

# Legalizing Mid-Rise Single-Stair Housing in Massachusetts

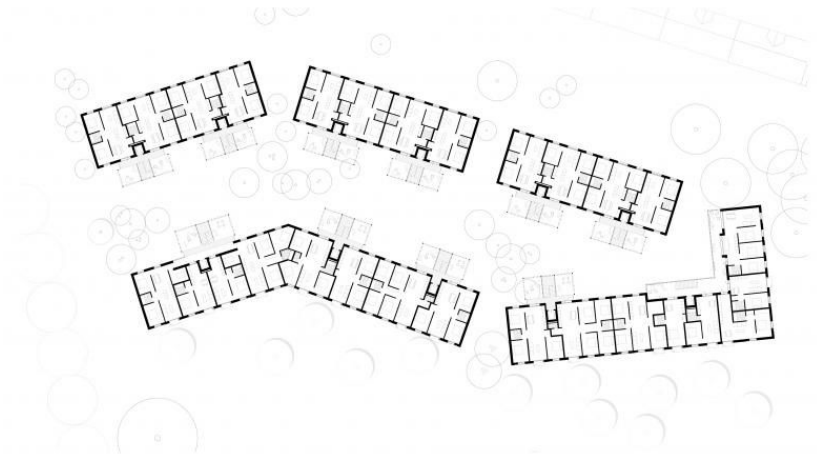
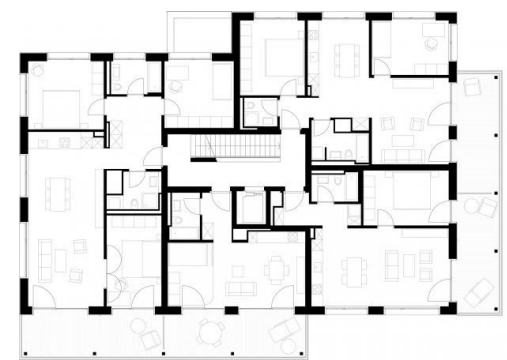
A Report on The Impact of Allowing Mid-Rise  
Point Access Blocks on Housing Design and  
Development in Greater Boston and Beyond.

Release Event at the Boston Foundation  
October 10, 2024

**utile**



# The Issue



US & Canada



Elsewhere

# The Record of Supply

FIGURE 13

## Recent housing production growth leaves Massachusetts far below historic levels.

New housing units permitted annually in Massachusetts, 1960-present.  
Census Building Permit Survey.

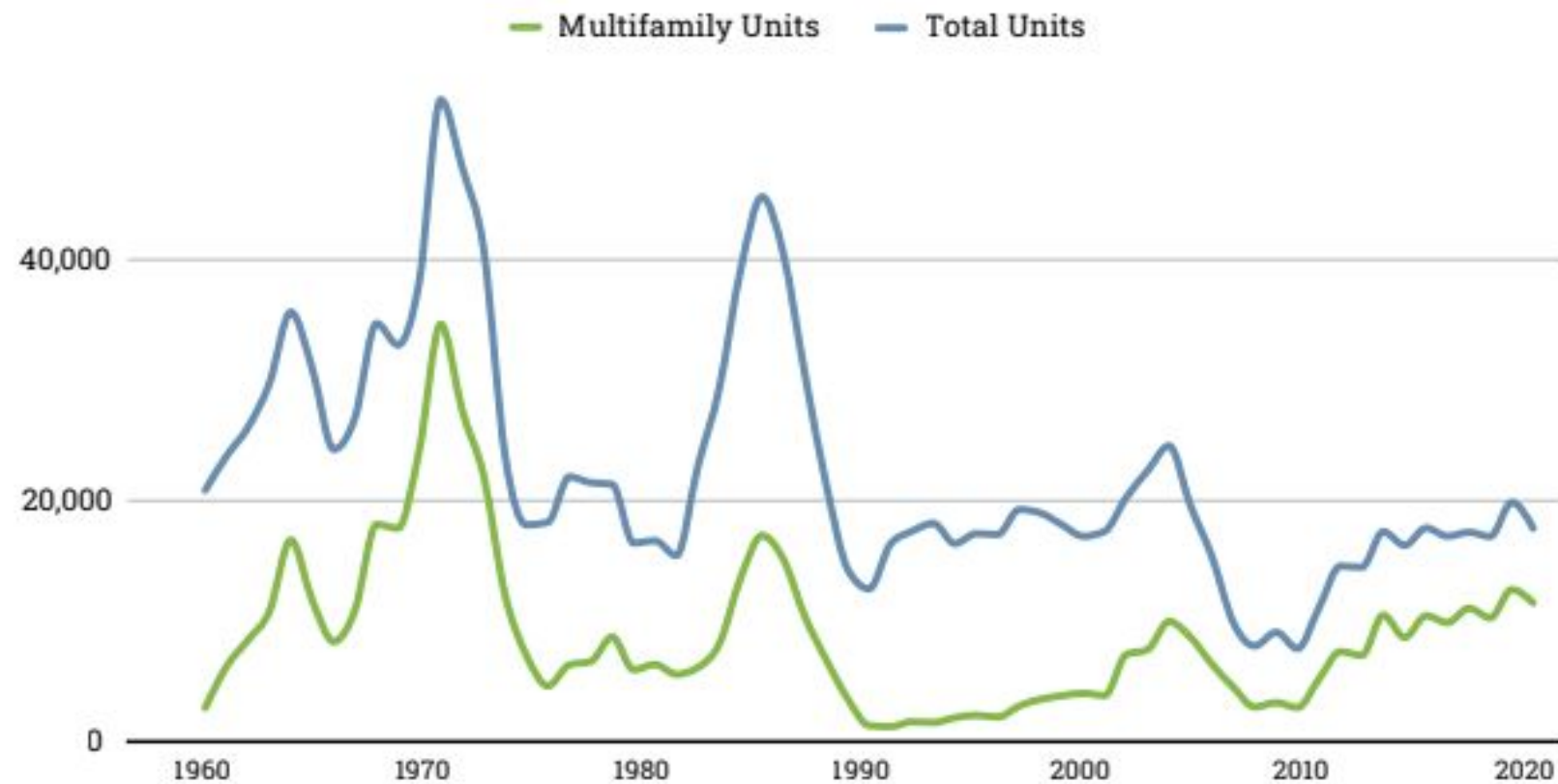


Chart: Reproduced version of graph appearing in Massachusetts Housing Partnership 2023 Building Momentum Report  
Source: U.S. Census Building Permit Survey

FIGURE 14

## Most states build substantially more housing per capita than Massachusetts.

Housing permits per 1,000 residents by state, 2022.

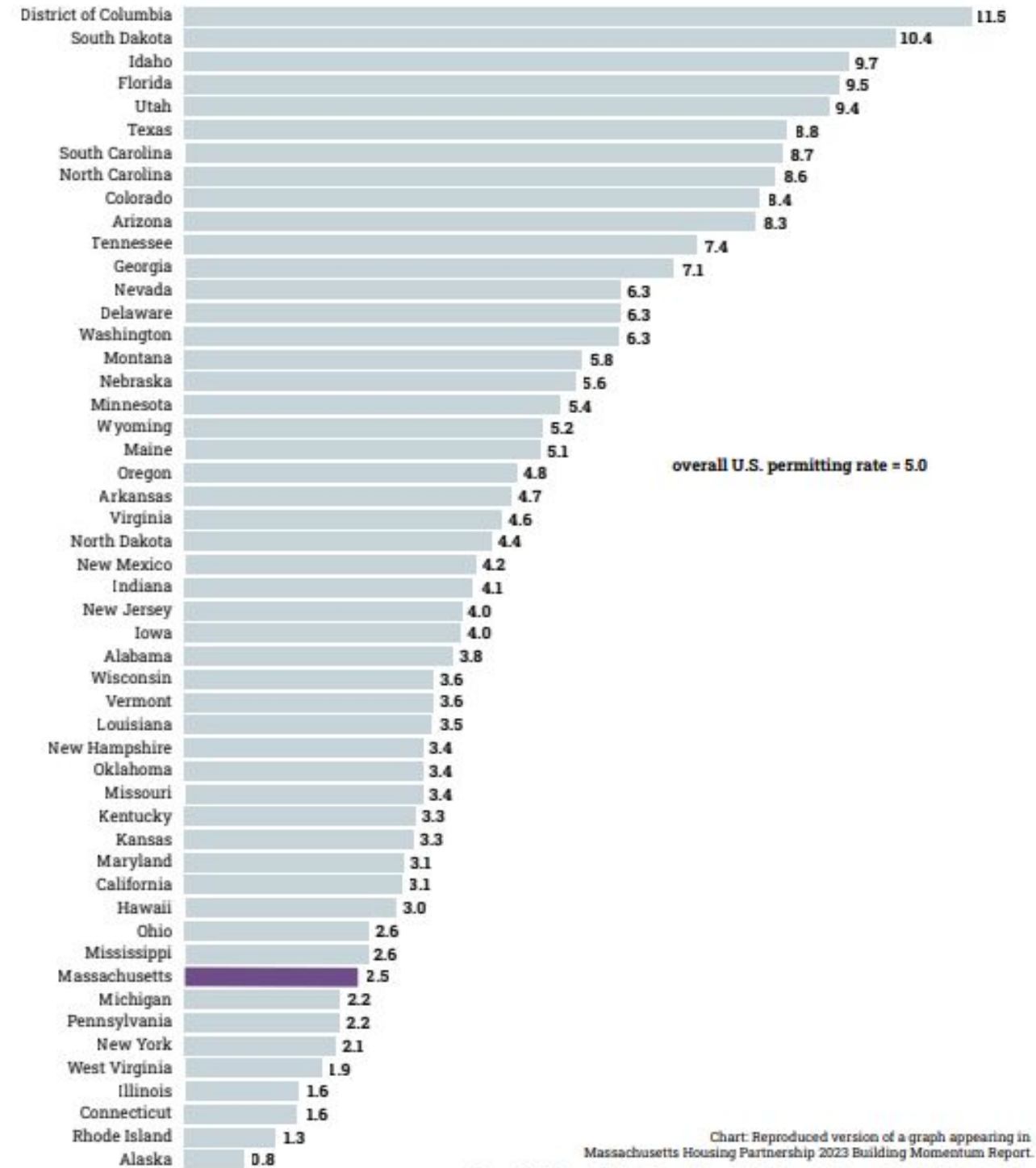


Chart: Reproduced version of a graph appearing in Massachusetts Housing Partnership 2023 Building Momentum Report.  
Source: U.S. Census Building Permit Survey, U.S. Census Bureau Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia, and Puerto Rico



# The Conversation

OPINION

## How changing an old rule about stairs could unlock a lot of new housing

THE EDITORIAL BOARD  
PUBLISHED MAY 25, 2024

FORUM

### Exit Strategy

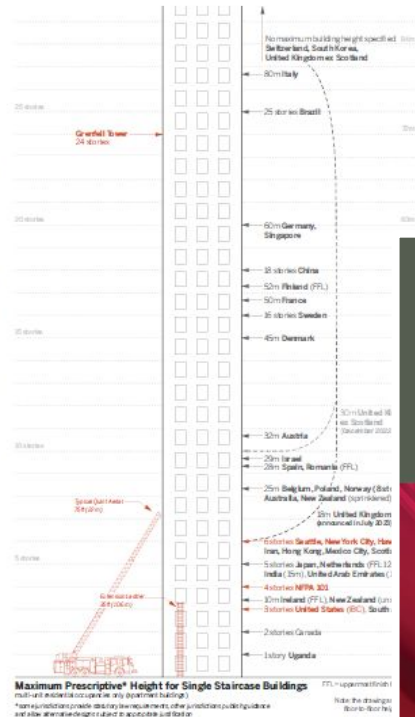
Allowing single-stair apartment buildings would bring a variety of benefits, writes Alex Armovich.

AMERICAN land-use reformers intent on addressing present-day housing shortages have, for the last decade, focused their efforts on amending zoning codes—the very rules that gradually downsized most urban land in the U.S., effectively outlawing multifamily housing, spurring suburban sprawl, and fanning the current crisis. Recently, however, a group of young architects and planners has brought attention to another code barrier that limits design options for large multifamily buildings: the multiple egress routes mandated by most American building codes. The argument, in short, is to re-legalize single-stair apartment buildings, also known as “point-access blocks”—a typology that was once commonplace and remains so in much of the world, including the European Union, where fireproof single-stair designs are allowed. If combined with zoning reform, such code reform would enable attractive, light-filled multifamily housing to be built cost-effectively on countless urban sites that would otherwise be developed as single-family homes.

Commentators often wonder why new apartment buildings across the United States tend to look alike, not-so-subtly implicating architects and developers. One key reason is that decisions around organization and massing are prescribed by, or strongly incentivized by, regulations. In the limited areas where zoning codes allow for apartments, these rules have given us the notorious “five over one.” In code lingo, these are a Type V light wood frame of up to five stories built over a single story of Type I fireproof podium (typically steel or concrete), with a double-loaded corridor and a stair at each end. Long, windowless corridors slice through the middle of deep floor plates. Non-corner units only have windows on one side, opposite the entry door—favoring studios and one-bedroom layouts.

By contrast, single-stair buildings across Europe tend to have shallower floor plates, “flow-through” light on at least two sides of each unit, and a shared central courtyard. Older American cities also feature outstanding examples of these “garden apartments.” New York’s first garden-apartment blocks, in Jackson Heights, Queens, were celebrated in *ARCHITECTURAL RECORD* in 1920 for their array of unit layouts and variety of outdoor spaces. Indeed, single-stair designs deliver more of the light, air, and acoustic privacy typically provided by detached single-family buildings. Light on two or three sides facilitates multibedroom suites even in compact floor plates. These buildings also facilitate community building. In Jackson Heights, for example, whole-block developments are composed of many buildings in series, each governed by its own co-op board, and each, with 20 or so units arranged around a single stair, is small enough for residents to get to know each other. (New York and Seattle are the only two American cities that continued to allow single-stair buildings throughout the 20th century.)

Single-stair designs also unlock economically feasible multifamily development on small in-fill lots. On such sites,



public



### THIS IS WHY WE CAN'T HAVE NICE THINGS.



### Single-Egress Stairs in multi-unit residential buildings

CASE STUDY | DECEMBER 2023

small housing



ground

IBC Code (IBC) requires that any multi-unit building over two stories must be equipped with egress stairs. The two-egress requirement was first developed in the 1940s when wood-frame buildings were highly combustible and fire safety was a major concern. Today, modern firefighting practices, automated sprinklers, fire-resistant materials, and other innovations have rendered wood-frame buildings that are as - or even more - fire safe than a two-story steel building.

