

## CHAPTER 2: Code Analysis and Best Practices

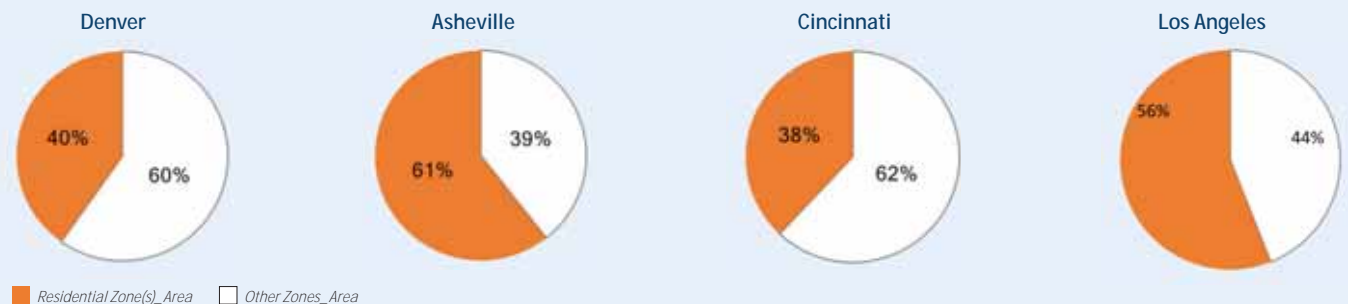
### CHAPTER SUMMARY

The 18 examples were adopted to address a housing need created primarily by many of the prior ordinances and regulations that prevented smaller houses and compact infill development. These examples also typically legalize and adapt existing built patterns for 21st century needs.

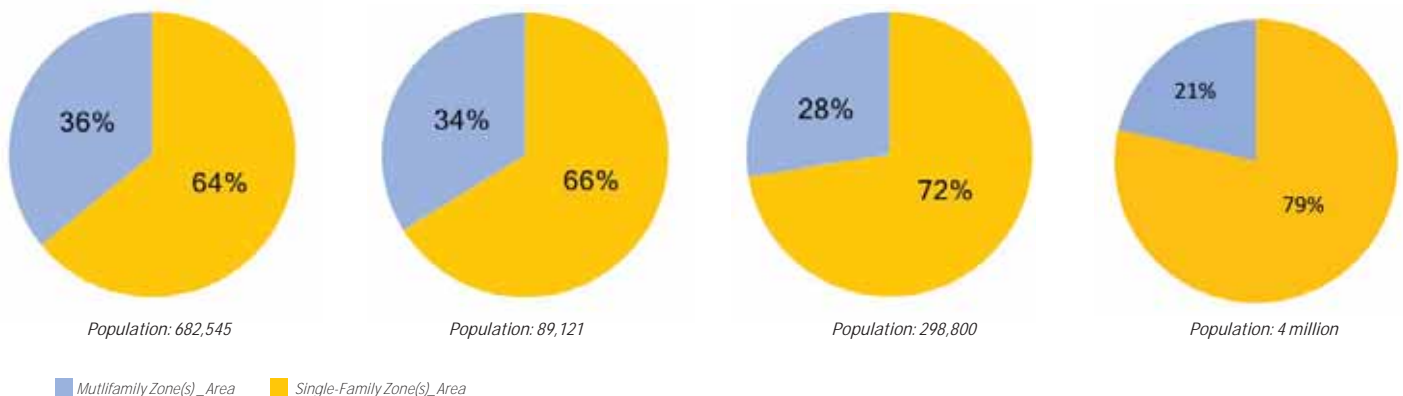
Having an updated set of standards or a new code helps provide clear direction and streamlines the development review and approval process, thus reducing costs to projects while providing neighbors with more clarity about what types of development are allowed. Attention is needed to keep the approval process from becoming overly burdensome and lengthy, particularly if the review is discretionary.

