in their neighborhood without losing aesthetic quality or comparable massing. As a result, locals are likely to respond positively to the new development.
3. Site selection process: A form-based code approach is typically used to determine the increase of density and size as housing gets closer to the urban center. Guidance of the housing's shape and form in the code help to pave the way for an effortless integration.
4. Updating and rewriting zoning ordinances to accommodate Missing Middle housing and address parking and site-area requirements.

CASE STUDY: MINNEAPOLIS, MINNESOTA

Draft Comprehensive Plan:

- Allow up to fourplexes in single-family zones but no larger in mass than surrounding houses.
- Focus Missing Middle types around transit locations and corridors.
- Eliminate off-street parking minimums.

Accessory Units:

- Allow accessory dwelling units (ADUs) in all single-family houses and duplexes.
- Property owner must own both houses.
- Remove requirement that property owner must live on the property. This allows owner to rent both units.
- Exterior finishes of ADU must match the principal building.



Fourplex, St. Paul, MN

CASE STUDY: OLYMPIA, WASHINGTON

Overall Zoning and Regulation

- Create a citywide form-based code.
- Missing Middle housing targeted for single-family zones.
- Property owner does not need to live on property.
- Count on-street parking towards parking requirements.

Accessory Units:

- Allow ADUs outright in single-family zones.
- Locate within 300 feet of a corridor or transit location.

Cottage Housing:

- Maximum cottage sqft per story is 1,000 square feet.
- Increase cottage density bonus from 20% to 50%
- Maximum cottage size is 1,250 square feet.
- 1 parking space per unit required.
- Reduce sewer hook-up fee to 1 per lot rather than 1 per unit.

Courtyard Housing and/or Apartments:

- 12 units per court maximum.
- Allow 2-story courtyards in R6-12 zone.
- Allow 1-story courtyards in R4 zones 600 feet from transit.
- Must follow infill design guidelines.

Duplex:

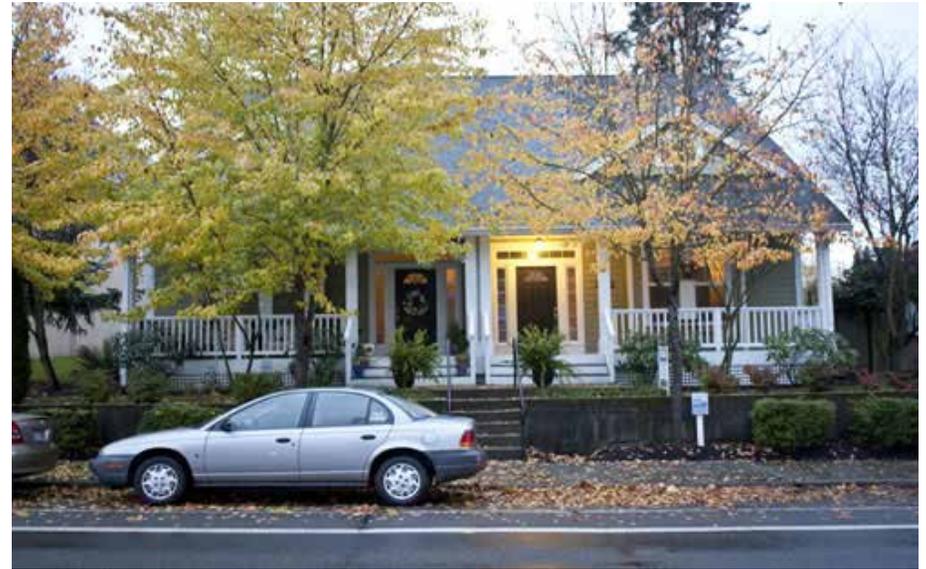
- Allow in 4.8 single-family zone.
- Reduce minimum lot width from 80 feet to 40 feet.
- Single sewer line to building rather than unit.
- Additional bonus unit for transfer of development rights purchase.

Triplex/ Fourplex:

- Permitting triplexes and fourplexes within 300ft of transit corridors.

Questions they are investigating:

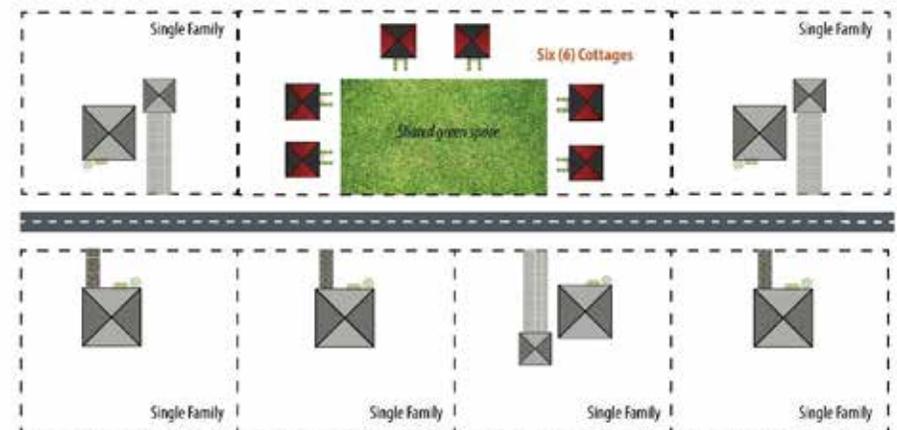
1. Are impact fees greater for cluster of houses rather than single-family house? (school, infrastructure fees)
2. Are general facility charges greater per size of house, townhouses, duplex or cottages? (roads, other)