#### Policy/program

Single egress in multi-unit residential buildings

#### Municipality

City of Vancouver, BC (2021 population: 663,348)

#### Gentle Density Types Involved

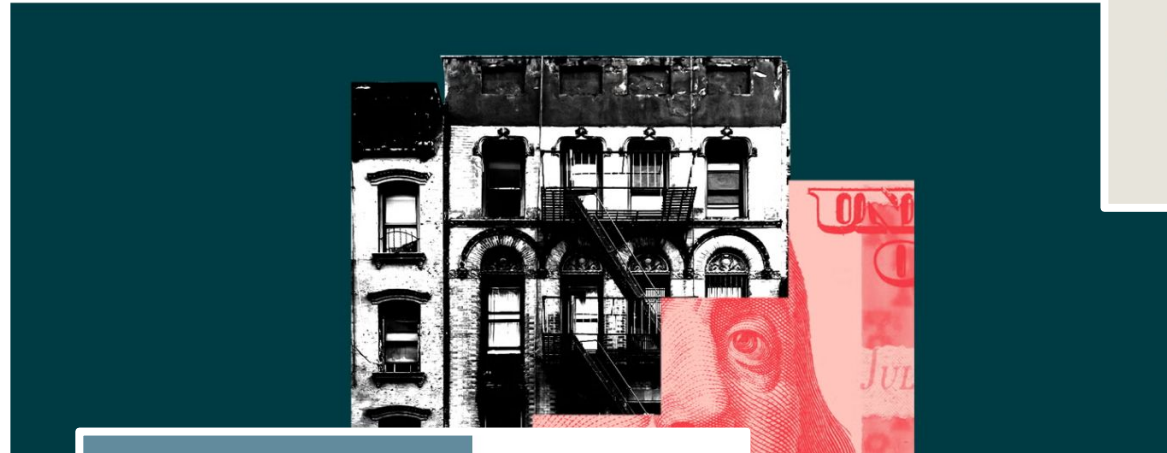
Multi-unit residential buildings above two stories with single egress stairs

Case Study | Single-Egress Stairs in multi-unit residential buildings | December 2023 | 1

DISCOURSE | REAL ESTATE

## One small step for apartment-kind

The foolproof fix for America's housing crisis: fewer stairs.



ATA24

## Bridging the Housing Gap: The Rise of Single-Stair Apartments

FR216

6/7/2024 2:00pm – 3:30pm

1.50 LUs/HSW/RIBA

ATA

Unlocking livable, resilient, decarbonized housing with Point Access Blocks



### In Canada and the U.S., every apartment must give its residents access

Final Report – Prepared by Larch Lab for the City of Vancouver, 28 December 2021

How Breaking Rules Could Create Better Apartments

2:21 / 11:12

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# The Support



larch lab



utile



1

STATUS QUO

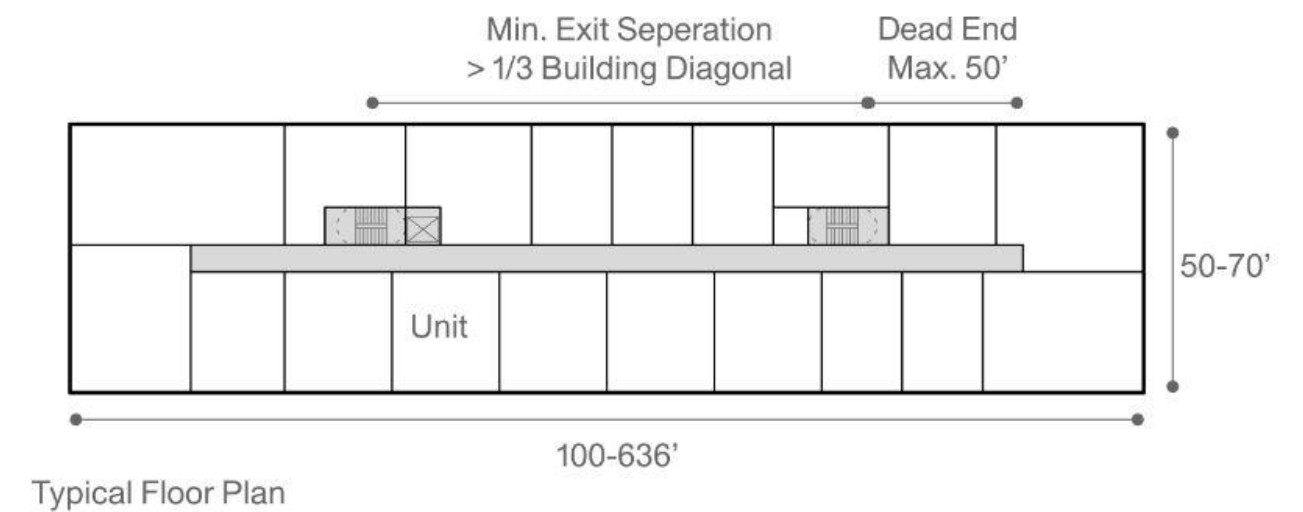
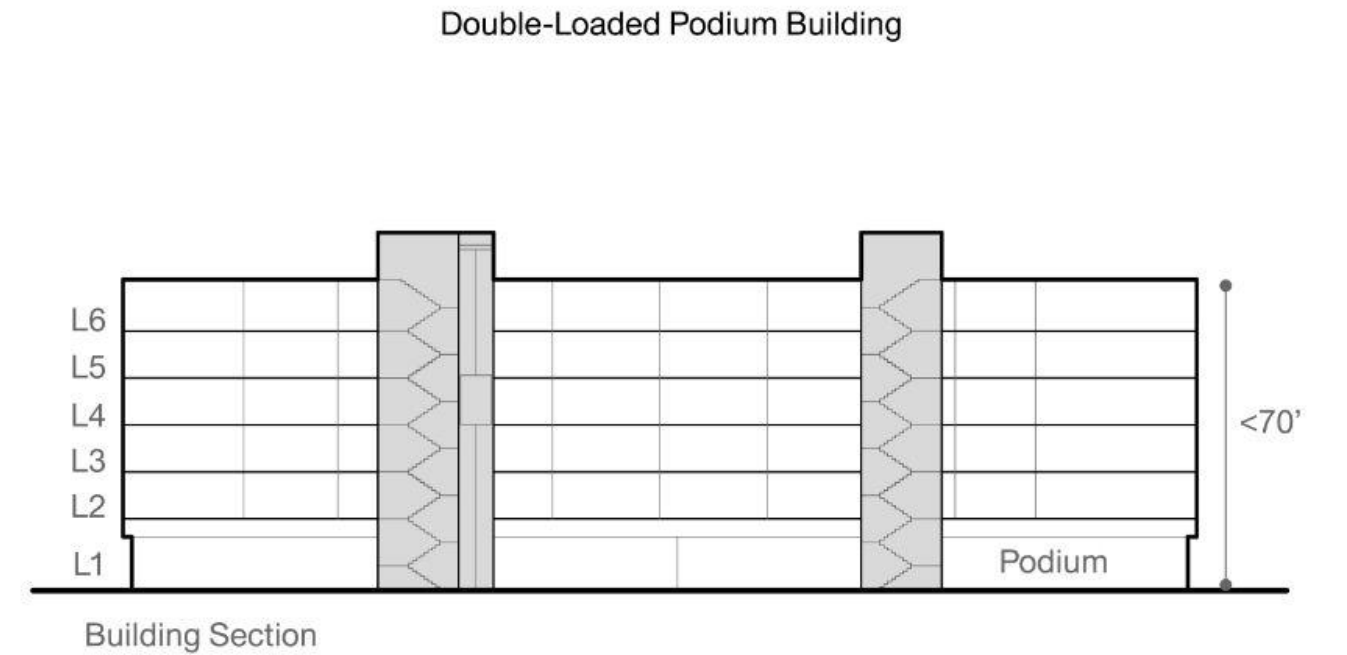
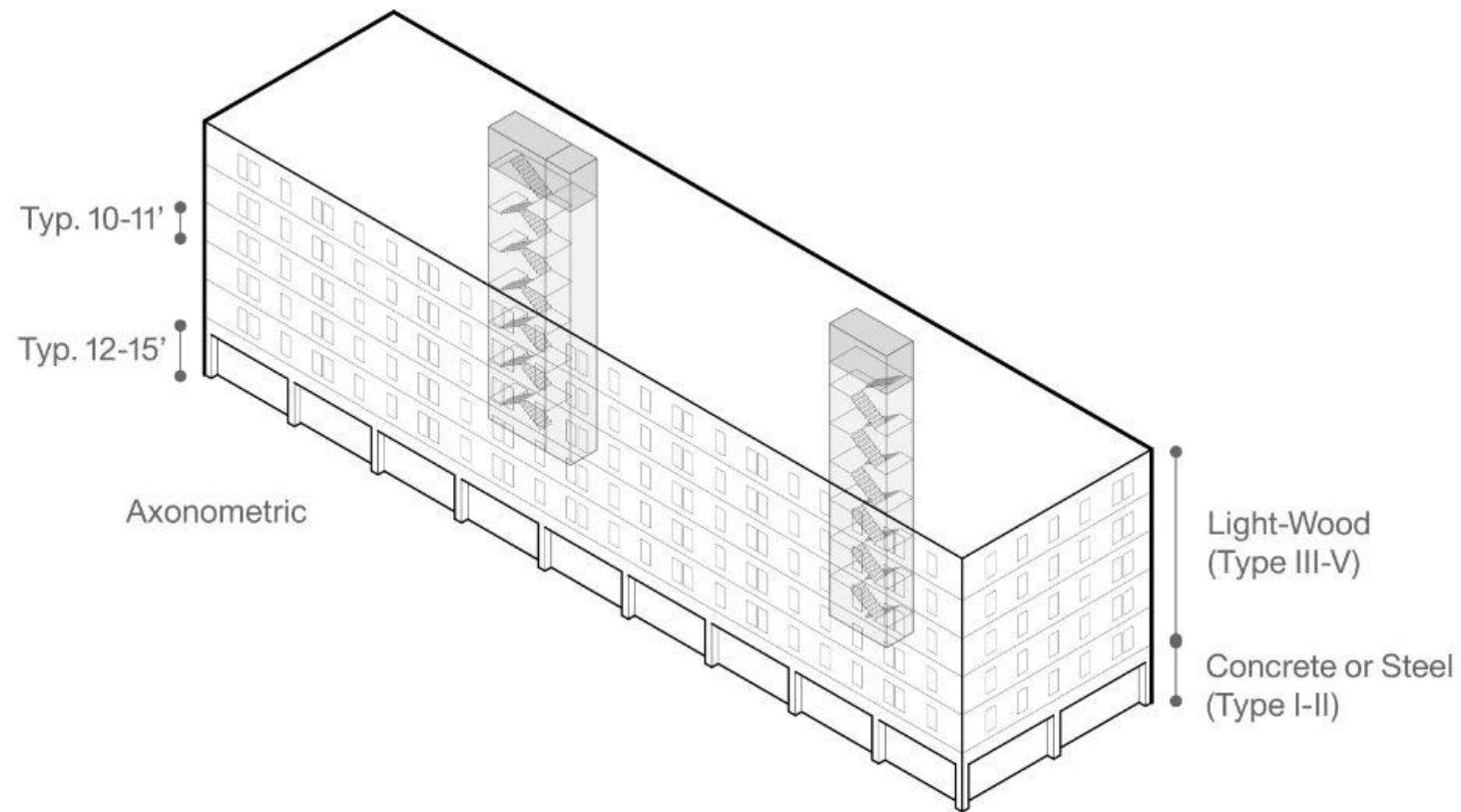
VS.

SINGLE-STAIR



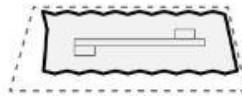
# Status Quo Podium Building

- Only Works at Large Sizes (11-15k floorplate)
- No Cross Ventilation
- Only 1 Aspect for natural light
- Less family sized units
- Inflexible Podium Design



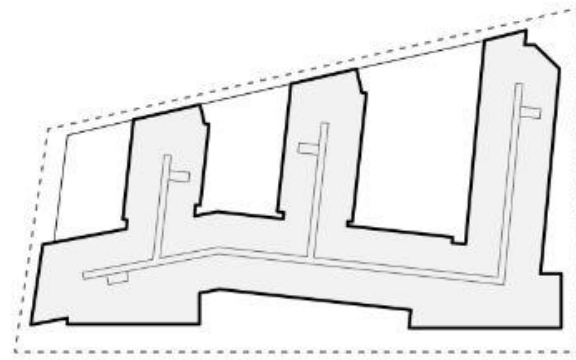
# Double-Loaded Footprints

Six-plex Footprint on Median Sized Boston Parcel (4,600 SF)

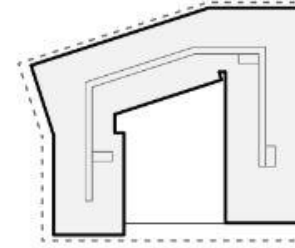


9K

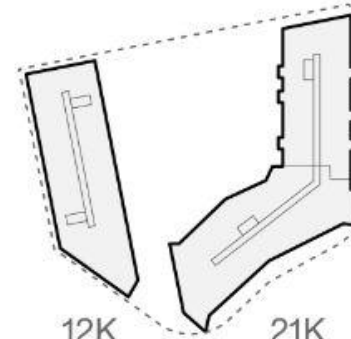
Typical Greater Boston Double-loaded Podium Footprints



61K Footprint

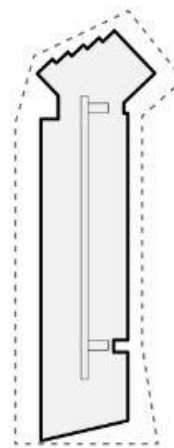


29K

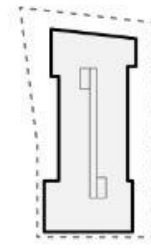


12K

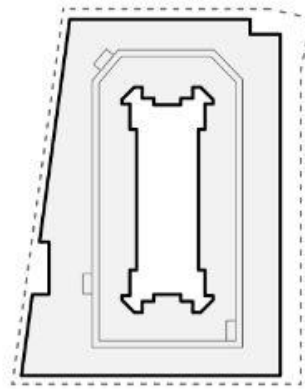
21K



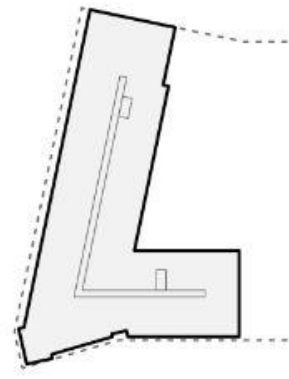
26K



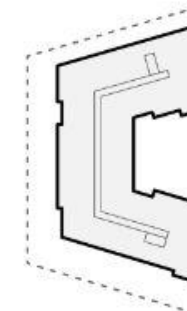
12K



55K



31K



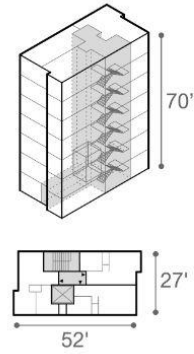
20K



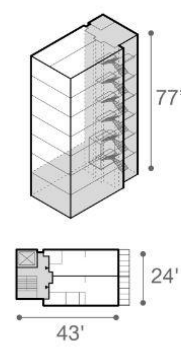
# Point-Access-Blocks (PABs)

## Small Infill

Capitol Core  
Seattle, WA  
2017  
17 Units  
76% Efficient  
1,374 GSF Floor Plate

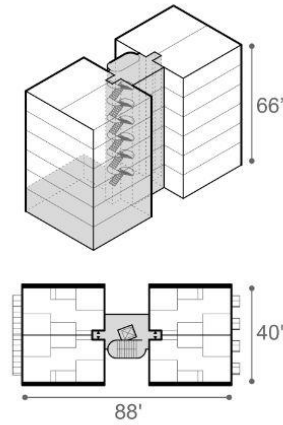


Apartment in Katayama  
Suita-Shi, Japan  
2007  
10 Units  
66% Efficient  
970 GSF FP