### Residential Total

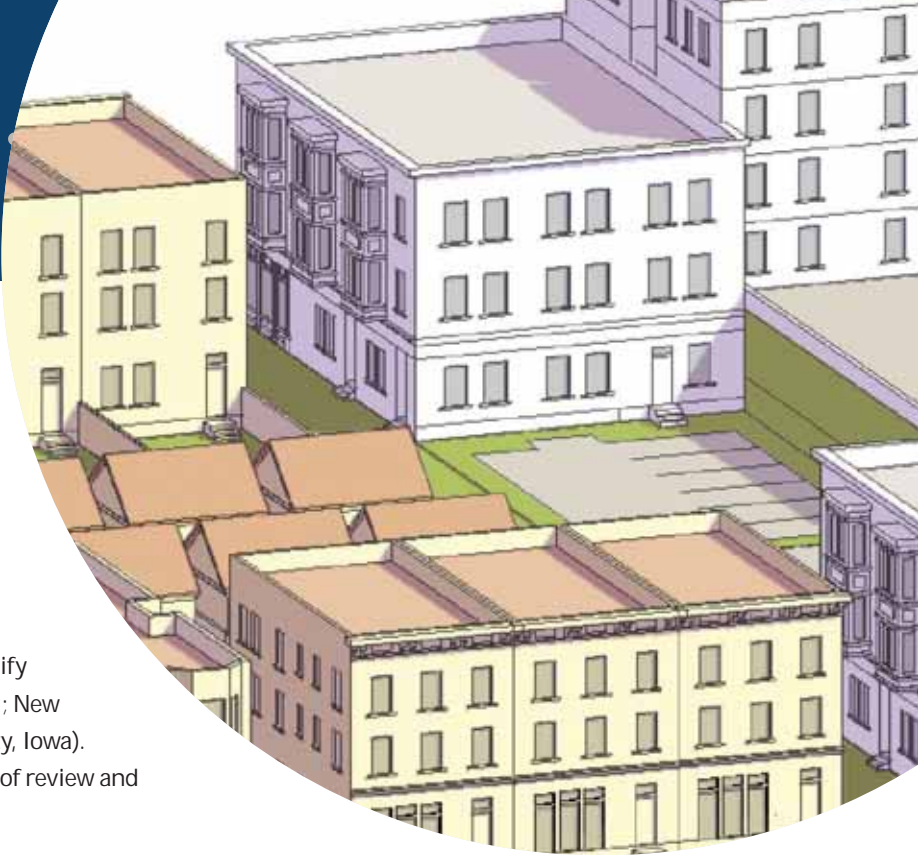
A variety of cities were analyzed for their amount of single-family neighborhoods in comparison to the amount of multi-family neighborhoods to understand the potential for some adjustments to lower intensity neighborhoods to include small multi-family housing-Missing Middle.



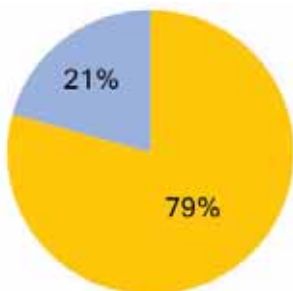
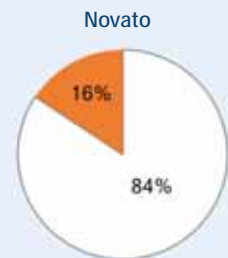
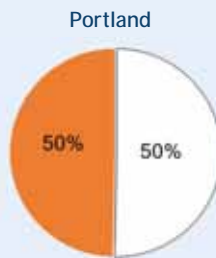
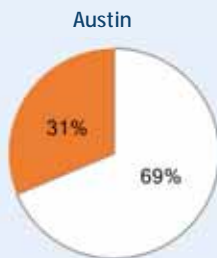
### Single Family – Multifamily



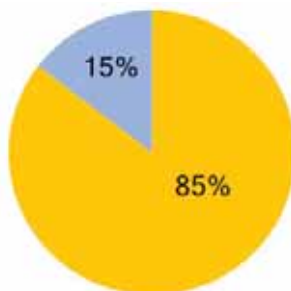
The codes selected for this analysis represent a range of approval processes, from 'by right' in Portland, Ore., and Daybreak in South Jordan, Utah, to those that have mostly administrative approvals, to those that balance both by-right and administrative approval with some discretionary review, to those that use a town architect to greatly simplify the design and review process (Kentlands, Md.; New Town St. Charles, Mo.; and Peninsula, Iowa City, Iowa). A trend with these codes is that as the amount of review and



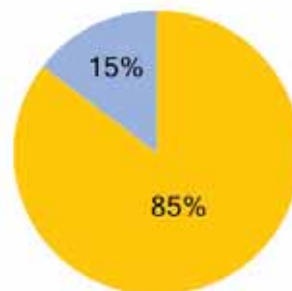
The data were taken from the official online databases of the cities' Planning Departments. The population count resulted from a google.com search.