New Infill Duplex, Olympia, WA
Credit: Olympia City Council

Six Cottages (with 50% density bonus proposed)

- ❌ Not allowed under Current Zoning Standards
- ✅ Allowed under Proposed Zoning Standards



Infill project illustration showing 6 cottages with 50% density bonus in Olympia, WA.
Credit: Olympia City Council

CASE STUDY: SEATTLE, WASHINGTON

Overall Zoning & Regulation

- Form-based code eliminates setbacks but sets required open space, yard or planted areas in front, side or rear of the house.
- New residential small L=lot (RSL) zone designation within existing single-family zones allows cottages, attached townhouses, stacked housing and tandem housing.
- Low-rise 2 zone (LR2)— increase maximum height to encourage 3-4 story townhouses and apartments.
- Low-rise 3 zone (LR3)— expand zone along transit corridors to encourage multi-family, duplexes, micro-housing and the repurposing of single-family homes into small apartment buildings.
- New mandatory housing affordability (MHA) policy will ensure that upzone guarantees new multi-family development must include affordable housing.

Accessory Units:

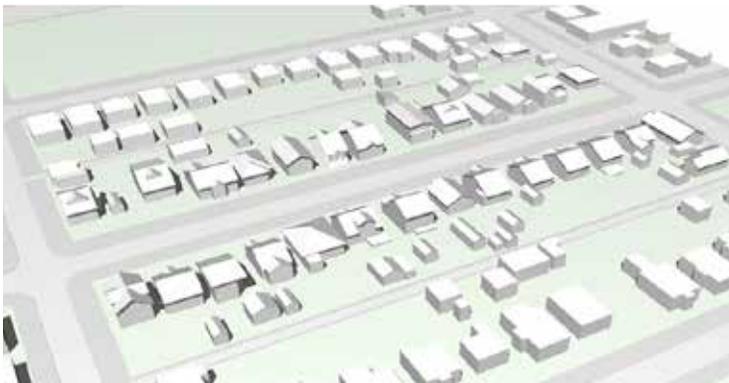
- A property can be allowed to have both attached and detached ADUs. Total size not to exceed allowed maximum square footage.
- Remove additional off-street parking requirements.
- Owner required to occupy site for 1 year only.
- Reduced square footage allowed for new replacement houses.



Bungalow court, Seattle, WA
Credit: CAST Architecture



Courtyard housing
First Hill, Seattle, WA



Before RSL zoning
Credit: CAST Architecture



After RSL zoning
Credit: CAST Architecture

CASE STUDY: PORTLAND, OREGON

Overall Zoning and Regulation

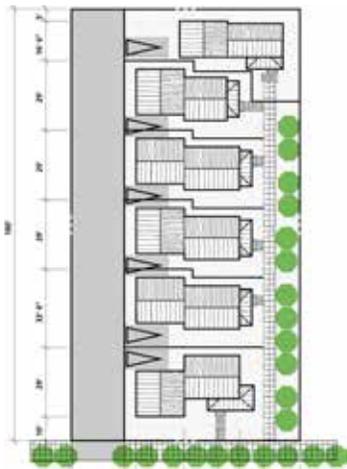
- Form-based code approach.
- Some strictly single-family housing zones (R-5) rezoned to R-2.5 allowing Missing Middle housing.
- Zoning along transit corridors changed to accommodate scale transition between single-family homes and multi-family housing.
- Guidelines/prototype catalogue identifies innovative site configurations to meet density, parking and design needs for each Missing Middle housing type. Prototype approved by city regulatory agencies and will ensure a speedy review process upon compliance by the owner/developer.
- Portland allows alternative house and lot configurations to solve medium-density infill in neighborhoods of single-family homes.

Accessory Units

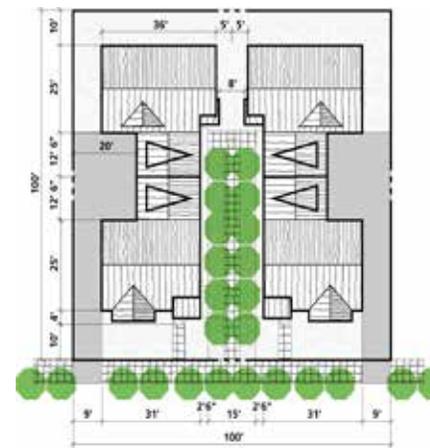
- ADU can be 75 percent of principal building in size.
- Systems development charge (SDC), a fee to mitigate increased infrastructure costs, is waived temporarily to incentivize ADU development. Stimulated a 25-fold increase in ADU development in one year.
- 2 ADUs allowed per lot; 1 within principal building and 1 freestanding.
- Utility hook-up fees waived.



