

# Aligning Zoning & Building Codes for the Housing we Want to See

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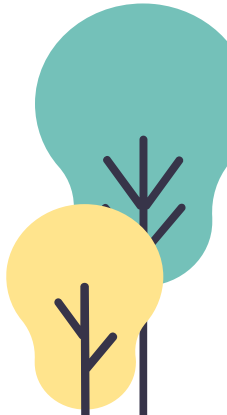
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## WHY THIS TOPIC

Addressing the housing crisis with urgency is essential to improving shared well-being for the public.

Understanding & being aware of how building codes impact housing goals is new knowledge planners will have to pick up.

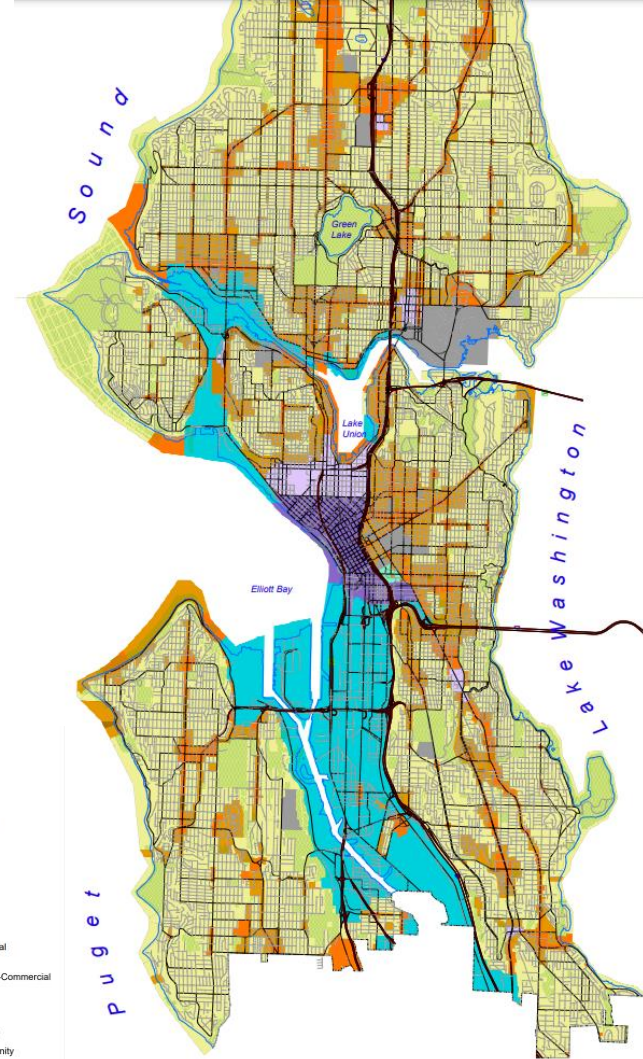
New State legislation provides great opportunities to build more housing. We should make sure codes don't conflict and cause barriers.

# Zoning History

- Euclidean zoning starts spreading across the U.S. during the 1920s
- Zoning designates and segregates land uses, and regulates development
- A first wave of major downzones in cities happens in the 1950s
- By the mid-1980s, most cities have designated 75-85% of their residential land as single-family