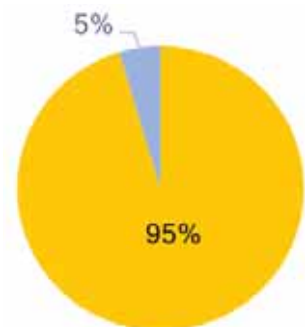
Population: 484,587



Population: 947,800



Population: 639,863



Population: 56,004

processing decreases, communities recognize that they need to be far clearer about standards and expectations. This is helpful to both the applicant and to the community's staff who processes and reviews development applications. In addition, understanding who is using the code helps determine how much educational information is needed to improve and make the process clear. The information that needs to be prepared for developers and design professionals is different from what needs to be prepared for a homeowner interested in building an ADU. But it's important to communicate clearly to both groups and other stakeholders. It's also important to understand the needs of builders and developers as well as the realities of buildings, lot sizes and different neighborhood contexts. In many communities, this approach is replacing a more general 'one-size-fits-all' type of approach that many communities did not realize existed.

When considering where the greatest opportunities are for small houses and compact infill in the typical community, it's typically the single-family zones that have the most land area. However, most single-family zones are not zoned to allow the types of housing highlighted in this analysis. The pie charts show the amount of single-family zoning relative to the multifamily zoning in some of the cities analyzed in this report. In an emerging trend, various cities such as Portland and Minneapolis have been adjusting their single-family zoning regulations to allow for more than just a single-family house.

There is a growing understanding that what we now refer to as 'multifamily' development was once a much more nuanced type of development than what we have come to know over the past 50 years. For example, pre-1940s neighborhoods typically have a variety of housing types. These neighborhoods consist mainly of single-family houses but also contain multifamily buildings. But the multifamily buildings are the size of houses ranging from duplexes to triplexes and fourplexes, and mansion apartment houses with 5 to 10 units. These types are now referred to as Missing Middle Housing because they represent the palette of housing choices in the middle, between single-family houses and large apartment buildings. After the 1940s, this house-scale, multifamily housing was seen as inefficient and instead, larger multifamily buildings became the prevalent approach. With the rediscovery of great examples from pre-World War Two neighborhoods and more people wanting to live in neighborhoods with a more personal scale and identity, Missing Middle Housing has provided a simple way for communities and developers to communicate about choices between a single-family house and large apartment buildings.



## ANALYSIS BY BUILDING TYPE

Opticos Design evaluated a wide range of building types (site plan and building configurations) across a variety of infill situations and greenfield developments. This resulted in identifying seven typical building types that can be easily customized to a variety of sites and neighborhoods. We acknowledge that there are regional variations of each building type including what they are called. With that in mind, the following are descriptions of the typical characteristics and design considerations for each of the seven typical building types that are recommended for expanding your housing choices.

### Accessory Dwelling Unit (ADU)

- **Building type:** A dwelling unit that is secondary to the primary building.
- **Height:** One to two stories.
- **Resultant density range:** About 15 dwelling units per acre for the average 5,000-square foot lot, including the primary structure. This will vary largely based on the size of the single-family lot. The density information is provided but typically, an ADU is not counted toward the density maximum.

### Variations

- **Detached ADU:** A structure completely separate from the primary building, including detached garage conversions or additions.
- **Attached ADU:** An addition to the primary building outside of the original building's footprint.
- **Internal ADU:** Conversion of a part of the primary building to an ADU (e.g., over an attached garage, in an attic, or in a small portion of the primary building's ground floor).