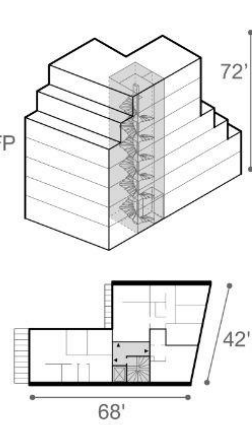


## Party Wall

110 Rooms  
Barcelona, Spain  
2016  
22 Units  
88% Efficient  
+/- 3,030 GSF FP

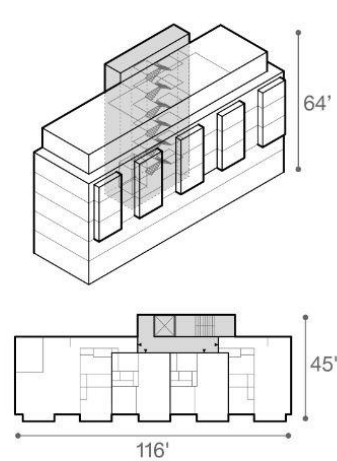


17 Apartments  
Paris, France  
2017  
17 Units  
84% Efficient  
+/- 2,300 GSF FP

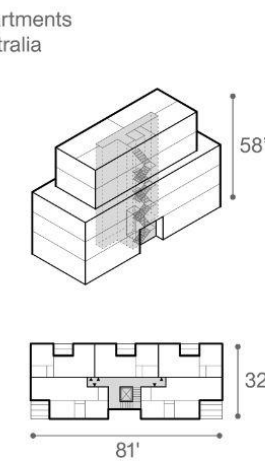


## Side / Single-Loaded

John Street  
Seattle, WA  
2016  
25 Units  
83% Efficient  
4,380 GSF FP

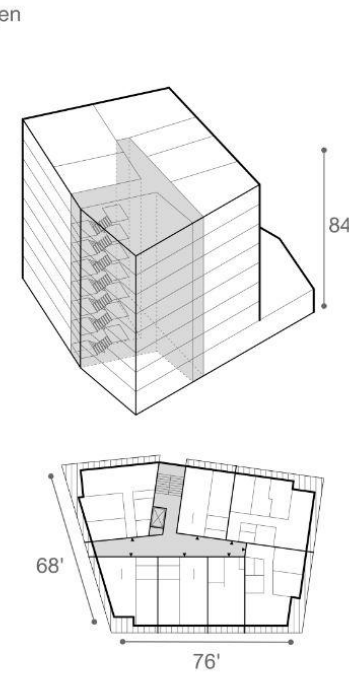


High Street Apartments  
Thornbury, Australia  
2022  
13 Units  
83% Efficient  
2,225 GSF FP

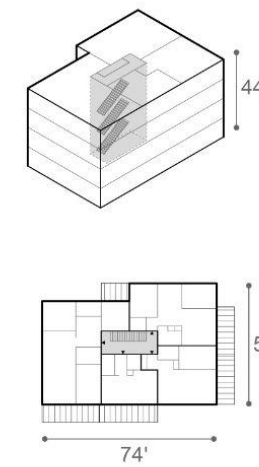


## Center Core

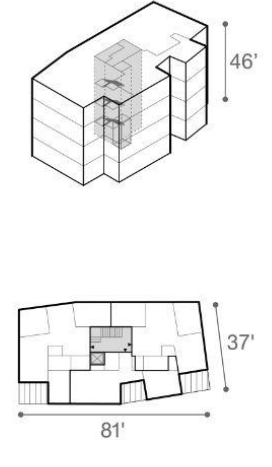
Quartier am Seebogen  
Vienna, Austria  
2021  
49 Units  
83% Efficient  
5,713 GSF FP



Suurstoffi Development  
Zurich, Switzerland  
2015  
16 Units  
90% Efficient  
3,455 GSF FP

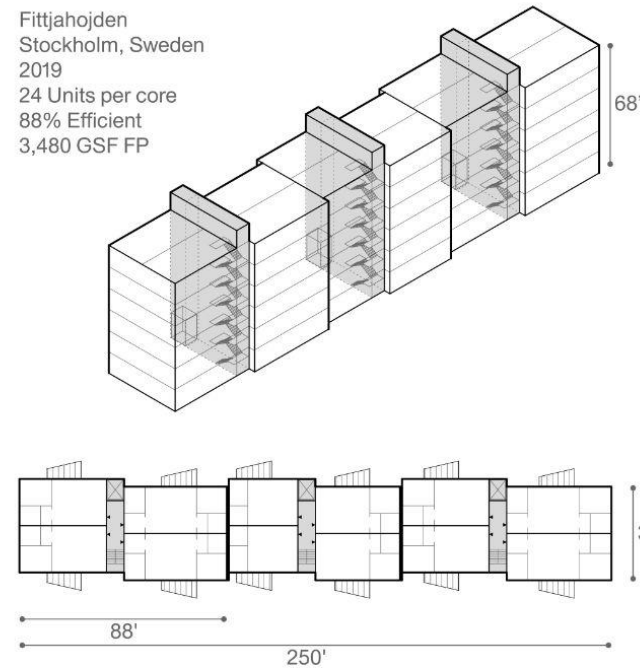


Apartments in Wetzikon  
Wetzikon, Switzerland  
2021  
12 Units  
89% Efficient  
2,891 GSF FP

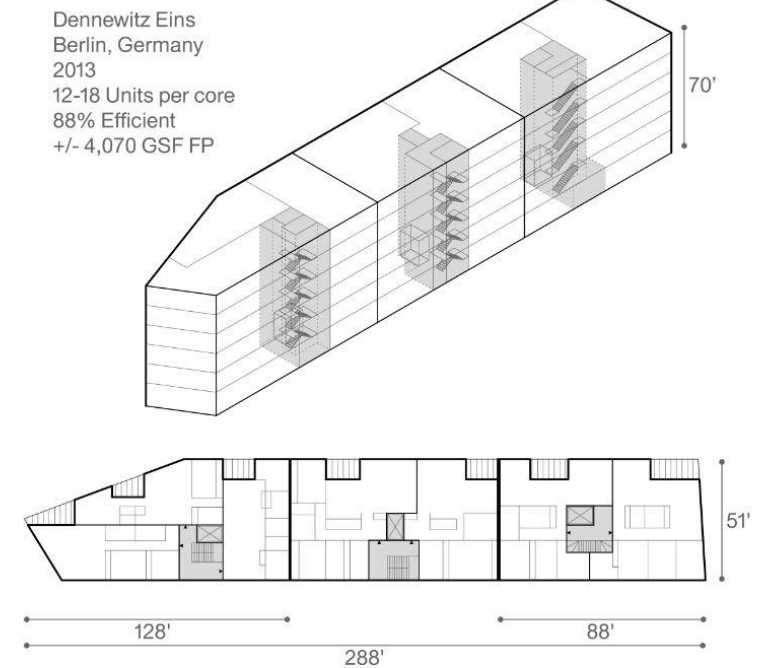


## Blocks

Fittjahojden  
Stockholm, Sweden  
2019  
24 Units per core  
88% Efficient  
3,480 GSF FP



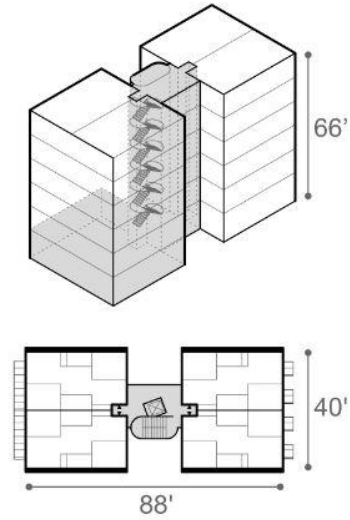
Dennewitz Eins  
Berlin, Germany  
2013  
12-18 Units per core  
88% Efficient  
+/- 4,070 GSF FP



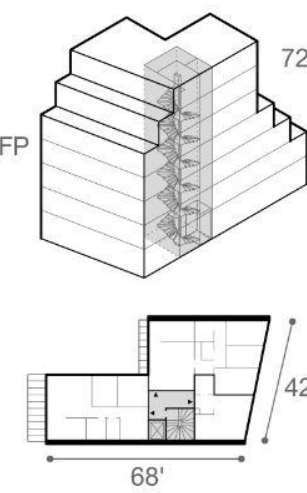


# Point-Access-Blocks (PABs)

110 Rooms  
Barcelona, Spain  
2016  
22 Units  
88% Efficient  
+/- 3,030 GSF FP



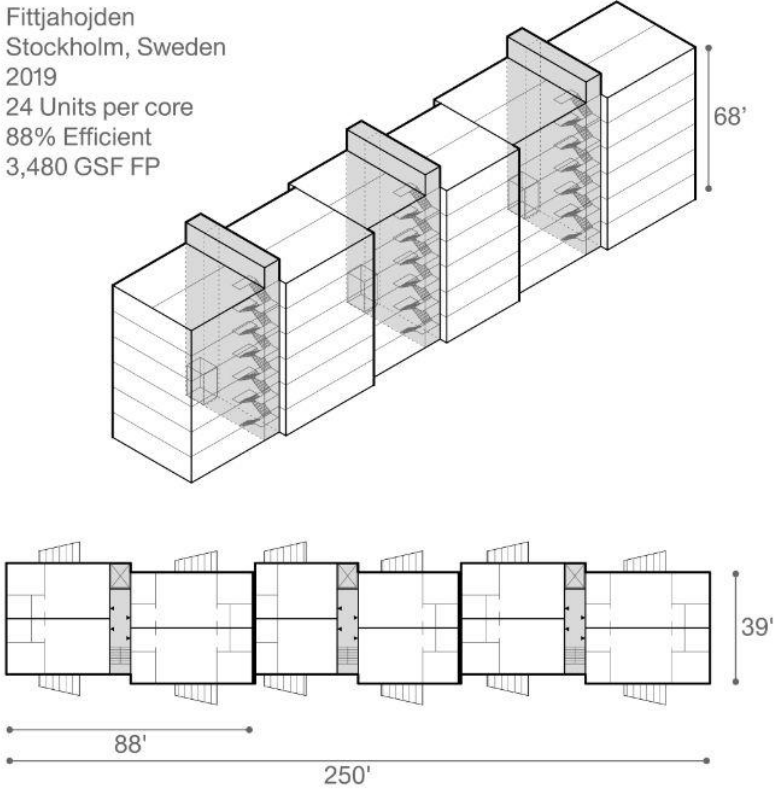
17 Apartments  
Paris, France  
2017  
17 Units  
84% Efficient  
+/- 2,300 GSF FP



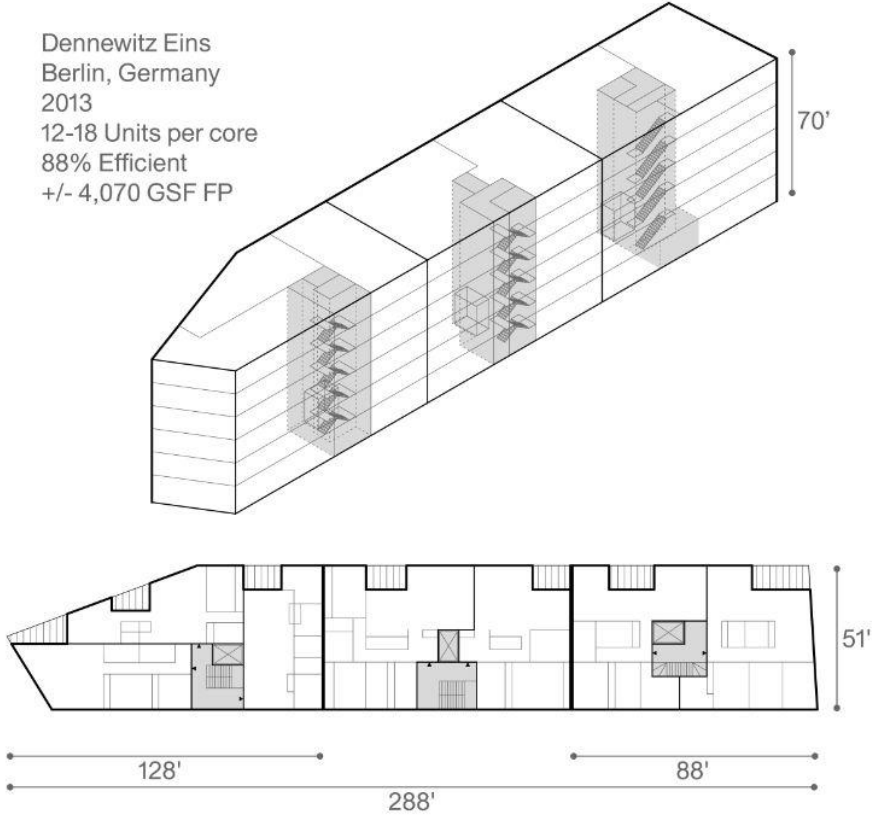


# Point-Access-Blocks (PABs)

Fittjahojden  
 Stockholm, Sweden  
 2019  
 24 Units per core  
 88% Efficient  
 3,480 GSF FP



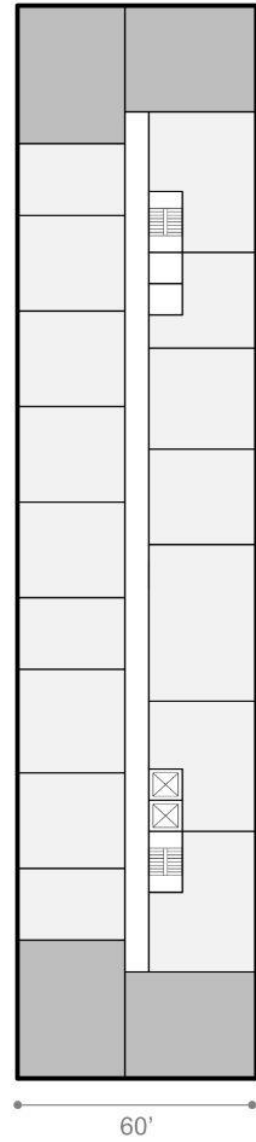
Dennewitz Eins  
 Berlin, Germany  
 2013  
 12-18 Units per core  
 88% Efficient  
 +/- 4,070 GSF FP



# More Air & Light

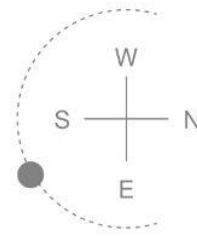
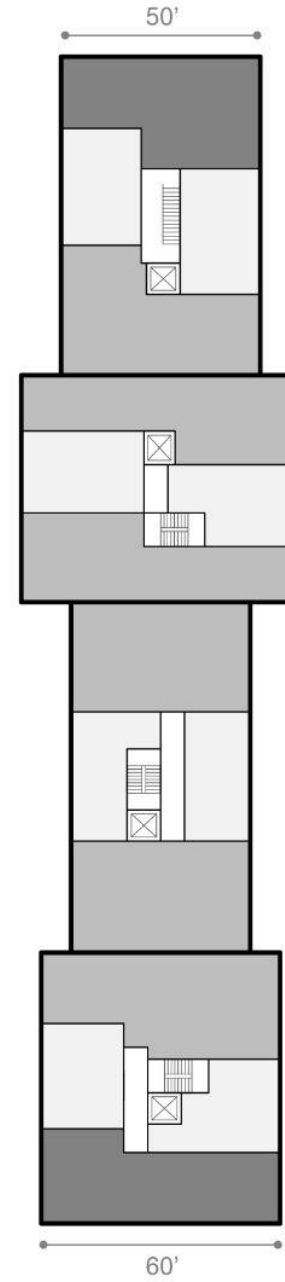
Double-Loaded  
Floor Plan