## City of Seattle Generalized Zoning

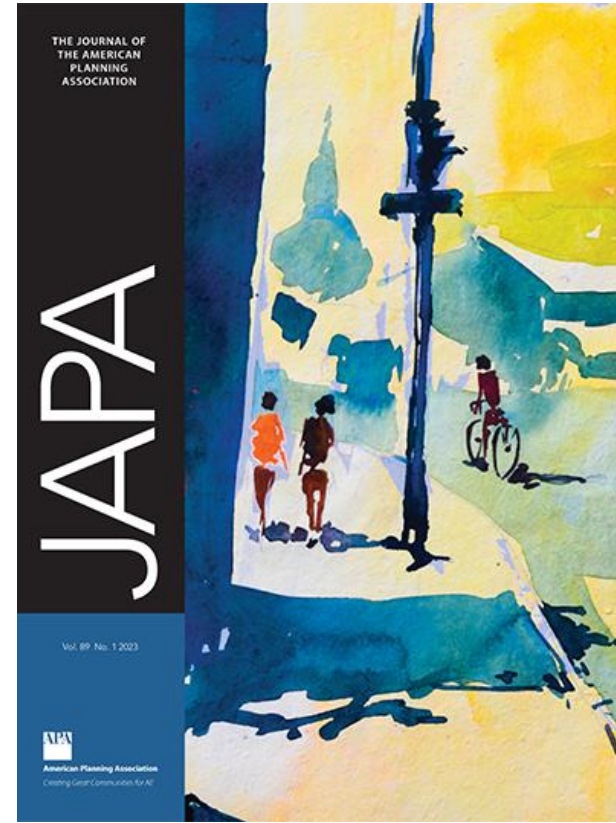
as of June 15, 2022



# Building Code History

- Two sets of building codes:
  - International Residential Code (IRC)
  - International Building Code (IBC)
- The International Code Council (ICC), a fully American membership nonprofit, has been writing the building code for states and cities since 2000
- Before the ICC, cities themselves or regional organizations wrote the building codes
- Similar to zoning, the advent of two building codes can be traced back to racist and exclusionary ideas

Kenneth Baar (1992) The National Movement to Halt the Spread of Multifamily Housing, 1890-1926, *Journal of the American Planning Association*, 58:1, 39-48, DOI: [10.1080/01944369208975533](https://doi.org/10.1080/01944369208975533)



Lawrence Veiller of the National Housing Association shared his strategy to restrict the spread of multifamily housing in 1913:

“

Do everything possible in our laws to encourage the construction of private dwellings... If we require multiple dwellings to be fireproof, and thus increase the cost of construction... even where there are only three families... that can be justified as a legitimate exercise of the police power... allow our private houses and two-family houses to be built with no fire protection whatever.

Lawrence Veiller

”

# Building Codes For Middle Housing

## HB 1110

- Cities will have to allow at least six of the nine middle housing types defined in the bill:
  - Duplex
  - Triplex
  - Fourplex
  - Fiveplex
  - Sixplex
  - Townhomes
  - Courtyard Apartments
  - Cottage Housing
  - Stacked Flats
- A majority of residential land in Washington cities will have to allow at least two to six units per lot



## Current Building Code Restricts Middle Housing Development

- IRC regulates 1-2 units; IBC regulates 3+ units
- This negatively impacts six of the nine middle housing types:
  - Triplex, fourplex, fiveplex, sixplex, and stacked flats
- IBC requires fire sprinklers, other fire safety features, and more expensive inspections & permitting
- 3-6 units under one roof is more expensive and not worth the jump for most small developers





## CHALLENGES TO CHANGING BUILDING CODE

- Fire safety professionals COULD pushback against potential changes
- Having staff with the knowledge and time to take on such a project
- Knowing what the appropriate language and code changes are

## OPPORTUNITIES TO CHANGING BUILDING CODE

- There are resources and examples of other cities and states that have made this change ([Memphis, TN](#) and [North Carolina](#))
- State advocacy for a housing bill that addresses this statewide (e.g. [Washington HB 1167](#))

## Recommendations

- Change IRC to include 3-6 unit buildings (3-4 unit buildings minimum)
- Allow for flexible fire safety measures if need be

### Memphis, TN Amends Local Building Code to Allow up to Six Units Under Residential Building Code (IRC) to Enable Missing Middle Housing

John Zeanah, AICP — January 12, 2022



On November 1, 2021, Memphis and Shelby County, Tennessee, rolled back a significant, but lesser noted regulatory hurdle to building missing middle in the US, by locally amending building codes to enable structures of 3 to 6 dwelling units to be reviewed by the city and county under their residential building code rather than the commercial building code that typically triggers at three units or more. For Andre Jones, a local builder and member of the City and

Today [#NorthCarolina](#) became the first state to change its Residential 1-2 Family Code to the 1-4 Family Code, a reform that opens up:

- lower cost triplexes & quads
- more viable missing middle housing
- more flexible alignment with zoning

It's potentially revolutionary for affordability. And no one is talking about it.



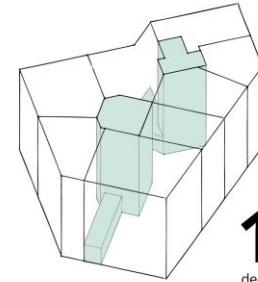
213134 Quadplex

# ZONING FOR TALLER SINGLE-STAIR APARTMENTS

## SB 5491

- A single stairwell can serve up to 5 stories for residential buildings and up to 6 stories for mixed-use buildings
- A maximum of four dwelling units per floor
- No more than two such single-stair buildings can be on any such lot
- Bill requires building code changes to be ready for state adoption in 2026
- Cities can adopt standards in bill before 2026 if they choose
- Single-stair buildings; Point Access Blocks; Vertical Shared Access (VSAs) Buildings are all terms you may hear to describe this housing type