### Design Considerations and Best Practices

- The ADU is usually smaller than the primary building. Consider not limiting by a percentage of the existing building because it is not effective for sites with small existing homes. Consider lot coverage as an alternative tool.
- Ideally there are no additional parking requirements for an ADU. If parking is required, consider reduction based on proximity to transit and/or retail/services. Also, consider tandem parking between the primary building and ADU, as parking can quickly become a limiting factor.
- Allow building height to be the same or nearly the same as the primary building. When the ADU is on the upper story, consider privacy issues with neighbors by limiting window placement to face the interior of lot or by requiring high windows that prevent overlooking.
- Setbacks for detached ADUs should be the same as for accessory structures, allowing for more internal open space on the lot.
- Consider providing some private outdoor space for the ADU.
- If the goal is to provide maximum options for long term housing in a community, consider not requiring owner occupancy of either the ADU or primary residence on the lot.

### Implementation Options

These are options for incorporating the type into local codes and allowing it in situations where the type is not currently allowed.

Adopt ADU Code	Modify Current Zoning to Allow ADUs	Adopt Small Lot Code	Modify Current Max. Zoning Density	Adopt Cottage Court Code	Modify Current Zone District Standard(s)	Adopt Overlay Zone(s) or Standard(s)	Replace Zone(s) with Form-Based Code
✓	✓	N/A	N/A	N/A	N/A	N/A	N/A



## Small House on a Small Lot

- **Building type:** A detached building with one dwelling on a lot that is smaller than the typical single-family lot. The house is also smaller than the typical single-family houses and has a dooryard or small front yard, often with a stoop or porch providing entry to the unit from the street or a shared garden. The building has a small rear yard with uncovered parking, or an attached or detached garage accessed by a side drive or an alley.
- **Lot size range (feet):** About 35 wide x 80 deep up to about 50 wide x 90 deep.
- **Height:** 1.5 to 2.5 stories.
- **Resultant density range:** About 10 to 15 dwelling units per acre (variations are higher).



## Variations

- **Very Small Lot:** The lot can be about 60-feet deep with alley access. Without an alley, the lot should be 45-feet wide to accommodate a garage accessed via a side drive from the street. This yields a detached house of at least 750 square feet (front access, single-story), or about 1,000 square feet (alley access, single-story) with a resultant density of about 16 dwelling units per acre.
- **Tiny Lot:** The lot can be as small as 25 feet by 35 feet if parking is not required. This yields a detached or attached house of at least 400 square feet (single-story, no parking), with a resultant density of 50 dwelling units per acre. This is recommended only for highly walkable contexts where a personal vehicle is not needed.

## Design Considerations and Best Practices

- Building setbacks and parking requirements should decrease as the lot size decreases, especially when in a walkable context.
- If attaching these houses, the resulting building should not be larger than large single-family houses in the area.

## Implementation Options

Adopt ADU Code	Modify Current Zoning to Allow ADU's	Adopt Small Lot Code	Modify Current Maximum Zoning Density	Adopt Cottage Court Code	Modify Current Zone District Standard(s)	Adopt Overlay Zone(s) or Standard(s)	Replace Zone(s) with Form-Based Code
N/A	N/A	✓	✓	N/A	✓	✓	✓

## Cottage Court

- **Building type:** One lot with a group of 3 to about 10 detached buildings, each with one single-story dwelling. Each cottage fronts the shared court and has a dooryard, stoop, or porch providing entry to the unit. Cottages share side yards and usually do not have a rear yard. Each cottage has open or covered parking in an attached or detached garage accessed by a side drive or an alley.
- **Lot size range (feet):** About 100 wide x 120 deep up to about 200 wide x 250 deep.
- **Shared court:** The court is usually a garden and typically about 20-feet clear in any direction to give the garden an open feeling.
- **Height:** 1.5 stories\*.
- **Resultant density range:** About 15 to 35 dwelling units per acre (variations are higher).

## Variations

- **Mixed-use:** One or more of the cottages have office, service, retail, or food uses. This variation is effective near and adjacent to neighborhood Main Streets.
- **Mixed-types:** A few of the cottages are expanded to duplexes or triplexes, keeping the small building footprint and scale while increasing the total units on the lot.
- **Pocket neighborhood:** The lot is the size of most of a block or up to an entire block (typically about 3 acres), and the shared court is much larger, or there are several shared courts. The individual cottages are expanded to include a mix of duplexes, four- to sixplexes, and courtyard buildings.