16,000 GSF Floor Plate  
20 Units  
88% Efficient



Point-Loaded  
Floor Plan

16,000 GSF FP  
16 Units  
91% Efficient



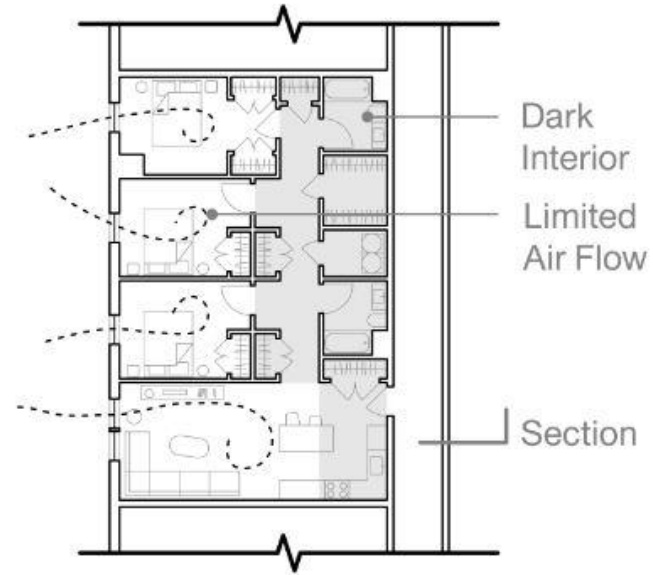
Single-Aspect    Dual-Aspect    Triple-Aspect



# More Air & Light

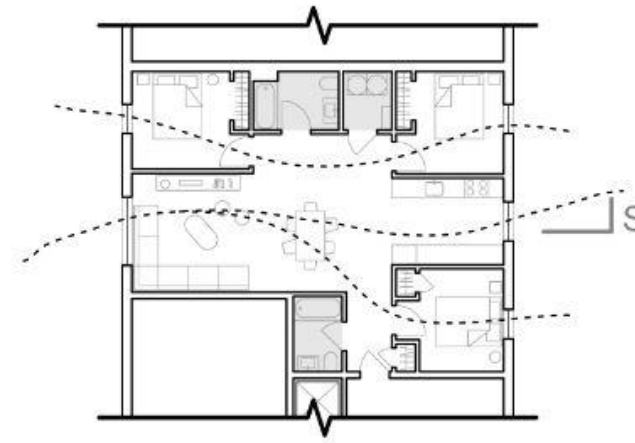
Double-Loaded  
Unit Plan

3 Bed / 2 Bath  
Single-Aspect

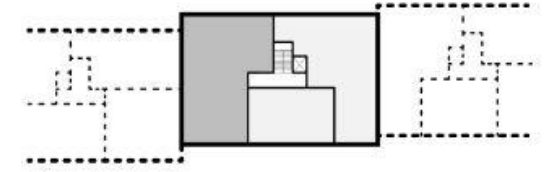
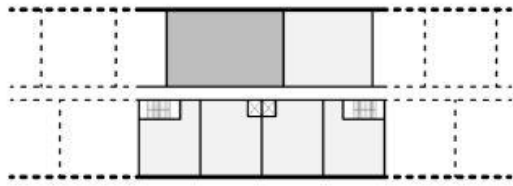


Point-Loaded  
Unit Plan

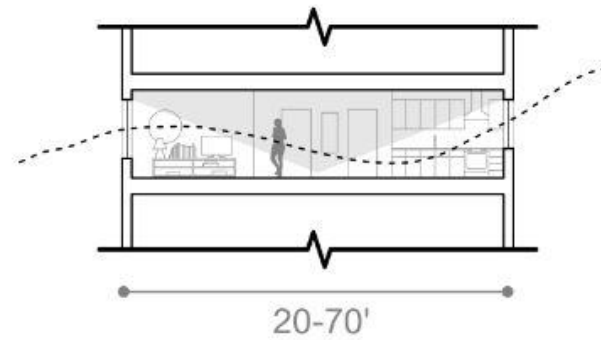
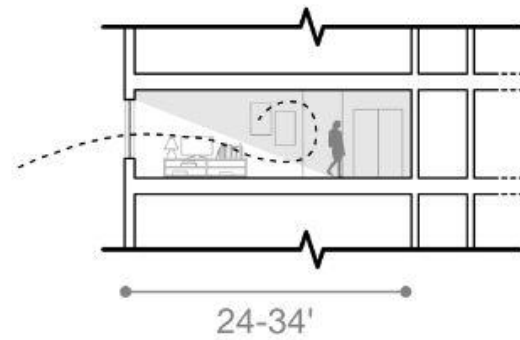
3 Bed / 2 Bath  
Dual-Aspect



Key Building Plans

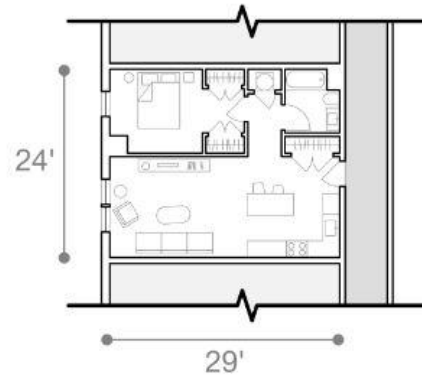


Unit Sections

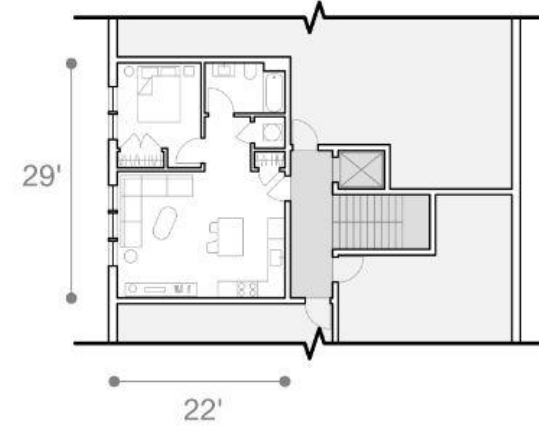


# Family Sized

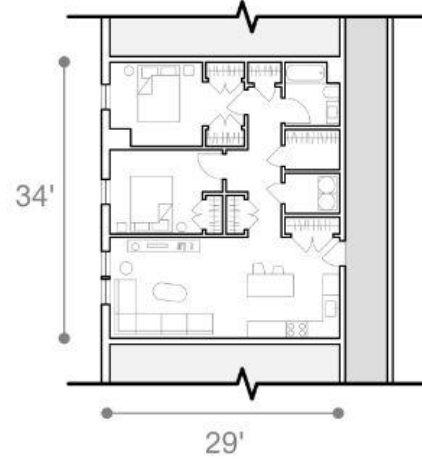
612 SF  
1 Bed / 1 Bath



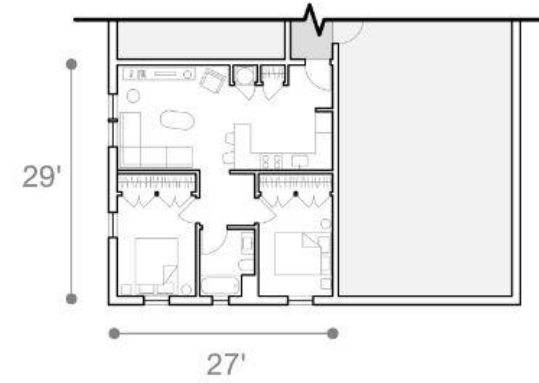
560 SF  
1 Bed / 1 Bath



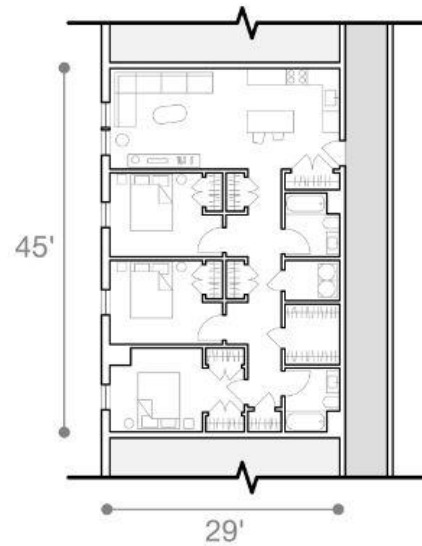
900 SF  
2 Bed / 1 Bath



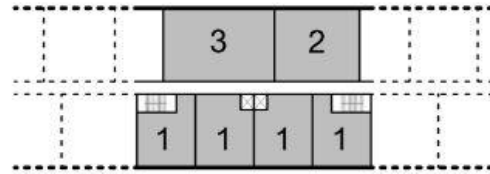
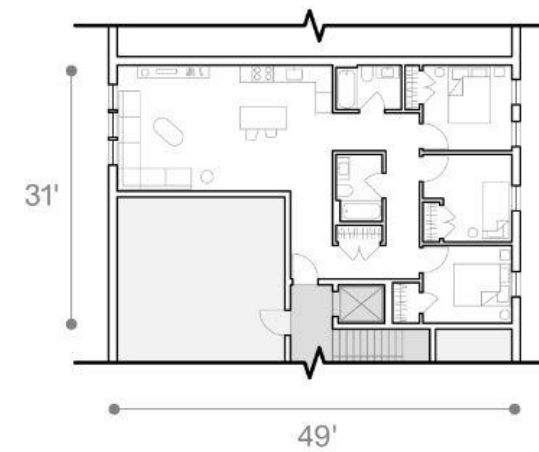
705 SF  
2 Bed / 1 Bath



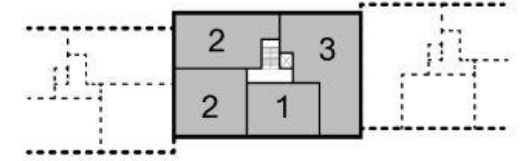
1,182 SF  
3 Bed / 2 Bath



1,054 SF  
3 Bed / 2 Bath



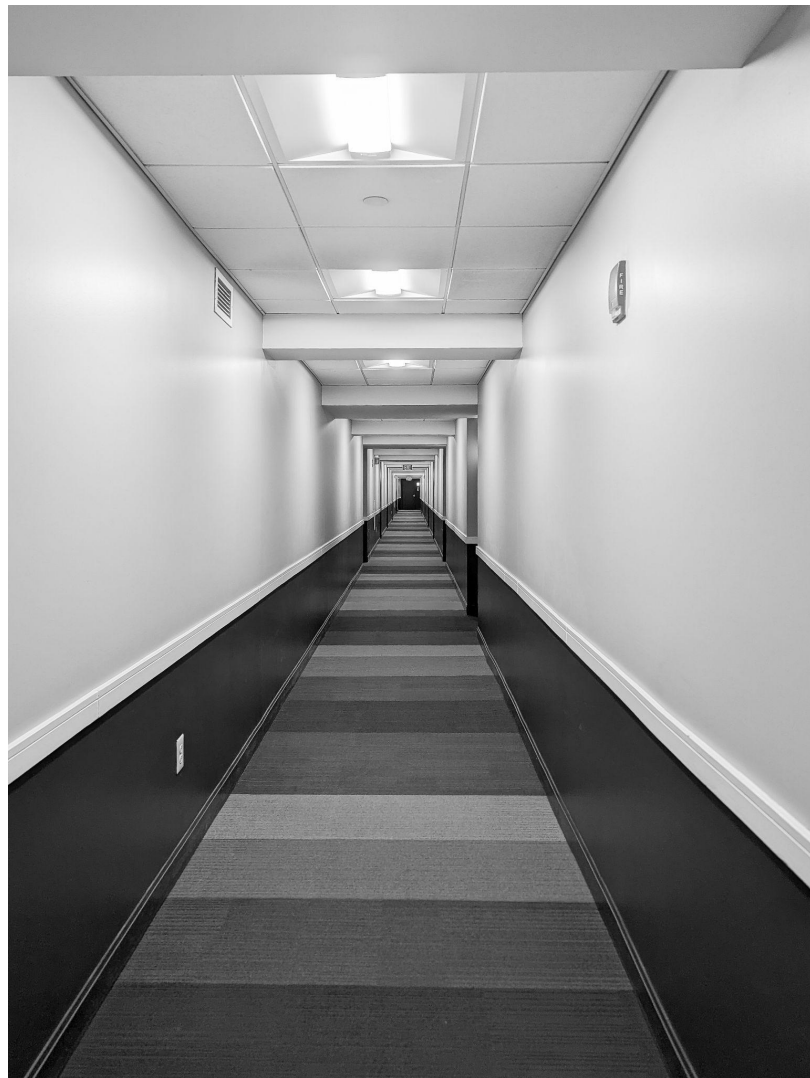
Double-Loaded  
Unit Plans



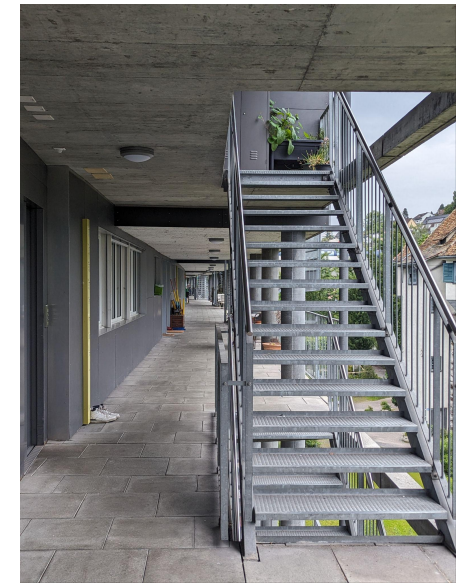
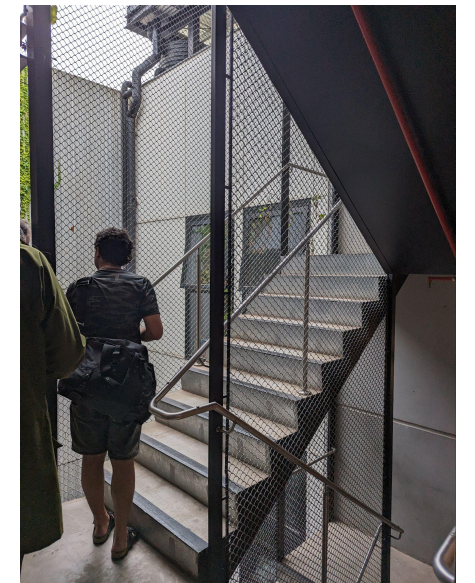
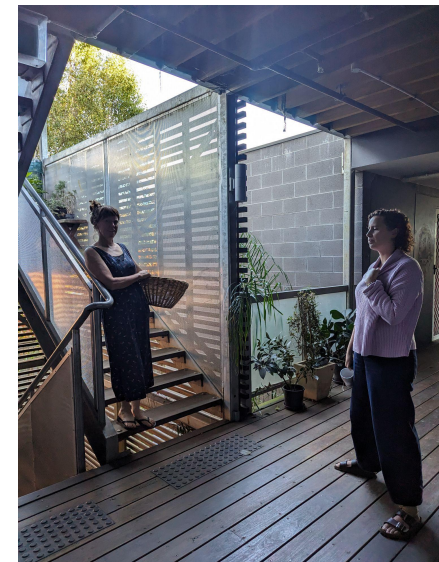
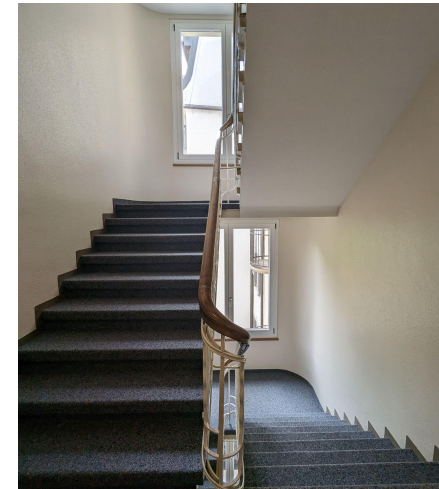
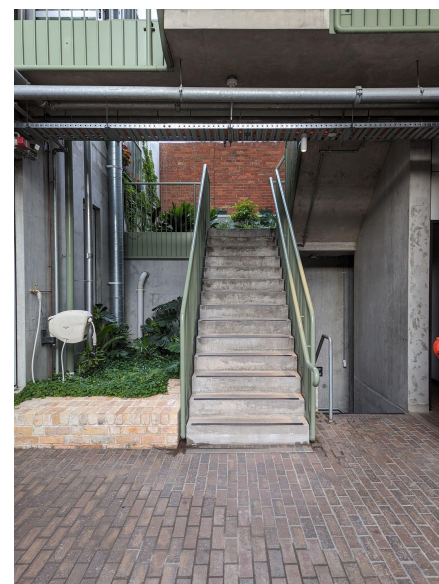
Point-Loaded  
Unit Plans