### Seattle Code Side-by-Side VSAs



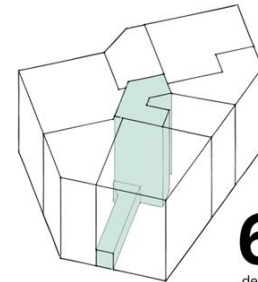
Stair/elevator each  
access 4 units  
More light and air  
ADA friendly  
46 units  
490 sqft average

**11%**

dedicated to circulation

Source: [Matt Campbell](#)

### Berlin Code Single VSA

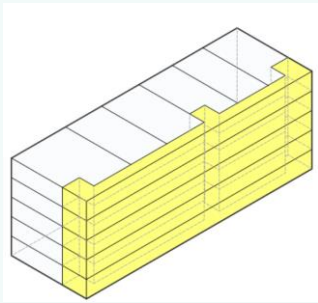


One stair/elevator to  
access all units  
Most light and air  
Family-oriented 2 beds  
40 units  
700 sqft average

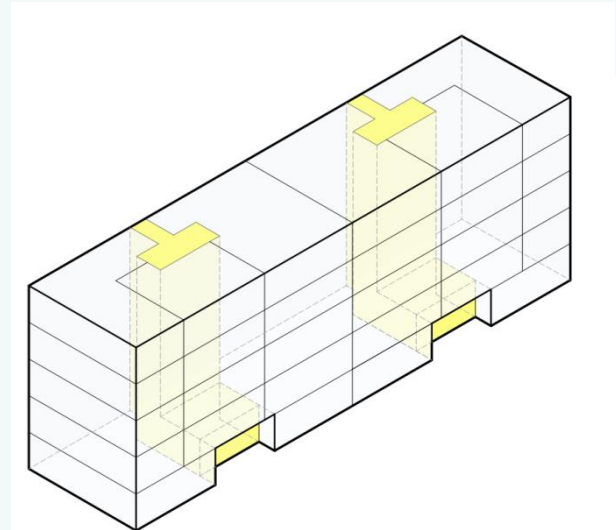
**6.7%**

dedicated to circulation

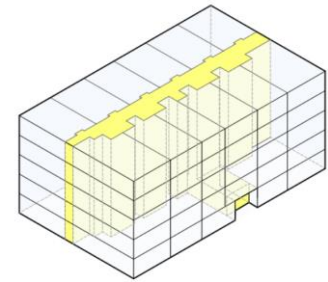
# Multifamily circulation options



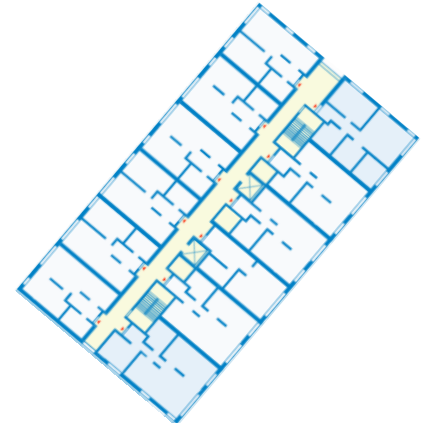
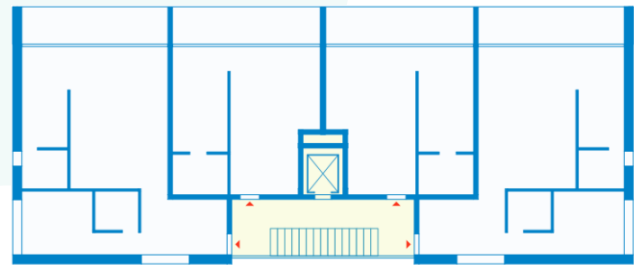
Single-loaded corridor