## Design Considerations and Best Practices

- The basic type is mainly defined by the combination of small cottages within a large lot facing a shared court, thus the name 'cottage court'. It is tempting to allow larger houses, but this can result in the court being overshadowed and greatly reducing the separation between buildings. For this reason, the footprint of each cottage should be small, about 30 feet by 30 feet. In addition, the height should be under two stories (i.e. 1.5 stories). If a second story is necessary, it should be set back enough to keep the 1.5-story scale as viewed from within the shared court.
- Each facade facing the shared court should have a dooryard or porch for enjoying the shared court.
- Side separation between cottages should be about 10 feet to emphasize their individual footprints. Consider not including fences/walls between cottages so that visual separation between cottages is more obvious.
- A setback between the rear of each cottage and the side or rear property line of the large lot is helpful for utilities and trash location. It is recommended to not require a rear yard for any of the cottages.
- Dooryards, stoops, and porches are effective when they are up to the edge of the shared court to provide identity and private space for each cottage, while keeping the shared court feeling visually open and inviting.
- \*When the rear lot line is adjacent to an alley or with a medium to large rear setback, consider allowing the rear-most cottage to be two stories to give visual emphasis to the shared court and to provide variety.
- The driveway from the street can be small and does not need to be two-way for this low intensity, especially when the driveway loops around the back and sides of the lot.
- Attached garages should be integrated into the design of each cottage to maintain the small scale and appearance.
- Allow but do not require that each cottage be on its own legal lot. The new standards can provide for a minimum lot size for each cottage, if desired by the applicant.

## Implementation Options

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N/A	N/A	✓	✓	✓	✓	✓	✓



## Duplex to Sixplex (4-6 units, 'multiplex small', 'mansion apartment')

- **Building type:** A detached building containing 2 to 6 dwellings that appears as one house. The building has a small- to medium-sized front yard, often with a porch, providing entry from the street or shared space to all or some units with other units accessed through a side yard. The building has a small- to medium-sized rear yard with an attached or detached set of garages that are accessed by a side drive or an alley.
- **Lot size range (feet):** About 40 wide x 100 deep (up to 3 units) up to about 80 wide x 150 deep.
- **Height:** 2 to 3.5 stories.
- **Resultant density range:** About 20 to 70 dwelling units per acre (about 58 if no alley access).

Duplex up to about 22; fourplex up to about 35; sixplex up to about 70.



### Variations

- **Flats:** The building is divided horizontally, for up to 3 flats on each story.
- **Townhouses:** The building is divided vertically for 2.5- or 3.5-story units. The 2.5-story size easily maintains physical compatibility with adjacent or nearby single-family houses.

### Design Considerations and Best Practices

- The building's footprint should be comparable to the largest single-family house in the area (typically up to about 60 feet to 80 feet in any direction).
- The building should be designed to have the massing of a large single-family house and not an apartment building.
- Consider only allowing 3- and 3.5-story versions at corners, or in locations where the building can serve as a transition to neighborhood Main Streets or moderate- to higher- intensity neighborhoods.
- In order to maintain a single-family house appearance, the garages are most effective down the side of the building or in the rear of the lot.
- The driveway from the street can be small and does not need to be two-way for this low intensity building.
- Attached or tuck-under garages should be integrated into the design of the building and the number of spaces should reflect the building's proximity to transit, services, retail, and food uses.

### Implementation Options

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N/A	N/A	N/A	✓	N/A	✓	✓	✓

## Multiplex Large

- **Building type:** A detached building with more than 6 up to about 20 dwellings that appears as one large house. The building has a medium-sized front yard, often with a porch, providing a common entry from the street for most or all of the units. The building has a small rear yard with an attached or detached set of garages accessed by a side drive or an alley.
- **Lot size range (feet):** About 50 wide x 100 deep up to about 150 wide x 150 deep.
- **Height:** 2 to 3.5 stories.
- **Resultant density range:** About 45 to 100 dwelling units per acre.