# Corridor vs. Single-Stair



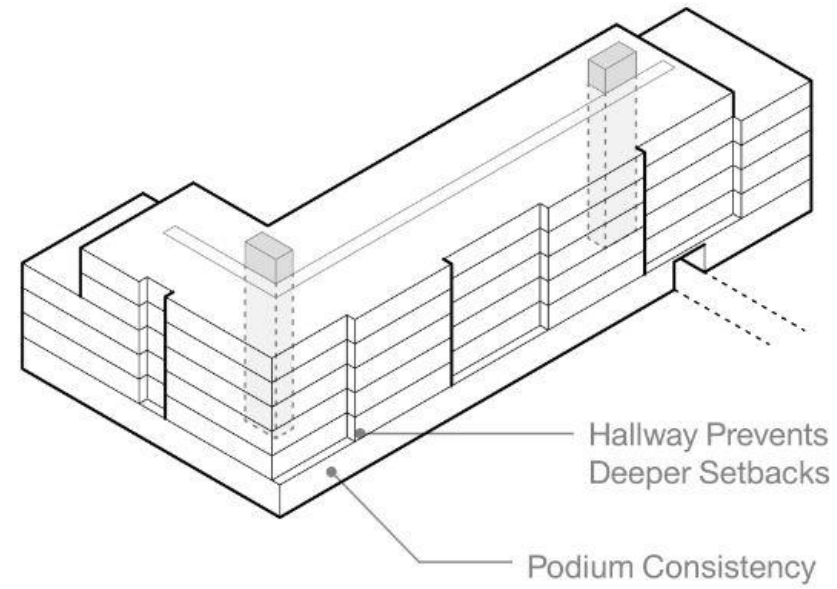
Multifamily in Boston



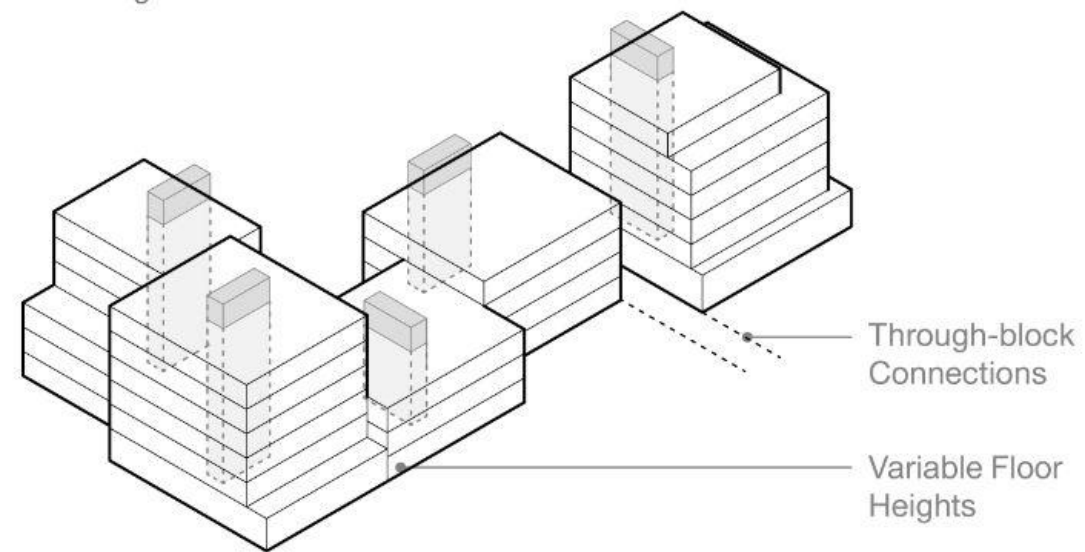


# Better Urbanism

Mid-Rise Double-Loaded Podium  
Limited Massing Options



Mid-Rise PABs in Sequence  
Variable Massing Possible

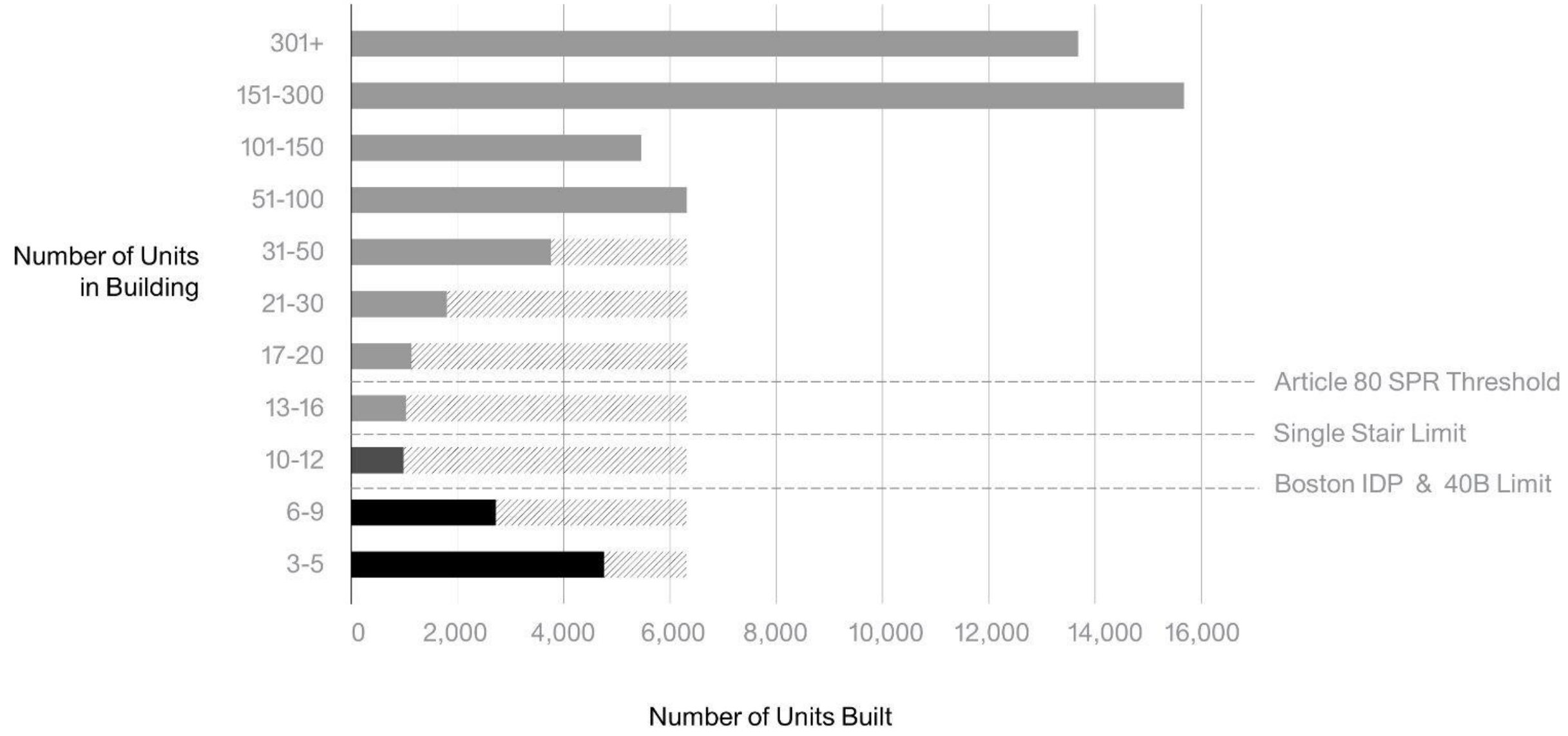


# The Missing Middle

“Greater Boston”  
MBTA Rapid Transit  
Communities

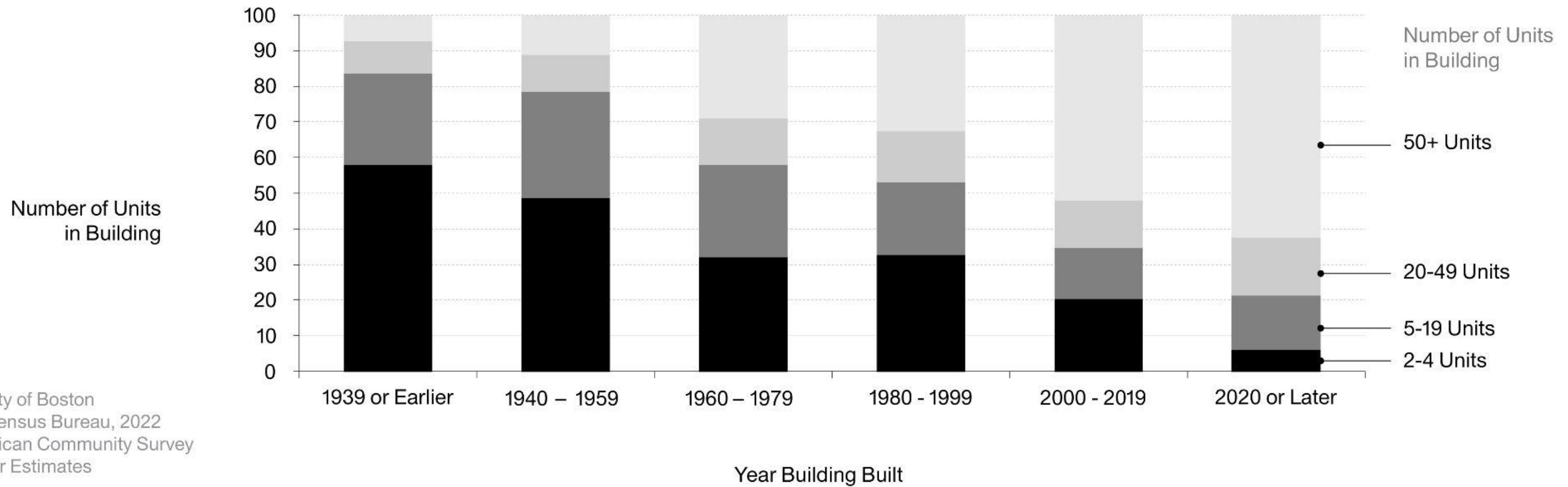


Total Housing Units Built in Greater Boston  
by Number of Units in the Building (2001-2022)



# Missing More Over Time

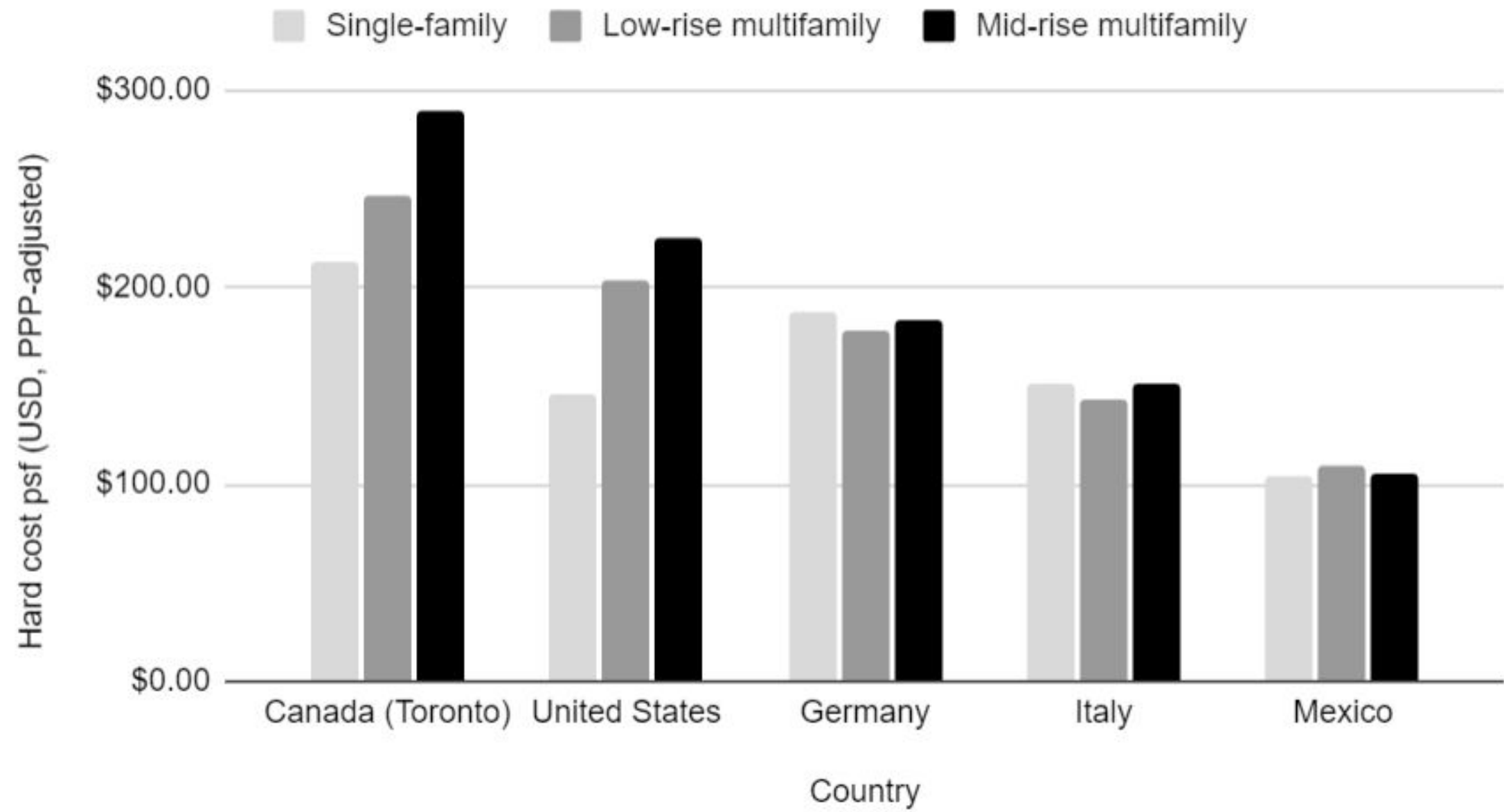
Share of Total Housing Production by Building Unit Count  
as a share of all units built per year