Point Access Block - Single-stair



Double-loaded corridor



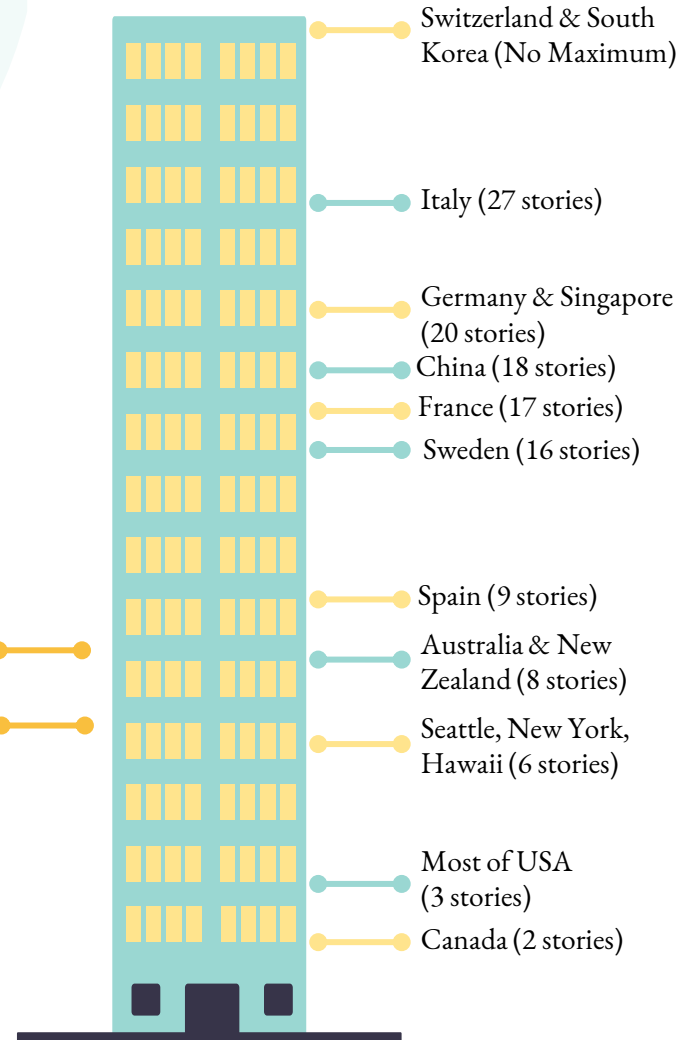
Source: [Larch Lab](#) & [Michael Eliason](#)

## Single-stair building heights allowed by other countries:

- Japan allows up to 10 stories with a base of 5-6 floors
- Australia and New Zealand – 8 floors
- Sweden, France, China – 16-18 floors
- Germany base of 6 stories but up to 20 stories
- Switzerland and South Korea have no code limit

Typical Fire Truck Ladder (75 – 85 ft)

SB 5491 (6 stories)



## Benefits of the Single Stair:

- Diversity of unit sizes & more family size units
- Cross ventilation, sun & air both sides
- Unlocks small lot development
- Unlocks irregular shaped lot development
- Lower cost
- No decrease in fire safety
- Generally, comes with comfy balcony
- Lower embodied and operational carbon
- Increase livability

Seattle U-District:  
12 units + 3 commercial spaces  
[Park Modern – Build LLC](#)

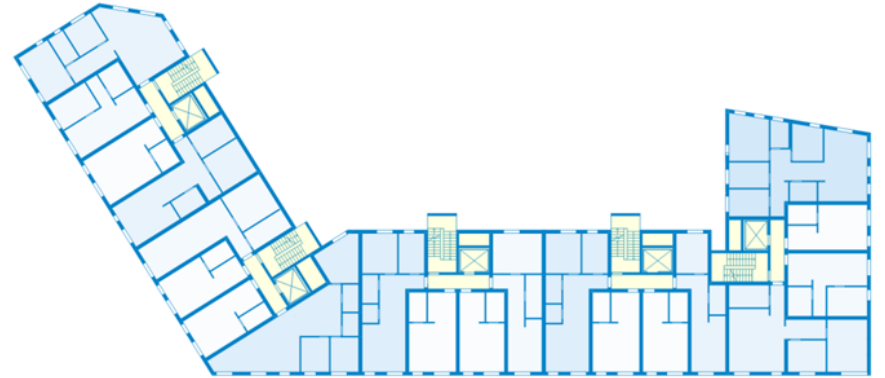


Seattle Capitol Hill:  
Affordable Housing –  
[Habitat for Humanity](#)  
13 condos  
487 – 949 sq ft  
~\$1,050 - \$2,500