### Variations

- **Multiple ground-floor entries:** In addition to the main entry, this variation provides ground-floor dwellings with direct entry from the sidewalk. Typically, this variation has up to 4 ground-floor entries facing the street, with other ground-floor entries along the side or rear.
- **Shared side yard space:** This variation uses each side yard as a shared garden/court that provides direct access to the adjacent ground-floor dwellings.

### Design Considerations and Best Practices

- In or adjacent to low-intensity neighborhoods, it is beneficial to include no more than 10 dwellings and to limit the height to 2.5 stories. This ensures that the building will be about 80-feet in width or similar in size and height to a large single-family house, which makes it more compatible in physical scale with adjacent or nearby single-family houses.
- The building should be designed with massing similar to the largest single-family house in the area (typically about 80-feet maximum). For example, two or more individual masses could be organized on a site as an 'L' or 'C' site plan while maintaining the house-scale footprint of up to about 80-feet overall.
- Consider only allowing 3- and 3.5-story versions at corners or in locations where the building can serve as a transition to neighborhood Main Streets or moderate- to higher-intensity neighborhoods.
- The building should be designed to have the massing of a large single-family house and not an apartment building.
- The driveway from the street can be small and does not need to be two-way for this low-intensity development, especially on corner lots where two access points are available.
- Attached or tuck-under garages should be integrated into the design of the building and the number of spaces should reflect the building's proximity to transit, services, retail, and food uses.



### Implementation Options

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N/A	N/A	N/A	✓	N/A	✓	✓	✓



## Rowhouse ('Townhouse')

- **Building type:** An attached dwelling within an array of up to 10 total dwellings that appear as one building. Each dwelling is a walk-up unit with no other unit above, built without side setbacks, with a small dooryard at the sidewalk and a small rear yard with an attached or detached garage.
- **Lot size range (feet):** For each dwelling, about 18 wide x 80 deep up to about 30 wide x 120 deep.
- **Height:** 2 to 3.5 stories.
- **Resultant density range:** About 15 to 30 dwelling units per acre (variations are higher).



### Variations

- **Tuck-under:** The rowhouse lot is shortened while keeping the dooryard along the sidewalk and removing the rear yard. The garage is located under most of the ground floor. The ground-floor entry is to a small home office or other secondary space with the primary rooms on the second and third stories. The unit depth can be as shallow as 35-feet. A variation on this is the Kentlands Cottage, which has alley access, tends to be at corners, and comes attached to a small green. It has the most compact footprint of the tuck-under variations and fits into a variety of block sizes making this a very adaptable building type. See section 3.3 for a case study on this variation.
- **Mews:** The rowhouse lot is turned sideways to be parallel to a pedestrian-passage and the unit is entered from the passage. The rear yard is optional.
- **Rowhouse flats:** Each rowhouse is divided vertically to create at least two flats. For example, a 3-story rowhouse could have 3 single-story units. A variation on this is for the ground floor to be a flat, while the upper unit could be a 2.5-story unit, for a total of 3.5 stories. Both of these variations are recommended for highly walkable contexts where parking needs are very low.
- **No rear yard:** Some versions of this type distinguish between townhouse (no rear yard) and rowhouse (small to medium rear yard) and put multiple rows of these units on one lot. While efficient, this can create awkward adjacencies between the backs (utility, trash, and parking areas) of one row of rowhouses and the fronts of another row of rowhouses.

### Design Considerations and Best Practices

- A simple and effective way to communicate how this type can adapt to different neighborhoods is to identify two versions: a house-scale version that includes no more than 4 rowhouses, and a block-scale version that can be as long as a block.
- In low- to moderate-intensity neighborhoods, it is effective to include only the house-scale version and to limit the height to 2.5 stories. This ensures that the building will be about 80-feet in width or similar in size and height to a large single-family house. This provides for physical scale compatibility with adjacent or nearby single-family houses.
- The house-scale version should be designed to have the massing of a large single-family house and not an apartment building.
- The mews variation needs close attention to how the facade and main entry along the pedestrian passage are designed to contribute to the appeal of the passage while providing privacy to the mews residents.