# Missing Also Because it's Expensive

Cost of Housing Typologies Around the World

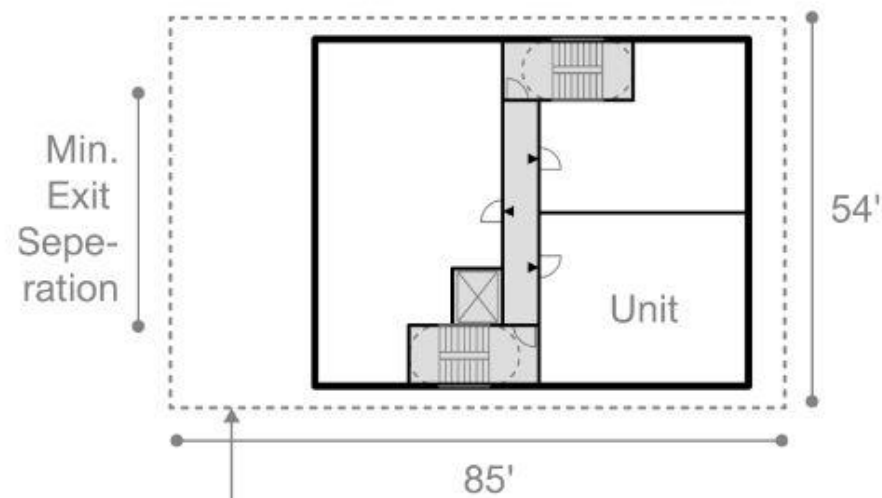


Courtesy of Center for Building in North America

# Unlocking Production

Small Double-Loaded Plan  
82% Efficient

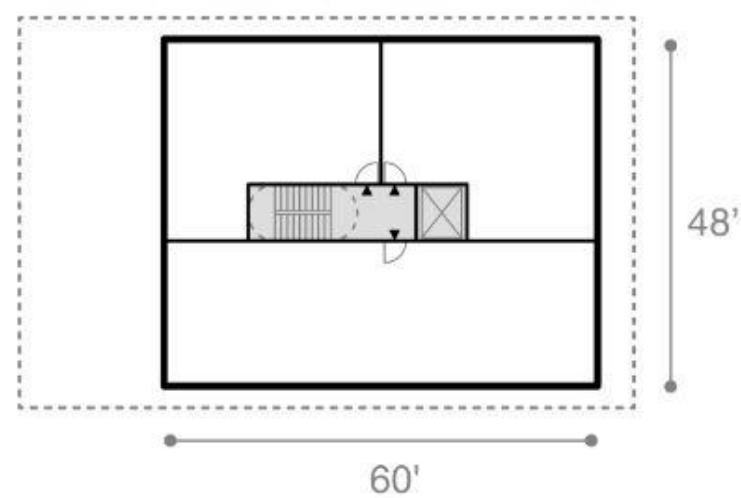
2,880 GSF Floor Plate  
3 Units



Median Parcel Size in Greater Boston (4,600 SF)

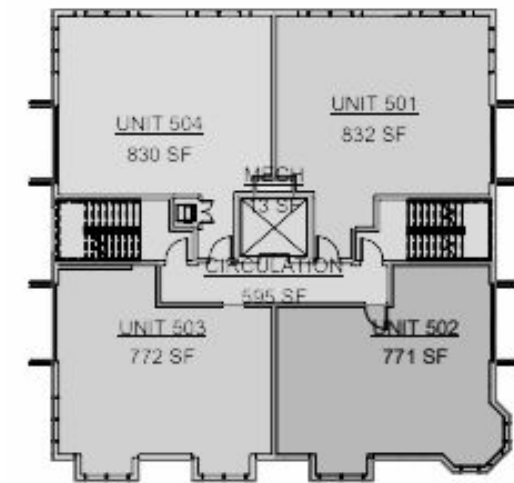
Small Single-Stair Plan  
92% Efficient

2,880 GSF FP  
3 Units



Residential Real Estate

## Developer pulls Cambridge housing proposal, citing climate rule



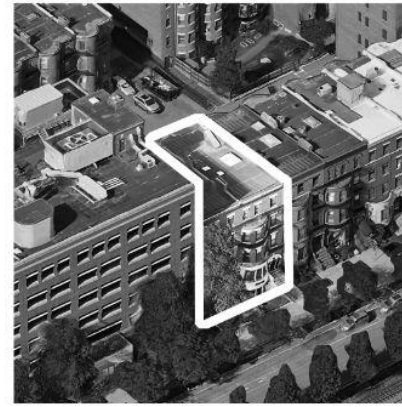
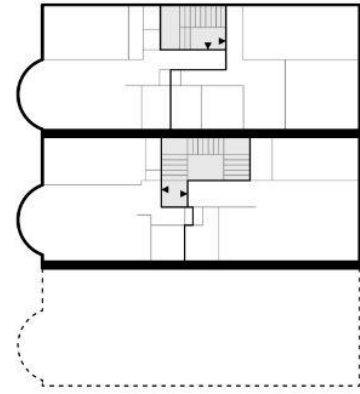


# 2 GREATER BOSTON HOUSING HISTORY

# Historic Single-Stair Fabric

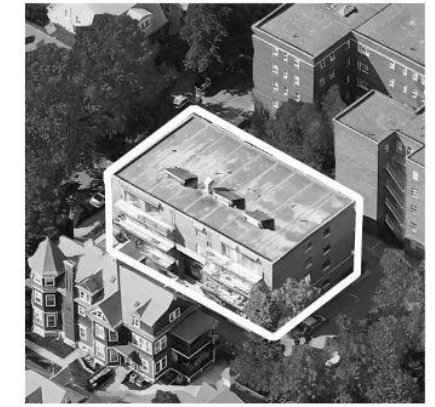
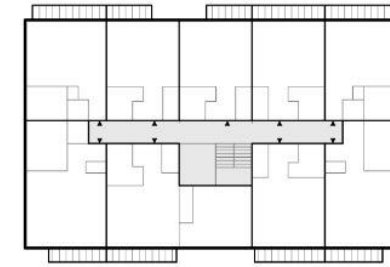
627 – 629 Commonwealth Ave.  
Boston, MA

Stories 4  
Built 1908



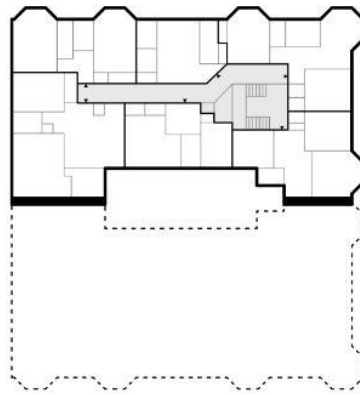
24 Highland Ave.  
Cambridge, MA

Stories 5  
Built 1950



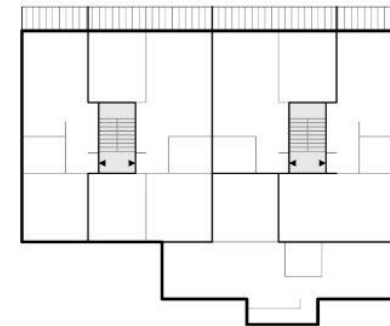
728 Commonwealth Ave.  
Boston, MA

Stories 5  
Built 1912



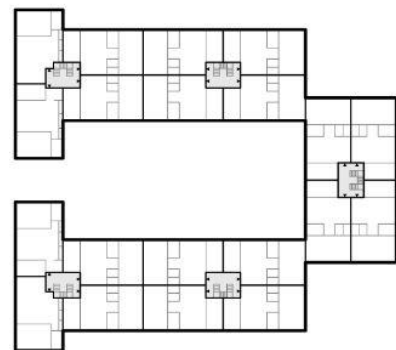
1350 Massachusetts Ave.  
Cambridge, MA

Stories 5 – 22  
Built 1964



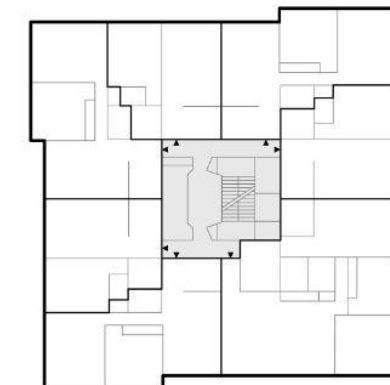
842 – 864 Massachusetts Ave.  
Cambridge, MA

Stories 3 – 5  
Built 1925



1105 Massachusetts Ave.  
Cambridge, MA

Stories 13 (Scissor Stair)  
Built 1970





# Single-Stair Today (by code)

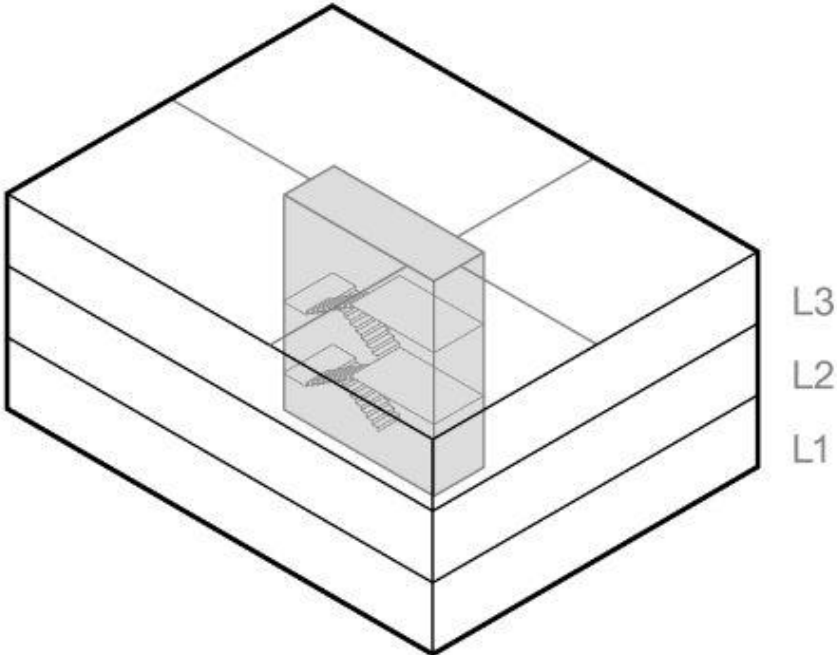
Section 1006.3.2 (Single Exit)

|                                     |      |
|-------------------------------------|------|
| Occupancy                           | R-2  |
| Max. Units Per Floor                | 4    |
| Stories                             | ≤ 3  |
| Max. Exit Access<br>Travel Distance | 125' |

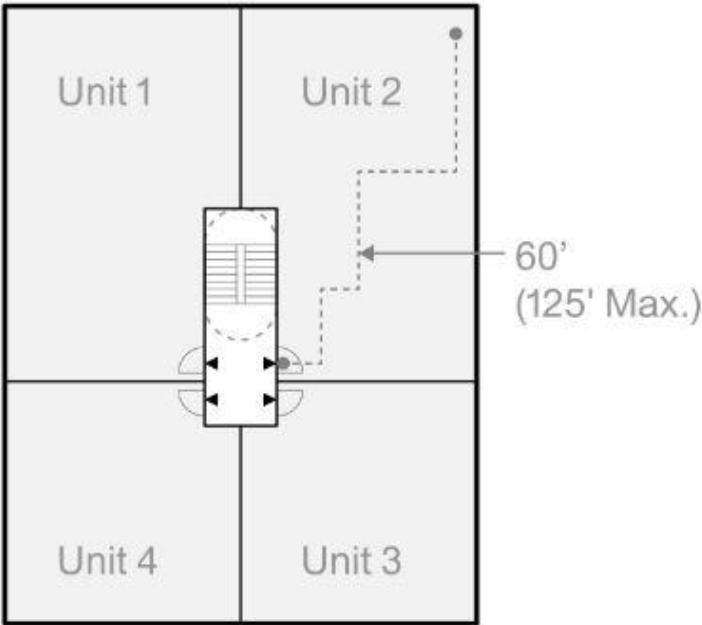
- + Equipped with an Automatic Sprinkler System
- + Equipped with Emergency Escape and Rescue Openings

Existing Single-Stair Limits

Axonometric



Floor Plan



# Single-Stair Today (Suburbs)





# Single-Stair Today

## (Greater Boston)



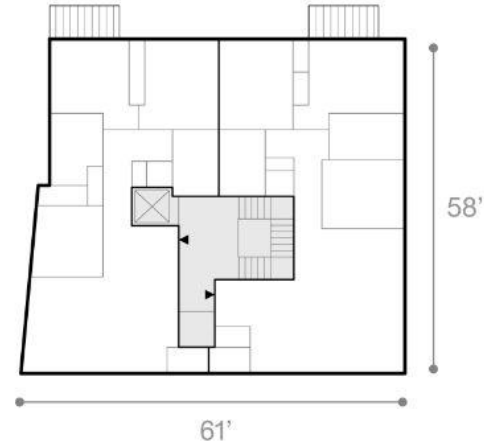
34 – 40 Chestnut Ave.  
Jamaica Plain, MA

Units 4  
Built 2012  
Floor Plate 2,545 GSF



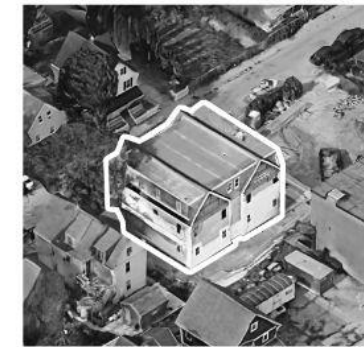
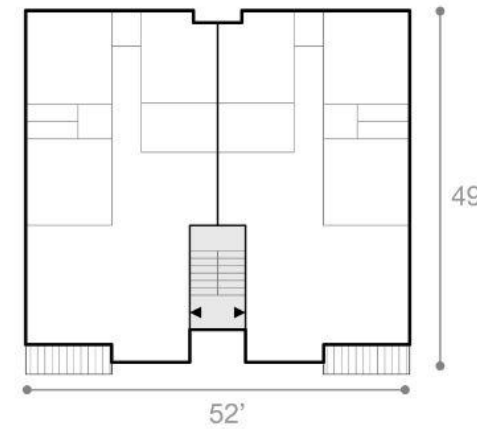
471 Somerville Ave.  
Somerville, MA