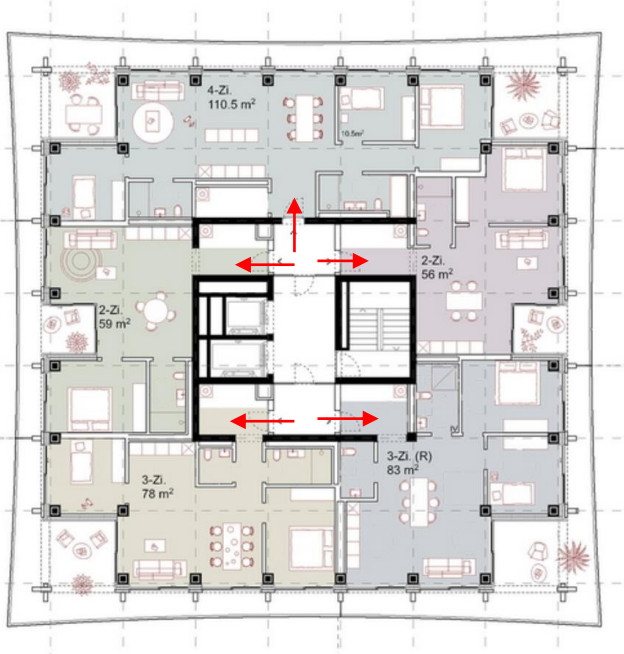
Source: Second Egress



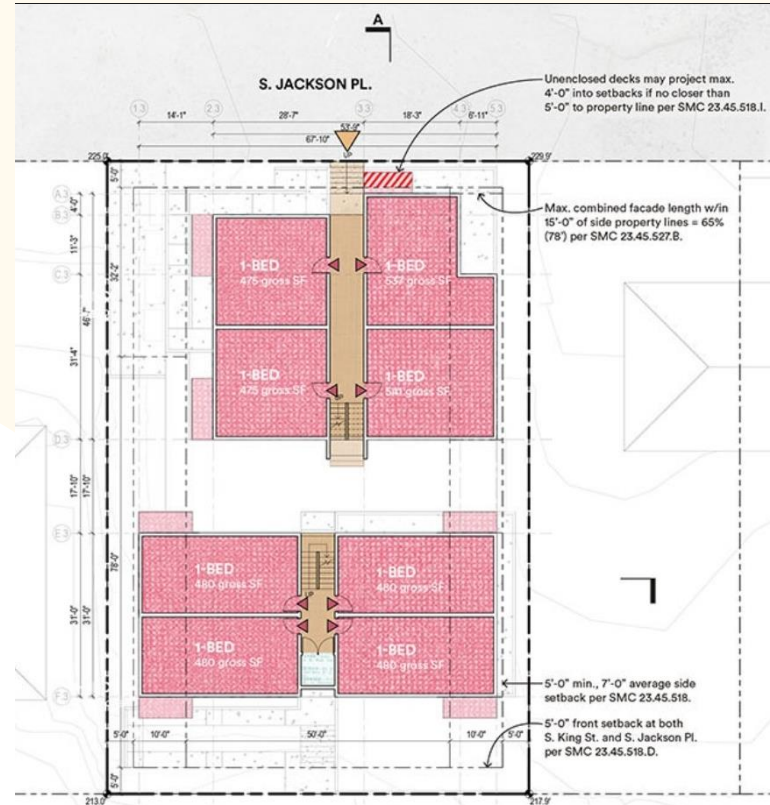
*'German Inspired' Vienna House with Point Access Blocks, Larch Lab*

Source: Larch Lab





Source: [Buchner  
Brundler  
Architekten](#)



Seattle Central District:  
30 homes  
[King Street Flats – Build LLC](#)

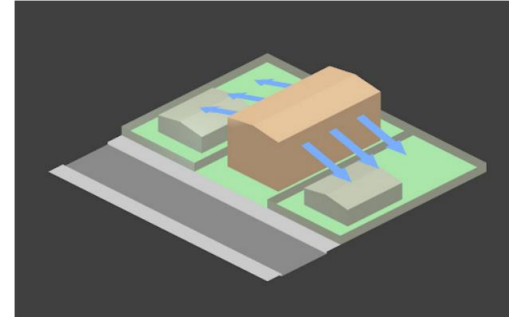




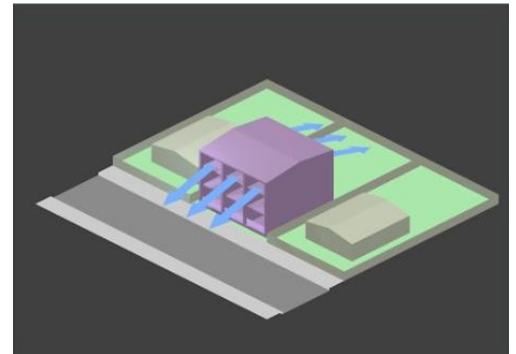
Source: [Stephen Smith & Michael Eliason](#)