- The tuck-under variation should be designed to make a pattern of short blocks served by alleys with the main entry to each unit along the streetscape.
- The lot for the tuck-under variation should be at least 45-feet deep to allow for a dooryard, porch, or other frontage and to provide a reasonable ground floor space along the front, so that the ground floor along the streetscape is active.
- The driveway from the street is most effective when it serves multiple units from the rear.
- Attached or tuck-under garages should be integrated into the design of the building and the number of spaces should reflect the building's proximity to transit, retail, service, and food uses.

## Implementation Options

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N/A	N/A	✓	✓	N/A	✓	✓	✓

## Courtyard

- **Building type:** One lot with a detached building that is 'U'- or 'C'-shaped to form at least one shared court. Entry to each unit is from the street for street-facing units and from the courtyard for interior units. Parking is in a surface parking area at the rear of the lot. This type, sometimes referred to as 'neighborhood courtyard', is the walk-up type of courtyard building that fits in Missing Middle Housing contexts.
- **Lot size range (feet):** About 75 wide x 100 deep up to about 200 wide x 200 deep
- **Shared Courtyard:** about 30-feet clear in any direction.
- **Height:** 2.5 stories (part of the building sometimes up to 3.5 stories in moderate- to higher-intensity neighborhoods).
- **Resultant density range:** About 25 to 55 dwelling units per acre.

## Variations

- **L-shape:** One L-shaped building or a few buildings form an 'L' to shape the courtyard. In low- to moderate-intensity neighborhoods, the building that is parallel to the street is along the rear and towards the middle. In higher-intensity neighborhoods, the building is along the front to provide more privacy for the courtyard and interior units.
- **O-shape:** One 'O'-shaped building, or a few attached or slightly detached buildings, form an 'O' to shape a courtyard.
- **Urban courtyard:** This variation is more urban than the previous variations and typically is about 4 to 6 stories. This building has elevators, some or all double-loaded corridor units, and podium or underground parking.
- **Combination building:** This variation is for sites along busy corridors that back up to low-intensity neighborhoods. The 'O'-shaped building is divided into two halves. The front half is an urban courtyard building facing the street, while the rear



half is a neighborhood courtyard building adjacent to the side or rear of neighboring single-family houses. This variation is also referred to as a 'hybrid courtyard' because it blends the two very different halves to address the different physical conditions of these sites.

## Design Considerations and Best Practices

- The courtyard reduces the buildable area and yield compared to other building types. However, the environment created by the courtyard is a feature that other building types do not include. But in order to make this type appealing to developers, density should not be regulated. Otherwise, when developers compare the same density of this type with a type that does not require a courtyard, it's likely that the courtyard type will not be selected. If density needs to be regulated, resultant density should be calculated after the courtyard is provided and a feasible number of dwelling units identified that can reasonably fit in the building.
- The building should be designed to make sure that the courtyard is not in shade all the time. It's also beneficial to the neighborhood to allow flexibility for different heights around the courtyard to avoid the rigid 'crew cut massing' scenario.
- In areas with high property values, podium and subterranean parking may be options. In those cases, the courtyard surface should be designed to feel like a landscaped garden and not the roof of a parking garage. Coordination with the department reviewing for drainage is recommended so that the podium surface can address drainage while providing an inviting ambience.
- The courtyard is most effective when it's seen as a very inviting and comfortable space. A key to such a space is lining the courtyard with dwelling entries and public rooms (living room, porch). If private rooms (bedroom, bathroom) are along the courtyard edge, residents tend to want extra privacy and keep the curtains closed off from view of the courtyard. In addition, if a playground is to be included, it's most effective in an adjacent park or plaza rather than in the courtyard where it can raise issues with ground-floor units.
- In addition to surface parking at the rear of the lot, tuck-under parking is compatible if the ground floor facing the courtyard is deep enough to accommodate a useable room.
- Attached or tuck-under garages should be integrated into the design of the building and the amount of spaces should reflect the building's proximity to transit, retail, services, and food uses.

## Implementation Options

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N/A	N/A	N/A	✓	N/A	✓	✓	✓



This document is a portion of NAHB's report  
*Diversifying Housing Options with Smaller Lots and Smaller Homes*  
[Click here to view the full report.](#)

# Diversifying Housing Options with Smaller Lots and Smaller Homes



Photo Courtesy of Ross Chapter

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