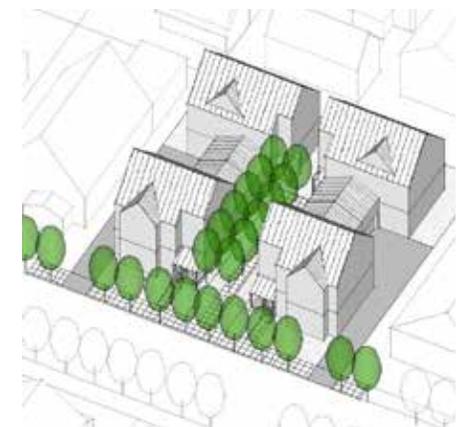
New rear yard accessory dwelling unit
Portland, OR



Mirrored green
Credit: PortlandOregon.gov



Cottage Cluster
Credit: PortlandOregon.gov



CASE STUDY: AUSTIN, TEXAS

CodeNext program adopted in Austin's 2012 Comprehensive Plan, which encourages Missing Middle housing types in several neighborhoods.

- Create form-based codes created for neighborhoods to encourage transit-oriented development along corridors and town centers.
- Loosen compatibility standards, which previously restricted most Missing Middle housing because of its size, architecture and density.
- Missing Middle projects of 2-10 units do not require site plan review if they include affordable or workforce housing components.
- If existing structure is preserved, then the floor area ratio (FAR) used for the ADU does not count toward the total FAR for the lot.
- Accessory dwelling units can be built at front, side or rear of a primary building.
- Parking reduction of .6 spaces per affordable unit.



*Duplex, Austin, TX
Credit: CodeNext*



*Townhouses, Austin, TX
Credit: Michael Hsu Office of Architecture*



Duplex, Austin, TX



*Fourplex sideyard building,
Bryan, TX*



*Fourplex mansion house
Stapleton - Denver, CO*



*Stacked duplex - townhouse over flat
Ellen Wilson Homes, Washington, DC*



*Side-by-side duplex
Seattle, WA*

II. ECONOMIC ANALYSIS

METHODOLOGY

The Missing Middle Study adopted a three-step approach to evaluating the architectural and economic feasibility of Missing Middle development within Montgomery County.

- Step One – Private Sector Focus Group
- Step Two – Architectural and Economic Case Study
- Step Three – Zoning Analysis

Step One: Private Sector Focus Group

A private sector focus group was conducted to not only identify, but also explore and analyze the various economic challenges associated with Missing Middle development. The focus groups took place between February and March 2018, at the Montgomery Planning Department and participants included local industry experts in the field of development, real estate/land-use law and real estate finance/economics.

The group sessions were audio-recorded and several members of the research and special projects team observed the discussions to take notes on key themes/findings. The two primary goals of the focus groups were information-gathering and topic exploration. Participants were encouraged to utilize their industry knowledge to think critically and “outside of the box” regarding costs and benefits of building more diversified housing types across the county.

Step Two: Architectural and Economic Case Study

A potential Missing Middle site within the county was selected by staff and analyzed for architectural and economic feasibility based on the information gathered in the private sector focus groups. Members of the Planning Department staff as well as local architects at Torti Gallas + Partners completed the analysis.

The site selected for the case study was a 2.62-acre parcel along Georgia Avenue in the Forest Glen/ Montgomery Hills (FG/MH) Sector Plan area. The case study site is located within 0.33 miles from the FG/MH metro station, and consists of an existing courtyard-style multi-family housing structure with approximately 75 dwelling units. The site is currently zoned R10 with an FAR 0.53, and its fair market

value is between \$6-8million. The front of the property faces a major transportation and retail corridor; both sides of the parcel align with similar parcels/property types, and the rear of the parcel abuts a single-family residential neighborhood. The multi-family residential structure is reaching the end of its useful life and would require significant masonry repairs if it were to remain as is.

There were three potential architectural and economic scenarios for redevelopment of the case study site. All three scenarios replaced the existing structure with new construction. The first development scenario replaced the existing structure with a large, mid-rise, high-density residential building similar to the structures surrounding many of the other Metro stations throughout the county. The second scenario included a mix of both mid-rise, high-density housing and various Missing Middle typologies. The third scenario included a wide variety of Missing Middle typologies with no mid-rise housing.

Step Three: Zoning Analysis

Once the private sector focus groups and the case study were completed, an intra-departmental zoning analysis was conducted to evaluate potential regulatory opportunities and recommendations. Certain residential zones, the townhouse zone and commercial residential neighborhood (CRN) zones were reviewed to determine whether reasonable modifications should be made to both the existing development review process and the zoning code to incentivize Missing Middle development.