## Zoning Challenges

- Not enough parcels zoned for this level of density
- There is often a mismatch between height, setbacks, and FAR/lot coverage. Low heights and high FAR incentivizes large floor plates & double loaded corridor buildings
- Large front and side setbacks lead to deep buildings and thin strips of outdoor space
- High minimum parking standards negatively impact feasibility
- Stepbacks and articulation standards reduce livable space and increase cost of construction



Source: [The Coalition for More Homes](#)



## Zoning Code Recommendations

- Increase zoned capacity for 4-6 story single-stair buildings
- Allow for maximum heights of 55 – 65 feet to fully take advantage of SB 5491
- Remove parking minimums
- For typical sized lots, at 5 or 6 stories, set FAR at 1.8 – 2.3 or lot coverage at 35% - 45%
- Relax side setbacks:  
0' = best, 3' = good, no more than 5'

\* Above & Beyond  
SB 5491

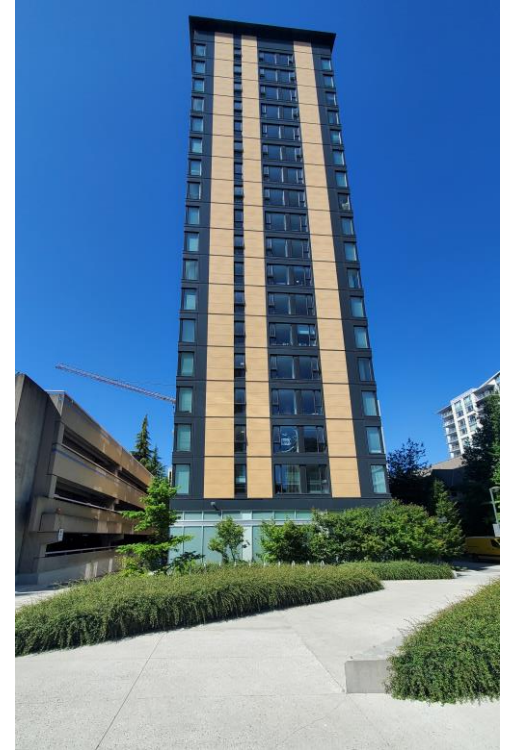
## Building Code Recommendations

- Remove restriction in code that says only two single-stair buildings on any lot
- Increase max height of single-stair buildings to 8 stories for residential and mixed-use