Units 5  
Built 2020  
Floor Plate 4,810 GSF



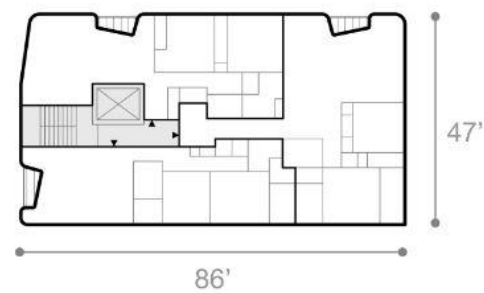
191 Condor St.  
Boston, MA

Units 9  
Built 2023  
Floor Plate 3,187 GSF



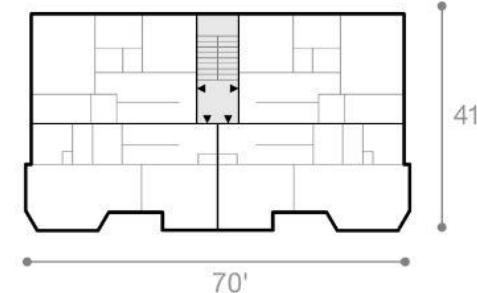
8 Oakhurst St.  
Dorchester, MA

Units 4  
Built 2023  
Floor Plate 2,480 GSF



110 Savin Ave.  
Boston, MA

Units 9  
Built 2019  
Floor Plate 3,980 GSF



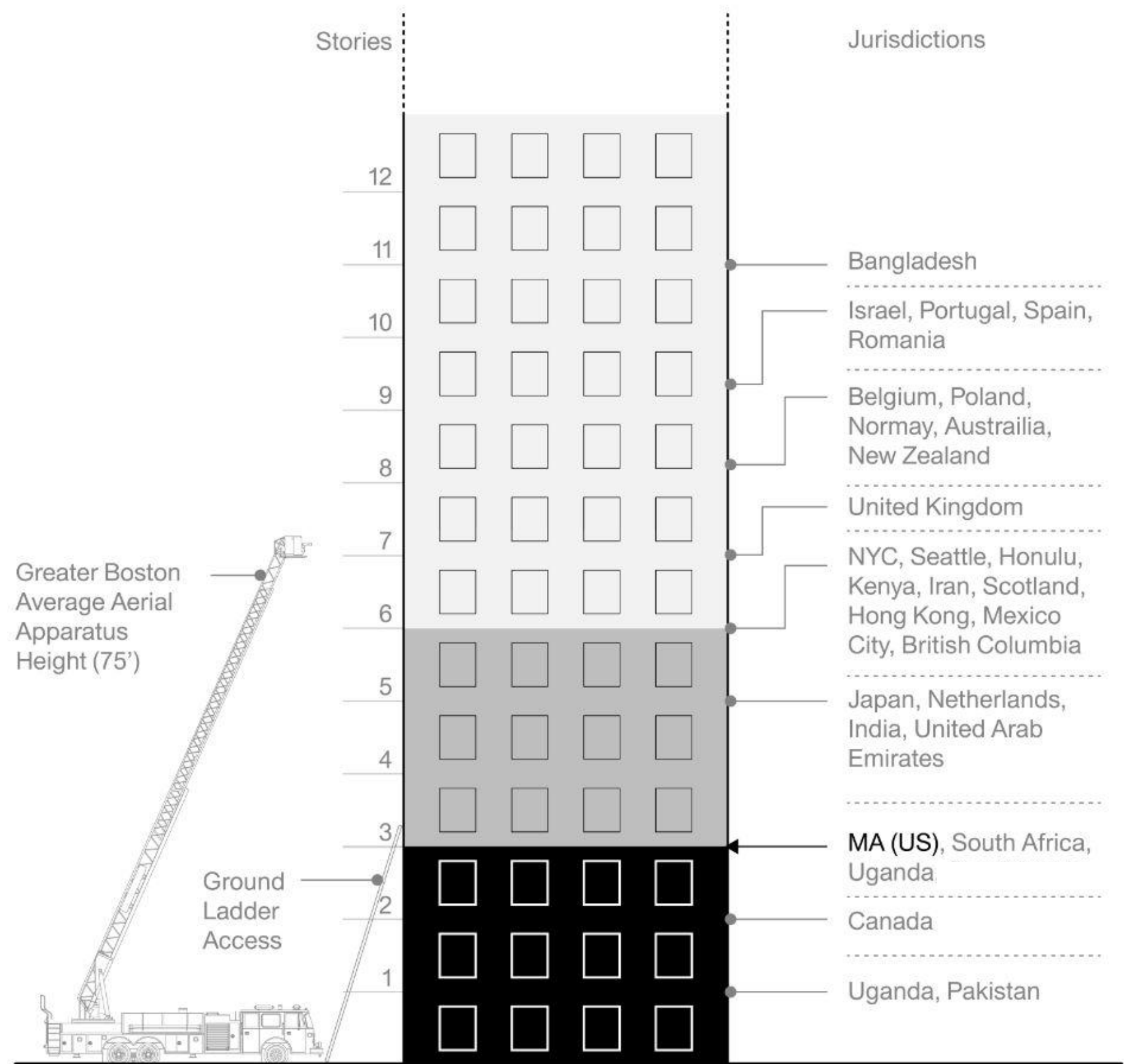
490 Bennington St.  
East Boston, MA

Units 7  
Built 2024  
Floor Plate 2,630 GSF

3

# EGRESS CODE LANDSCAPE

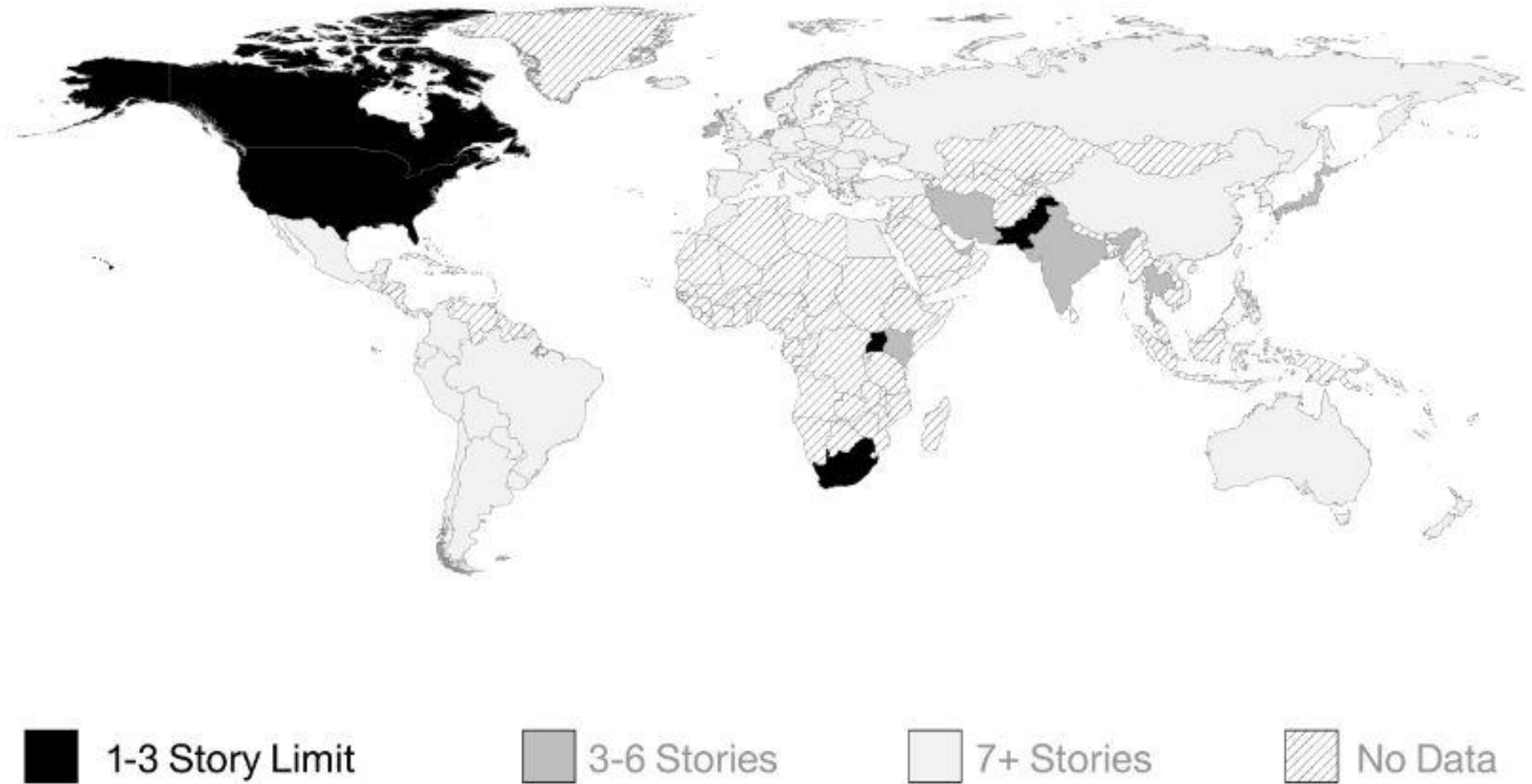
# Single-Stair Worldwide





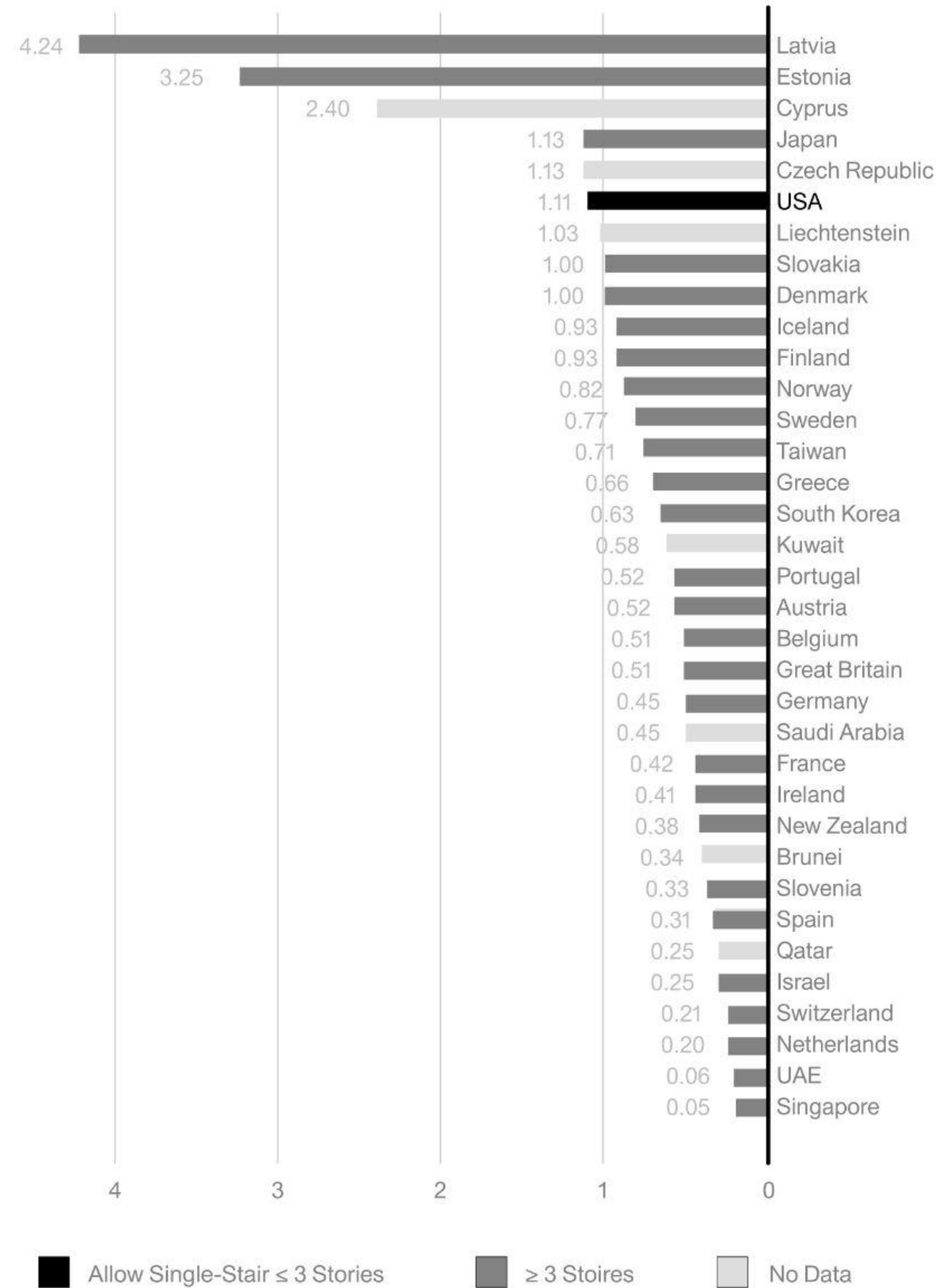
# Single-Stair Worldwide

Legality of Single-Stair by Number of Stories



# Less Than Stellar Fire Record

Average Number of Fire Deaths per 100,000 Inhabitants (2018-2022)



From the Center for Fire Statistics  
World Fire Statistics Report, No. 29  
(excluding countries with less than  
\$25,000 GDP per capita)

# Fire Protection Strategies



US & Canada



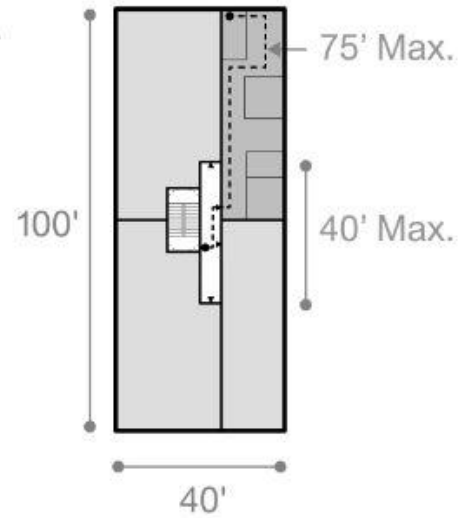
Elsewhere



# Code Limitations

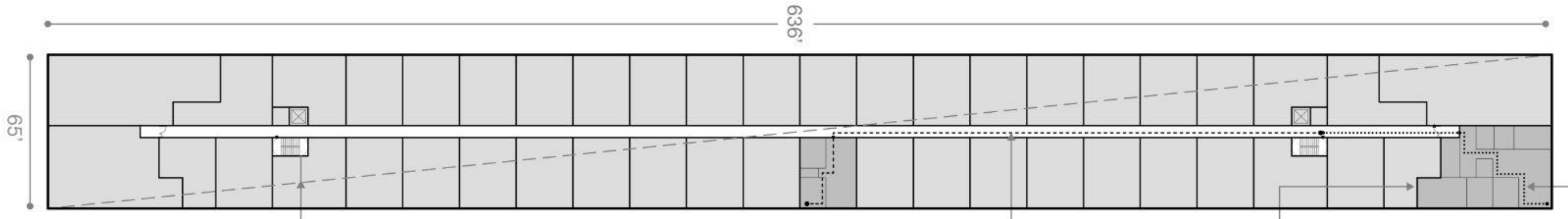
## Maximum Single-Stair Floor Plan (Proposed)

Single-Stair  
4 Units  
4,000 GSF FP  
75' Max. Travel

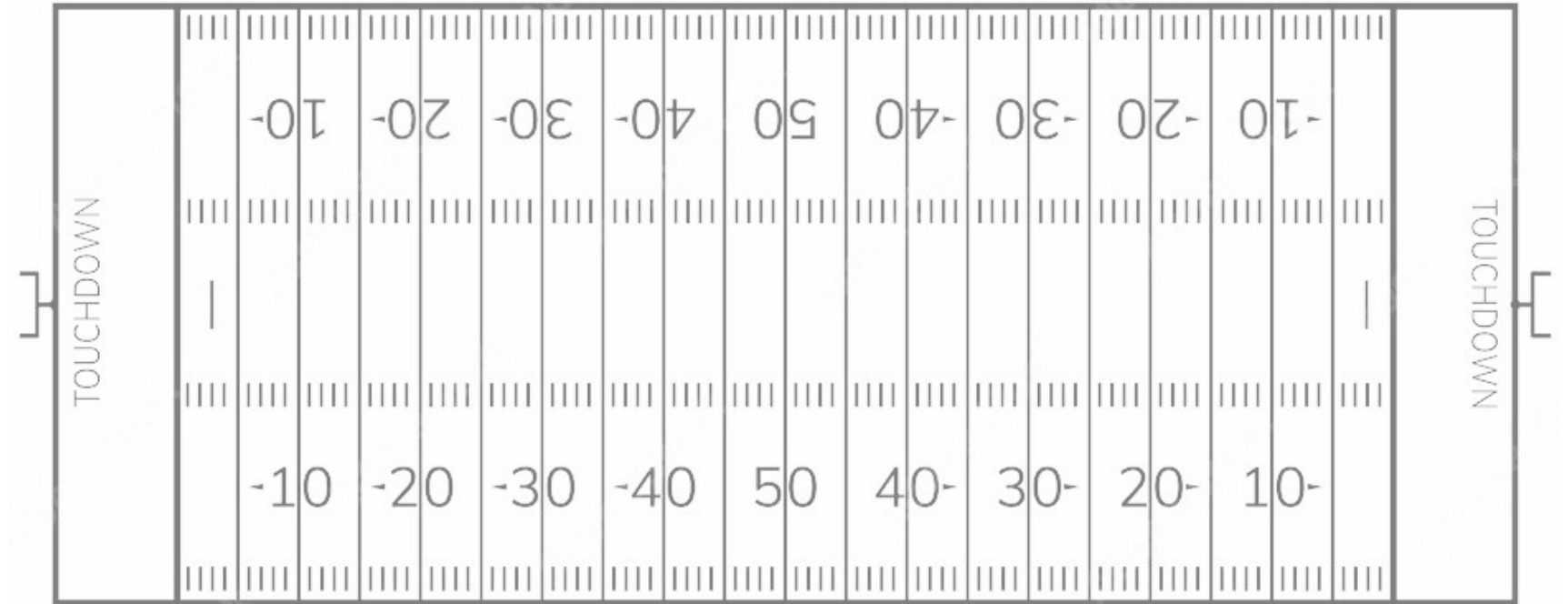


## Maximum Double-Loaded Floor Plan (Existing)

Double-Stair  
48 Units  
41,356 GSF Floor Plate  
125' Max. Common Path  
250' Max. Travel