STEP ONE: FOCUS GROUPS AND DISCUSSION

The private sector focus group covered a wide-variety of topics associated with Missing Middle development; however, the following four key economic findings prevailed as the most influential in understanding the process of developing Missing Middle typologies throughout the county.

- Parcel size and market behavior
- Developer types & market conditions
- Development review process & zoning code
- Financial incentive programs

Finding One: The importance of parcel size & understanding the role of the market barbell

A real estate development proforma is a financial tool used to identify and evaluate the potential risks and returns associated with a prospective real estate development opportunity. The real estate proforma considers all facets of a project's revenue potential as well as its projected expenses over the duration of the investment's life span. It is designed in such a way that individual project variables can be manipulated to evaluate and control for project risks and returns. The development proforma is also designed to yield a set of measures that can be used to benchmark the prospective development within the context of a greater market or directly against alternative development opportunities.

Minimizing investment risks while simultaneously maximizing returns on investment is the key to creating a competitive real estate development proforma. If the perceived risks of a project are so high that they cannot be offset by the anticipated returns (or vice versa), the project is considered infeasible and the private sector is unlikely to pursue it. Furthermore, financial institutions and equity investors often base their lending or investment criteria on the projected risk-to-return proforma performance, meaning that they will either deny financing or will charge a much higher premium to finance projects with returns too low to justify projected risk.

Single-family home developments on smaller parcels tend to be low risk/low return investments. The perceived risk of building single-family homes is relatively low because the single-family development market is well established, the construction process is relatively predictable, and initial costs/investment requirements are lower than that of larger, more complicated development projects. That said, the revenue potential of a single-family home development is limited due to its single-use and small lot size.

Multi-family developments on large parcels or large single-family subdivisions tend to be high-risk/high-return investments. A high-density development is riskier because it is much more complicated to build than a single-family home; there are more opportunities for market forces to interfere with long-term revenue potential, and the initial investment required for a high-density development project is much higher than that of a single-family development project. That said, the potential gains from a high-density housing development project are significantly and exponentially higher than that of a single-family home.

As a result, developers will most often gravitate toward single-family home development projects on small parcels or multi-family development projects on large parcels as a means of either minimizing risks or maximizing gains in their proforma. This "barbell effect" is a major market driver and is the primary reason for why intermediately-sized housing projects or Missing Middle housing is pursued much less frequently than single-family or high-density development projects. Missing Middle housing is often just as risky as high-density development projects to build and maintain, yet these projects yield much lower returns over the long run, limiting the competitiveness of the Missing Middle proforma and/or making them altogether infeasible.

Finding Two: Taking into account both developer types and existing market conditions

The size and scope of a real estate developer's portfolio is dependent upon their resources or access to capital (also known as depth of the developer's capital stack). Smaller developers tend to finance projects using cash from friends and family or by applying for loans from local lenders. Larger developers tend to finance projects via high-equity investment partners and/or accessing alternative debt sources that are not available to the public or smaller developers.

Friends and family tend to not demand the same returns that high-equity investors require, allowing smaller developers the latitude to pursue projects with much lower revenue thresholds than larger developers. Local lenders, on the other hand, are traditionally much more risk-averse than alternative debt sources, allowing large developers to finance riskier projects that are out of reach for smaller developers. Due to the low returns and high risks often associated with Missing Middle development projects, both small and large developers have difficulty financing these types of projects given the above-mentioned limitations on their access to capital.

It is often easier for small developers to make the leap from developing single-family homes to developing Missing Middle housing than it is for high-density developers to downsize into Missing Middle projects because there are more opportunities for overcoming and controlling risk factors than there are for generating additional revenue potential.

Lastly, the Missing Middle housing market in Montgomery County is still very much in its infancy, and as is the case with any developing market, it takes time to build market momentum. The market's ability and willingness to pay for these housing types over alternative market substitutes (demand) remains uncertain. Additionally, the infrastructure or framework to build these housing types (supply) needs further support and development. As the number of successful Missing Middle developments grows, supply chains will become more efficient, and demand for these housing types will become more robust. Over time, this market growth should enhance overall project accessibility to developers of all sizes and scope by reducing existing barriers to market entry and exit.

Finding Three: Process matters: development review and zoning modifying the development review process

Developments that are new or atypical in the market area, projects with non-standard design characteristics, and/or projects that require a zoning variance under the existing code, such as many of the missing middle typologies, often entail a complicated and lengthy development review process (DRP). This process can take anywhere from six to 18 months and cost between 15 percent and 25 percent of total project costs.

As a project increases in size, the development costs increase according to the number of units added. Initially, this per-unit development cost is high; however, at a certain point, the per-unit cost begins to decrease like when a retailer buys items in bulk from a wholesaler.