# ZONING FOR MASS TIMBER HOUSING

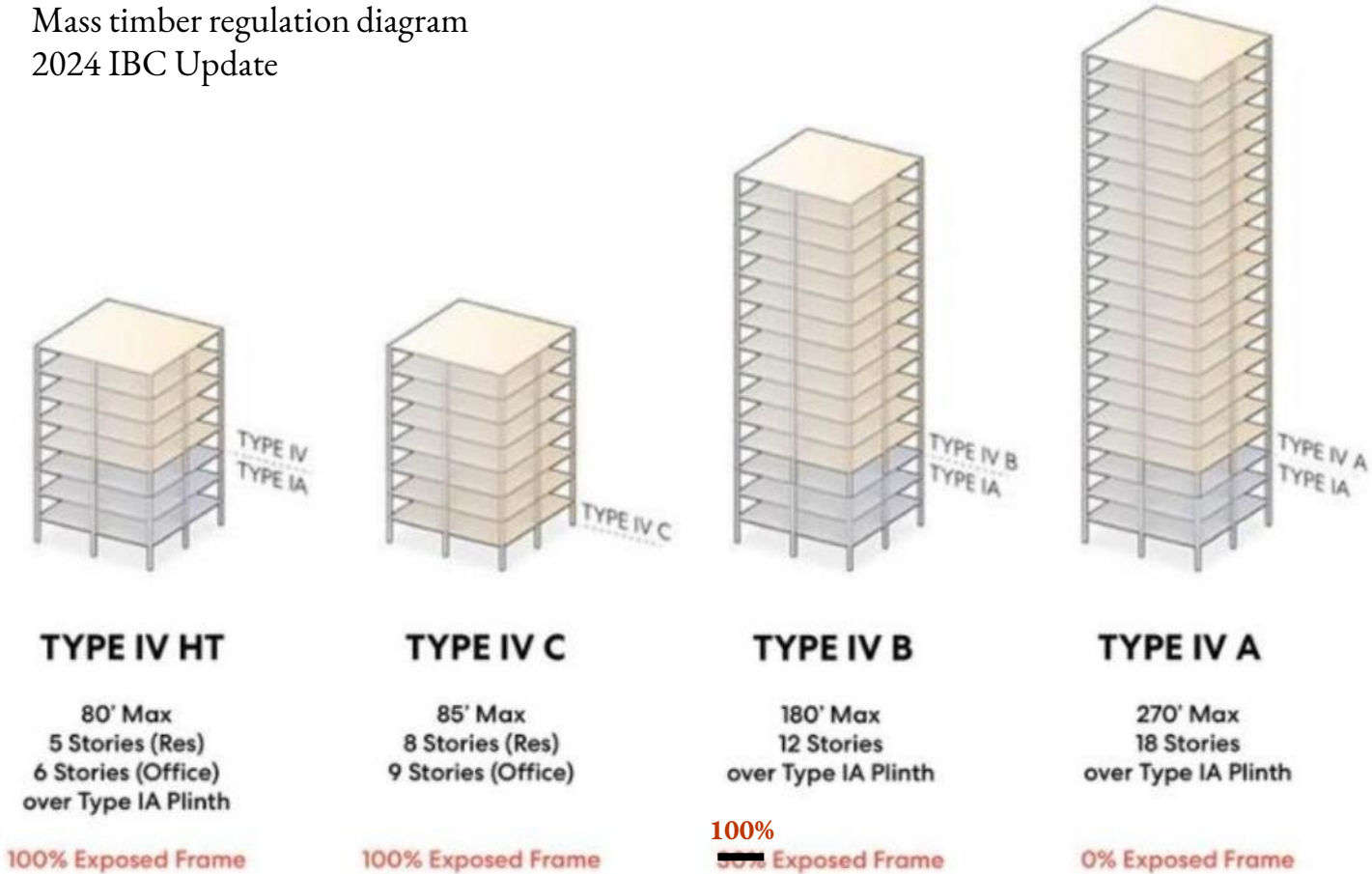
## 2024 IBC Update

- The current building code has four mass timber construction types:
  - Type 4A – up to 18 stories of mass timber
  - Type 4B – up to 12 stories of mass timber
  - Type 4C – up to 9 stories of mass timber
  - Type 4 HT – up to 6 stories of mass timber
- Currently, the façade of type 4A must be 100% covered and type 4B must be 80% covered
- Covering mass timber with other materials instead of having it exposed adds cost & reduces marketability
- The major code change is Type 4B will be allowed to be 100% exposed wood instead of 20-30%



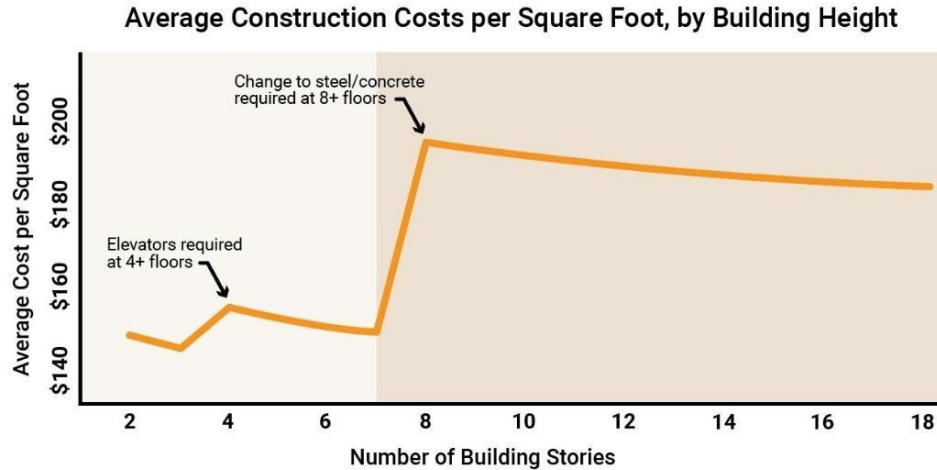
University of British Columbia's  
Brock Commons (18 story mass timber)

Mass timber regulation diagram  
2024 IBC Update



## Zoning Barriers - Height

- Maximum heights set too low to take advantage of mass timber buildings
- In the past we've set height limits based on vibes and aesthetic preferences
- Recent research shows the cost of adding an additional floor is non-linear
- The average cost of taller buildings jumps at certain heights. Otherwise the cost of additional floors decreases per floor



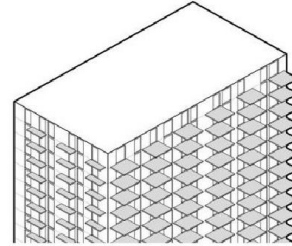
Source: Eriksen, M. D., & Orlando, A. W. (2021). Returns to Scale in Residential Construction: The Marginal Impact of Building Height. *Real Estate Econ.* 1-31. <https://doi.org/10.1111/1540-6229.123>  
Estimated costs based on RS Means multifamily building assemblies on 10,000 square foot floor plate using the national average prices of materials and nonunion labor in 2018.