As a result, many smaller developers have difficulty obtaining the necessary resources (including the competitive funding) required to offset the high initial per-unit development costs, and larger developers with deeper pockets and more experience navigating complex regulatory systems will almost always opt to build projects that are large enough to achieve the bulk per-unit development rate. If the development review process was streamlined in such a way that the difference in per-unit costs between projects of various sizes were minimized, both small and large developers would be incentivized to build Missing Middle typologies more often.

Creating more flexibility in the building code

The three most suitable primary zones for potential Missing Middle developments include, R60-R90 zones, townhouse zones, and CRN zones. Regardless of the zone, however, any developer seeking to develop a Missing Middle typology in the county is required to comply with a variety of design-related regulatory requirements. To lower the costs and risks associated with meeting these requirements, the participants in the group made three suggestions:

- Create more townhouse zones during the master planning process as these zones are the most flexible regarding approving the development of Missing Middle typologies.

- Create a new Missing Middle conditional use or optional method within the existing zoning code, particularly in the R60-R90 zones. This may be enough to spur more development of these typologies within the county.
- Create a Missing Middle overlay zone near public transit or along major transportation corridors that would allow either by right development of certain Missing Middle typologies and/or significantly streamline the regulatory process.

Furthermore, participants in the focus group identified the major Missing Middle regulatory sticking points or “economic/design deal-killers” in the existing zoning code:

- Parking requirements
- Building height limitations
- Structure setback requirements
- Lot coverage ratios

Generally, decreasing the parking requirements on a Missing Middle site due to its proximity to public transit would allow for higher density housing types on smaller lots, such as a duplex/triplex/live-work unit on a lot that could only traditionally park a single-family home. That said, lowering parking requirements may also have a negative impact on both price for those units and/or overall demand for Missing Middle typologies. Increasing the height restrictions in residential and townhouse zones as well as lowering the height limits in CRN zones would encourage the development of more creative and efficient Missing Middle typologies that are not currently feasible under the existing code but could reduce the opportunities for high-density and/or affordable housing in prime locations throughout the county.

Lastly, removing setback requirements altogether or creating greater flexibility around lot coverage was also discussed in the focus group. Many Missing Middle housing types, particularly ones that include courtyards or other community amenities, are currently impossible or extremely difficult to achieve given the existing setback and lot coverage ratio requirements in residential, townhouse, or CRN zones. Changing setback and lot coverage requirements would allow for the development of more Missing Middle typologies but could also have a significant impact on the overall and/or intended character of an existing neighborhood.

Finding Four: Adding financial bells & whistles

Governments will sometimes use monetary or fiscal incentives to intervene in the private sector if they feel as though it is in the public’s best interest. For example, many local governments and the federal government offer tax credits or impact/connection fee waivers for sustainable development or the development of affordable housing. These incentives can come in the form of a one-time or ongoing benefit. Regardless of their frequency, however, these types of incentives have proven to be extremely effective in manipulating market behavior at every level. Due to increased construction costs associated with many Missing Middle typologies, as well as the longer-term limitations on revenue potential, it was suggested that further exploration of potential financial incentives such as impact fee waivers or tax credits was warranted if Montgomery County felt there was a public benefit to improving accessibility of Missing Middle housing in the county.

Recommendations pertaining to the specific design and impact of these potential programs was beyond the scope of this study and would need to be fully investigated prior to inception to ensure that the costs to the county do not outweigh the benefits. That said, there are many cities throughout the United States that have successfully instituted financial incentives to stimulate Missing Middle housing that could be used to project the potential impact on the Montgomery County market.

STEP TWO: CASE STUDY RESULTS AND DISCUSSION

Scenario One: High Density	Scenario Two: Mixed: High Density and Missing Middle	Scenario Three: Missing Middle Only																																										
																																												
<ul style="list-style-type: none"> • 210 Total Units, 78 DU/Acre • 133 total parking spaces • Rent: \$1,500/month • Development Costs: \$31M-\$40M (approximately \$42,000 per unit) • Rate of Return: 39.62% 	<ul style="list-style-type: none"> • 177 Total Units, 38 DU/Acre • 97 total parking spaces • 36 tuck-under parking spaces • 68 off-street parking spaces • Rent: \$1,200-\$1,400/month • Development Costs: \$29M-\$35M (approximately \$45,000 per unit) • Rate of Return: 24.34% 	<ul style="list-style-type: none"> • 102 Total Units, 28 DU/Acre • 43 total parking spaces • 60 off-street parking spaces • Rent: \$1,300-\$1,400/month • Development Costs: \$15M-\$20M (approximately \$43,000 per unit) • Rate of Return: 17.8% 																																										
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This property along a primary county corridor is between mid-rise multi-family buildings to the top and bottom of the plan, and single-family homes to the left. It is within 0.33 miles of a Metro station. Three scenarios were created to evaluate the economic viability of a total midrise development, a half mid-rise and half Missing Middle housing development, and a fully high-density, Missing Middle plan.

Scenario One: High-Density Multifamily

The high-density multi-family option would yield the highest number of total housing units and would thus yield the highest rate of return for the investor/developer. Scenario One also aligns well with the county's long-term goal of concentrating density near public transit. This 4-story wood-framed building would adjoin the streets with parking behind it. To achieve Scenario One, the site would require zoning modifications. Parking requirements would be at 0.5 space/unit. If the market was left to its own devices, the high-density scenario would be the most competitive option for a developer and, therefore, would be the most likely to occur naturally given existing conditions.



South-facing view of Scenario Three: Missing Middle only

Scenario Two: High- Density and Missing Middle

Scenario Two is a mix of high-density, mid-rise, multi-family housing adjacent to existing multi-family housing and lower-scale Missing Middle typologies facing the single-family blocks. This development creates a transition in scale and massing along the site between these two zones. It would result in 15 percent fewer units than the high-density option with slightly more parking at .6 parking spaces per unit. Rents in this option would vary and overall risk would be slightly higher due to the varied housing types; however, rate of return to the developer would still be relatively healthy at a little under 25 percent. To achieve Scenario Two, the site would require zoning modifications and parking requirements must be lowered per unit. The primary advantage of Scenario Two is that, architecturally, it achieves a more gradual transition from the higher density housing to the single-family neighborhood and market-wise, it offers a variety of housing typologies to meet the diverse community needs.

Scenario Three: Missing Middle Only

This development scenario that solely consists of Missing Middle housing would yield the fewest number of total units and would require the highest number of parking spaces at 0.9 spaces per unit. This development creates high-density yet achieves a logical transition in form and mass between the higher density apartments and the lower-density single-family lots. Rents would vary due to the diverse options of housing typologies, and although this option would be the cheapest to build, its projected returns would not be enough to achieve competitive financing given existing market conditions. To achieve Scenario Three from a regulatory perspective, the site would require zoning modifications and parking requirements must be lowered. Arguably, Scenario Three would be the most visually appealing and would provide the most diverse housing options to meet the diverse community needs. However, it is unlikely that the private sector would pursue this scenario on its own, even if extensive regulatory changes were to be made due to the site's proximity to Metro and the various other factors discussed in the private sector focus group.

III. ZONING ANALYSIS

One of the major impediments to Missing Middle infill housing nationwide is Euclidean zoning, where land use and building typologies are segregated into different zones. These Euclidean zones are focused on producing the housing types that have become familiar: single family houses, townhouses, or multi-family complexes with little to no mixing of the types. Although Montgomery County has a number of more flexible zones that include form-based elements, the greatest amount of residentially zoned land in the county is zoned for single-family homes with no diversity of housing types.

From the Developer Working Group report, several ideas about zoning and zoning modifications were suggested; however, the group clearly suggested that if Montgomery County wants to encourage the greatest amount of Missing Middle type development, the county must address impediments to small developers, who are the group most likely to implement Missing Middle housing. This group's largest impediment is access to financial resources and time spent dealing with the regulatory process, which can add up to 25 percent of total project costs. Rezoning or seeking variances could allow Missing Middle developments in certain areas, but the time and cost involved in successfully navigating these processes is prohibitive to small-scale developers. The following actions were suggested by the Developer Working Group as potential ways Missing Middle developments could occur more easily:

- Increase Townhouse zoning through the master planning process;
- Create a new Missing Middle Conditional Use or Optional Method of Development within the existing zoning code;
- Create a Missing Middle Overlay zone near public transit or along major transportation corridors to streamline the regulatory process.

Based upon feedback from the Developer Working Group, research about efforts in other jurisdictions and a deep understanding of the Montgomery County Zoning Code, staff has analyzed various options for introducing Missing Middle housing opportunities.

Key to all of these strategies is a clear understanding of where it is most

appropriate to introduce this type of housing. The most ideal locations for Missing Middle housing typologies are at the following locations:

- Along major transportation corridors, where Missing Middle housing can serve as a transition between busy thoroughfares and neighborhoods on internal streets.
- At the edges of single-family residential neighborhoods adjacent to other more dense uses and building typologies, so as to provide a transition between land uses.
- Within a certain distance of transit and transportation alternatives such as bus, bus rapid transit, Metro and Purple Line light rail.
- A limited number of typologies within single-family neighborhoods, e.g. accessory dwelling units or duplexes.

The next challenge is to identify the appropriate zones for Missing Middle housing. Single family zones do not allow Missing Middle housing types. In the Townhouse zones, the maximum densities are close to the ideal; however, lot coverage and setback requirements can still make development difficult to achieve. The Commercial Residential Neighborhood (CRN) zone seems almost perfectly suited for Missing Middle; however, very little land in the county is currently zoned CRN. New zoning options will be needed. Because Missing Middle is a typology that will be primarily an infill effort, it is essential to assure compatibility with surrounding land uses and neighborhoods. For this reason, any zoning for Missing Middle should include a site plan requirement at a minimum and should, in all likelihood, include carefully constructed design standards – including locational criteria based on the priorities list in the paragraph above.