Adapted by Scott Bonjukian from [Eriksen & Orlando, 2021](#)

## Zoning Barriers – Modulation & Articulation Standards

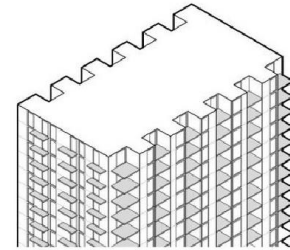
- Modulation and articulation standards make mass timber construction near impossible
- Modulation leads to more expensive buildings, more heat loss, and more embodied & operational carbon
- Simplicity is climate action; Simplicity is advantageous for mass timber

**VFAR: 0.49**



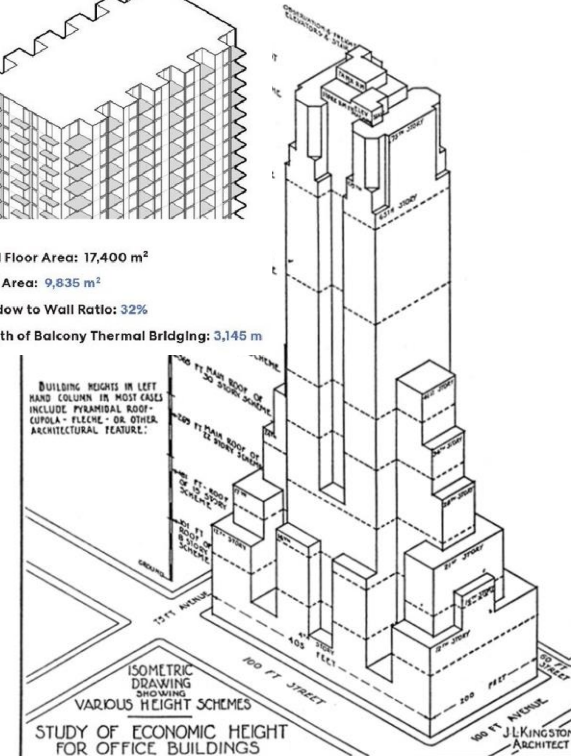
Total Floor Area: 17,400 m<sup>2</sup>  
Wall Area: 5,320 m<sup>2</sup>  
Window to Wall Ratio: 45%  
Length of Balcony Thermal Bridging: 1,634 m  
Source: [Perkins&Will](#)

**VFAR: 0.7**



Total Floor Area: 17,400 m<sup>2</sup>  
Wall Area: 9,835 m<sup>2</sup>  
Window to Wall Ratio: 32%  
Length of Balcony Thermal Bridging: 3,145 m

Source: 1916 New York  
Zoning Code



## Zoning Code Recommendations

- Set maximum height at 85 feet for 9 story mass timber
- Set maximum height at least between 130-155 feet for 12 story mass timber
- Use a code incentive to eliminate or reduce modulation and articulation standards for mass timber buildings
- Changing single-stair code to allow eight stories + changing zoning standards above  
= 8 story mass timber single-stair buildings





# Resources:

- [SB 5491](#)
- [Halting the spread of multifamily](#)
- [Memphis, TN](#) middle housing building code update
- [North Carolina](#) middle housing building code update
- [Washington HB 1167](#)
- [Second Egress – Single stair research](#)
- [Urbanist single stair](#)
- [Slate single stair](#)
- [Larch Lab single stair Report](#)
- [Larch Lab single stair Policy Brief](#)
- [Center for Building – Why we can't build family size MF](#)
- [Seattle Single-stair building tracker](#)
- [Fire Death Rate Trends](#) (2011)
- [2021 Fire Death Rate & Fire Safety Trends](#) (pg. 118)
  - [Fire safety chart with notes](#)
- [Europe fire sprinkler summary](#)
- [Climate Friendly Buildings](#)
- [IBC 2024 Mass Timber Update](#)
- [The Marginal Impact of Building Height](#)



# THANKS

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