Applying a new zone or changing zones is typically done through the Master Plan and Sectional Map Amendment process and this is possible for Missing Middle housing, although it will mean a slower roll-out of the effort. Certain master plans that are currently being considered, such as the Veirs Mill Corridor Plan and the Forest Glen/Montgomery Hills Sector Plan, are introducing the potential for Missing Middle and are proposing zoning that may make some Missing Middle housing possible. In these plans, staff has explored the use of the Commercial

Residential Neighborhood (CRN) zone and to a lesser extent, the Townhouse zones allow the most diverse array of housing typologies that are like Missing Middle housing. There is also the potential for doing a more comprehensive, county-wide functional plan for locating and zoning Missing Middle housing – although this would be a multi-year effort.

There are opportunities for introduction of limited Missing Middle housing through a zoning text amendment that would allow for an Optional Method of development in certain zones – including R-60, R-90, Townhouse zones and CRN. Staff has explored this alternative, but only at a very basic level and there would need to be further analysis. Specifically, the Optional Method would need to have very strict locational criteria and design standards and these elements have not been developed fully. However, some basic information on this option and the standards for an Optional Method of development is included in the charts below. The following table on the next page summarizes the recommendations for each zoning criteria for Missing Middle housing.



*Fourplex
Bethesda, MD*



*Accessory Dwelling Unit
Kentlands, MD*



*Side-by-side duplex, Tacoma, WA
Torti Gallas + Partners*

RESIDENTIAL (R60-R90)

Zoning Criteria	Residential (Primarily R60-R90)	Current Optional Method	General Recommendations for Successful Missing Middle Development	Notes comparing current zoning to standards for Missing Middle	Potential change to address limitations: MM Optional Method
DENSITY MEASURED IN NUMBER OF DWELLING UNITS/ ACRE	4.84-7.26 DU/Acre	5.90-8.86 DU/Acre For 15% MPDUs (ZTA 18-06 would allow: 6.29-9.44 DU/Acre for 20% MPDUs and 6.53-9.80 DU/Acre for 25% MPDUs)	Between 10-18 DU/Acre	Allows for higher densities when providing more affordable units. Cannot achieve the desired MM densities.	Between 8-12 DU/Acre
HOUSING TYPE PERMITTED	Detached House	Detached House Townhouse Duplex	No Restrictions on Structure Type	Allows for a greater diversity of housing types under optional method. Does not require a re-zoning process to achieve MM unit types under optional method. Perhaps community resistance to compatibility.	Detached House Townhouse Duplex
PARKING MINIMUM	2 spaces/unit, eligible for waiver	2 spaces/unit, eligible for waiver	1 space/DU and maintain eligibility to waive minimum	Waiver provision allows for lower parking requirement.	2 spaces/unit, 1 space/DU if within 1 mile of transit, eligible for waiver
BUILDING HEIGHTS	35'	40'	40'-50'	Allows minimum desired height under optional method.	40'-50'

Zoning Criteria	Residential (Primarily R60-R90)	Current Optional Method	General Recommendations for Successful Missing Middle Development	Notes comparing current zoning to standards for Missing Middle	Potential change to address limitations: MM Optional Method
LOT COVERAGE	30%-35%	50%-60% (Detached & Duplex) N/A for Townhouse	No restrictions. Require site plan approval.	Allows for flexibility to achieve increased densities under optional method. No minimum for townhouses.	No restrictions. Require site plan approval.
SETBACKS	<u>R-60</u> Front – 25' Rear – 20' Side – 8' <u>R-90</u> Front – 30' Rear – 5' Side – 8' Side Street – 15'	Depends on adjacent property/streets, but varies between 4' – 20', some set at site plan.	No restrictions. Require site plan approval.	Allows for flexibility to achieve increased densities under optional method. Optional method allows reduced setbacks.	No restrictions. Require site plan approval.

Note: MM Optional Method of Development would be tied to specific locations that would most benefit from this type of development.

TOWNHOUSE

Zoning Criteria	Townhouse	Current Optional Method	General Recommendations for Successful Missing Middle Development	Notes comparing current zoning to standards for Missing Middle	Potential change to address limitations: MM Optional Method
DENSITY MEASURED IN NUMBER OF DWELLING UNITS/ACRE	9.07-15.02 DU/Acre	11.07-18.32 DU/Acre For 15% MPDUs 11.79-19.53 DU/Acre For 20% MPDUs 12.25-20.28 DU/Acre For 25% MPDUs	Between 10-18 DU/Acre Depending on the Base Zone	Allows for higher densities when providing more affordable units. Requires provision of more MPDUs than minimum required – (15%) to achieve desired MM densities.	Between 9-15 DU/Acre
HOUSING TYPE PERMITTED	Detached House Townhouse Duplex	Detached House Townhouse Duplex	No Restrictions on Structure Type	Allows for diversity of housing types. Does not require a re-zoning process to achieve MM unit types. Perhaps community resistance to compatibility.	Detached House Townhouse Duplex
PARKING MINIMUM	2 spaces/unit, eligible for waiver	2 spaces/unit, eligible for waiver	1 space/DU and maintain eligibility to waive minimum	Waiver provision allows for lower parking requirement.	2 spaces/unit, 1 space/DU if within 1 mile of transit, eligible for waiver
BUILDING HEIGHTS	35'-40'	40'	40'-50'	Allows minimum desired height.	40'-50'
LOT COVERAGE	35%-50% (Detached & Duplex) N/A for Townhouse	60-75% For (Detached & Duplex) N/A for Townhouse	No restrictions. Require site plan approval.	Allows for flexibility to achieve increased densities especially under optional method. No minimum for townhouses.	No restrictions. Require site plan approval.
SETBACKS	Depends on adjacent property/streets, but varies between 4' – 20'	Depends on adjacent property/streets, but varies between 0' – 15'	No restrictions. Require site plan approval.	Allows for flexibility to achieve increased densities especially under optional method. Only modest set backs required- minimal restriction to design	No restrictions. Require site plan approval.

COMMERCIAL RESIDENTIAL NEIGHBORHOOD

Zoning Criteria	CRN (no optional method under CRN zoning)	General Recommendations for Successful Missing Middle Development	Notes comparing current zoning to standards for Missing Middle	Potential change to address limitations: MM Optional Method
DENSITY MEASURED IN FAR - CRN ZONE, STANDARD METHOD	0.00-1.5	Between 10-18 DU/Acre	Density set by the master plan process.	
HOUSING TYPE PERMITTED	No restriction	No Restrictions on Structure Type		
PARKING MINIMUM	2 space/DU 1 space/DU in PLD or reduced parking area (CRN zone within 1 mile of transit) and eligibility to waive minimum	1 space/DU and maintain eligibility to waive minimum	Parking flexible in areas near transit.	
BUILDING HEIGHTS	25'-65'	40'-50'	Can be zoned with appropriate/optimal height.	
LOT COVERAGE	90% (Detached, Duplex & Townhouse) No Restriction on other structure types	No restrictions. Require site plan approval.	Very minimal limitation for detached, duplex and townhouse building types.	No restriction. Require site plan approval.
SETBACKS	Depends on adjacent property/streets, but varies between 0' – 15'	No restrictions. Require site plan approval.	Very minimal limitation based on adjacent uses and zoning.	No Restriction. Require site plan approval.

Given these challenges, there is not one alternative or solution that will promote a large influx of Missing Middle housing development within the county. However, several short-term and longer-term ideas are worth further analysis and discussion. Here are a few of these ideas:

1. Create, through a zoning text amendment, a Missing Middle Optional Method of Development in a number of the most appropriate zoning categories, which would have clear locational criteria and design standards, including site plan review.
2. Evaluate the ability to use floating zones to create Missing Middle housing. Modify prerequisites for certain floating zones in specific locations or create a Missing Middle Floating Zone.
3. Encourage rezoning to CRN in appropriate areas of the county through the master planning process.
4. Consider a Missing Middle Housing Functional Master Plan for the County that would identify all the ideal locations for Missing Middle housing typologies and result in a sectional map amendment that would rezone appropriate areas.
5. With the county's support, create a request for proposals (RFP) or a developer/architect competition to design and construct Missing Middle housing typologies on a county-owned site. This pilot project can then be used to promote Missing Middle typology development as a viable housing alternative throughout the county.
6. Create a staff/consultant group that can evaluate and suggest potential financial incentives, such as tax credit programs and fee waivers that encourage Missing Middle typologies.

IV. CONCLUSION

Quality housing and a variety of housing types are essential to economic competitiveness and growth. Encouraging development of the Missing Middle is certainly a tool to attract, maximize and retain residents in Montgomery County.

Existing market conditions and regulatory barriers are currently interfering with the natural growth of the Missing Middle housing market in Montgomery County. The demand for these housing types is very strong yet remains undeveloped, and potential suppliers do not have enough economic incentives to consistently pursue these types of projects. If the county was to decide that increasing Missing Middle housing development was a priority, a variety of regulatory and other policy-related changes could be enacted to stimulate the development community to build more of these types of housing.

The primary challenge to constructing Missing Middle is the existing zoning options and the density/mix of building types that is allowed. There are a variety of approaches, both short and long term that can be employed to address these zoning challenges. However, Missing Middle housing is infill housing and compatibility is very important. It is essential that zoning strategies take this into account and include strict locational criteria and design standards.



*Hill Court, Sacramento, CA (80 du/acre)
Credit: Google Earth*



*Faulklands Chase Courtyard Apartments
Silver Spring, MD*



*Meridian Court, Pasadena, CA
Moule and Polyzoides - Architects*



*Englenook Cottage Homes
Ross Chapin - Architect*