American Football Field

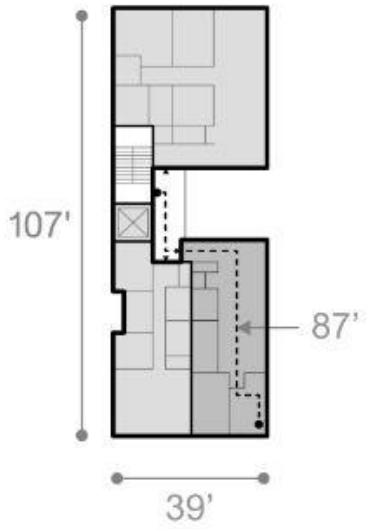


# Code Limitations

## Illegal in MA

Capitol Hill Cohousing  
(Seattle, 2016)

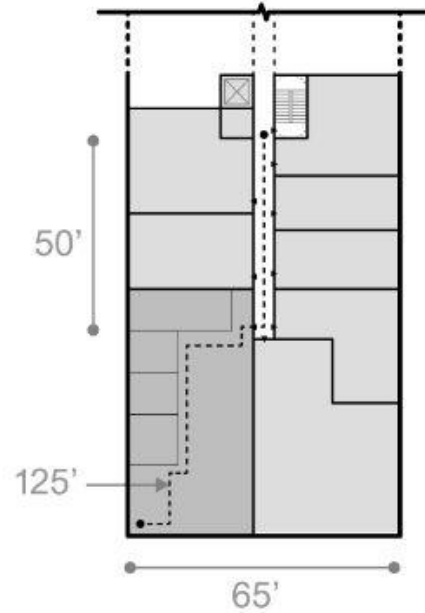
Single-Stair  
4 Units  
3,600 GSF FP  
87' Max. Travel



## Legal in MA

Code Maximum

1 Stair (dead end)  
8+ Units  
5,800 GSF FP  
125' Max. Travel



# What Some People Think

Two-Stairs



Single-Stair





# What it Really Means

Two-Stairs



Single-Stair



# Change Happening

## Code Change Landscape in the US & Canada

Courtesy of the Single Stair Tracker from  
The Center for Building in North America

### Currently Legal

New York City  
Seattle (1977, modified)  
Honolulu (2012, re-legalized)  
British Columbia (2024)

Minnesota  
New York  
Ontario (Canada)  
Pennsylvania  
Rhode Island  
Tennessee  
Virginia

### Pending but Accepted<sup>15</sup>

California  
Oregon  
Washington State

#### Cities

Austin  
Nashville  
New York City (expanding floor plate size)  
Toronto (Canada)

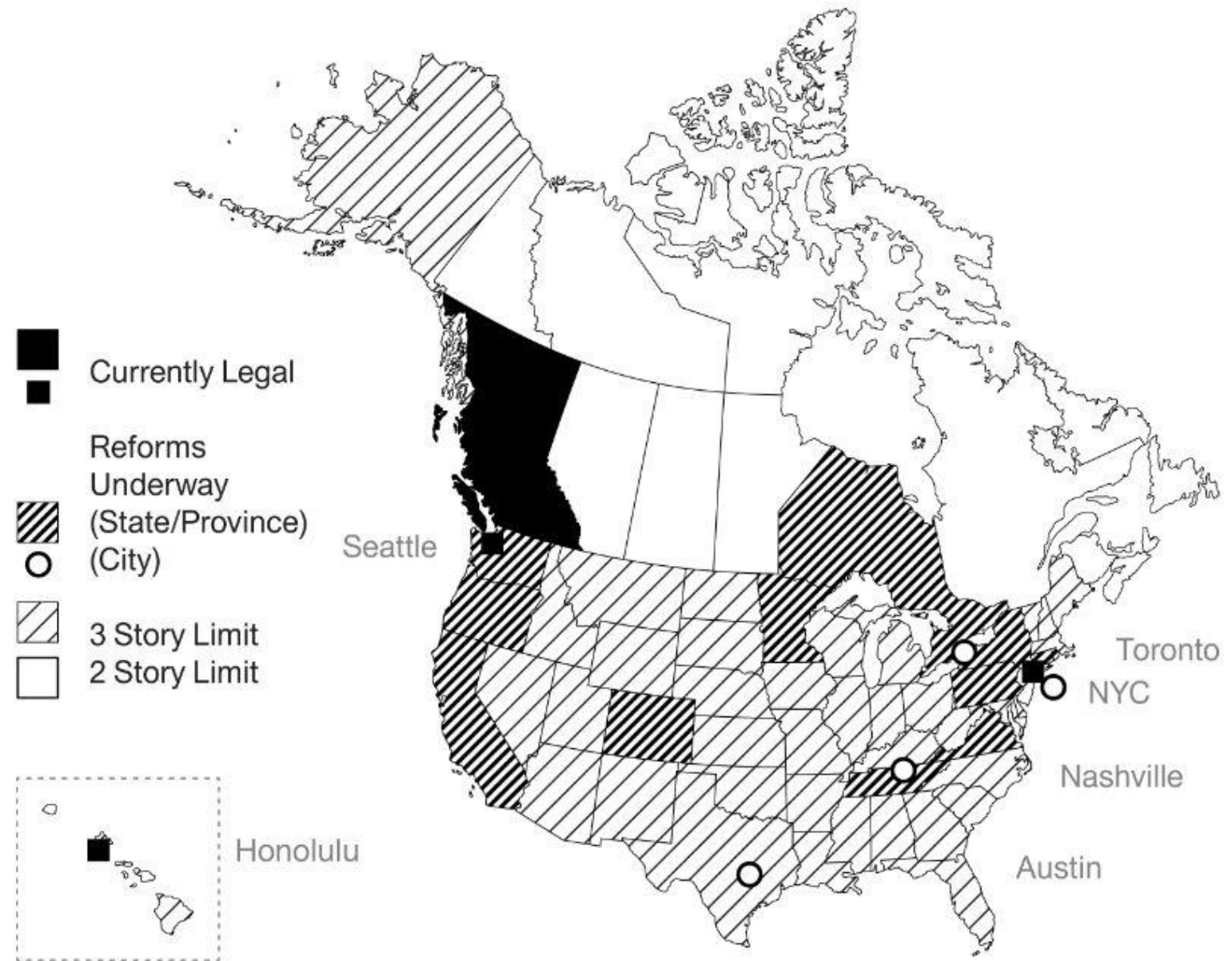
### In Progress States/Cities

#### National

Canada (NBC Proposal)  
US (ICC Proposal)

#### States/Provinces

Colorado  
Connecticut





# Our Proposal

## Proposed Requirements

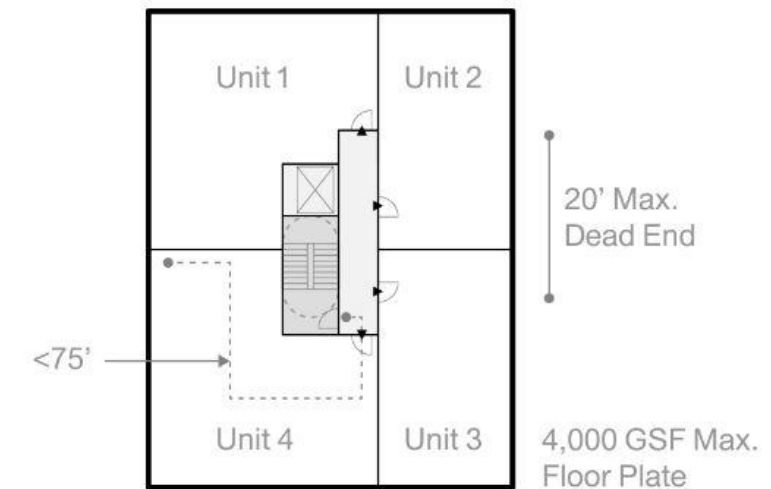
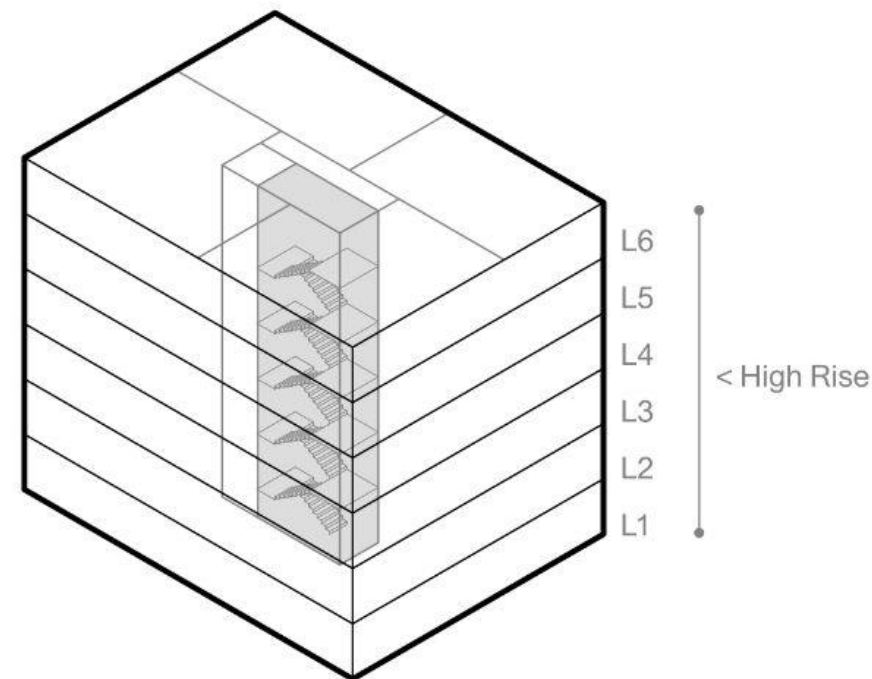
- 4 maximum units per floor
- 6 stories maximum (non-high rise)
- 4,000 GSF maximum floor plate
- 75' maximum exit access travel distance
- 20' maximum corridor length
- 45-minute minimum rated unit entry doors

## Additional measures (if not already required)

- Equipped with a NFPA 13 sprinkler system
- Two-hour rated exit stair (smokeproof enclosure)
- Equipped with emergency escape and rescue openings
- Buildings can be mixed-use, but other occupancies cannot be above the ground floor

## Optional Measures

- Exit stair discharge requirements such as mandating it directly exit to a public way and cannot be through another occupancy or a residential lobby
- Stair smoke control features such as pressurization, stairwell emergency smoke ventilation systems, or exterior stairwells
- Even higher unit entry door rating requirements
- Noncombustible construction type limitations



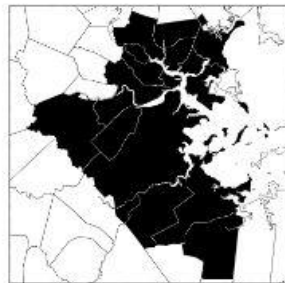
4

# POINT LOADED POTENTIALS

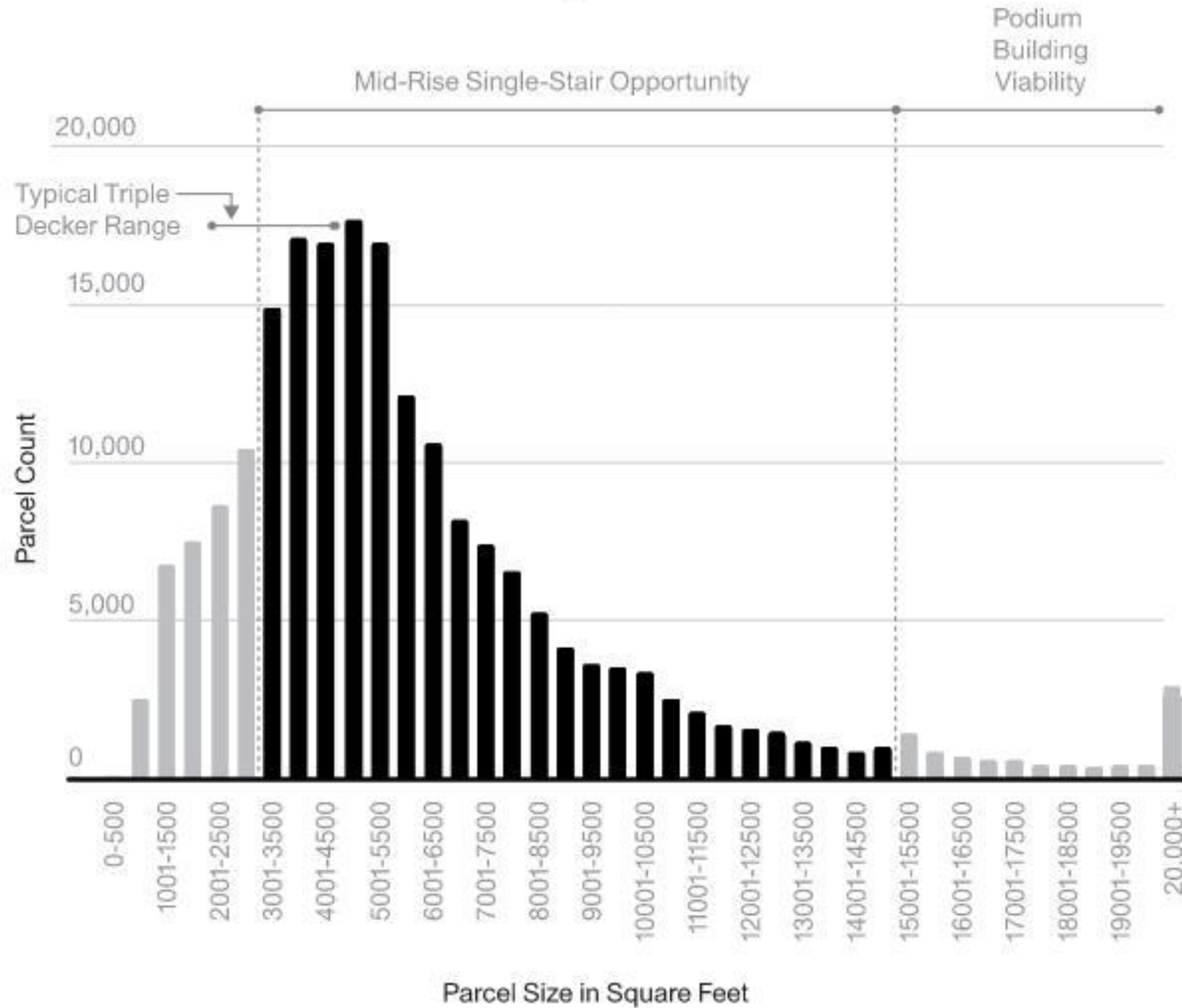
# New England Fine-Grain Fabric

161,860  
Parcels

“Greater Boston”  
MBTA Rapid Transit  
Communities



Total Parcel Count by Area in Greater Boston

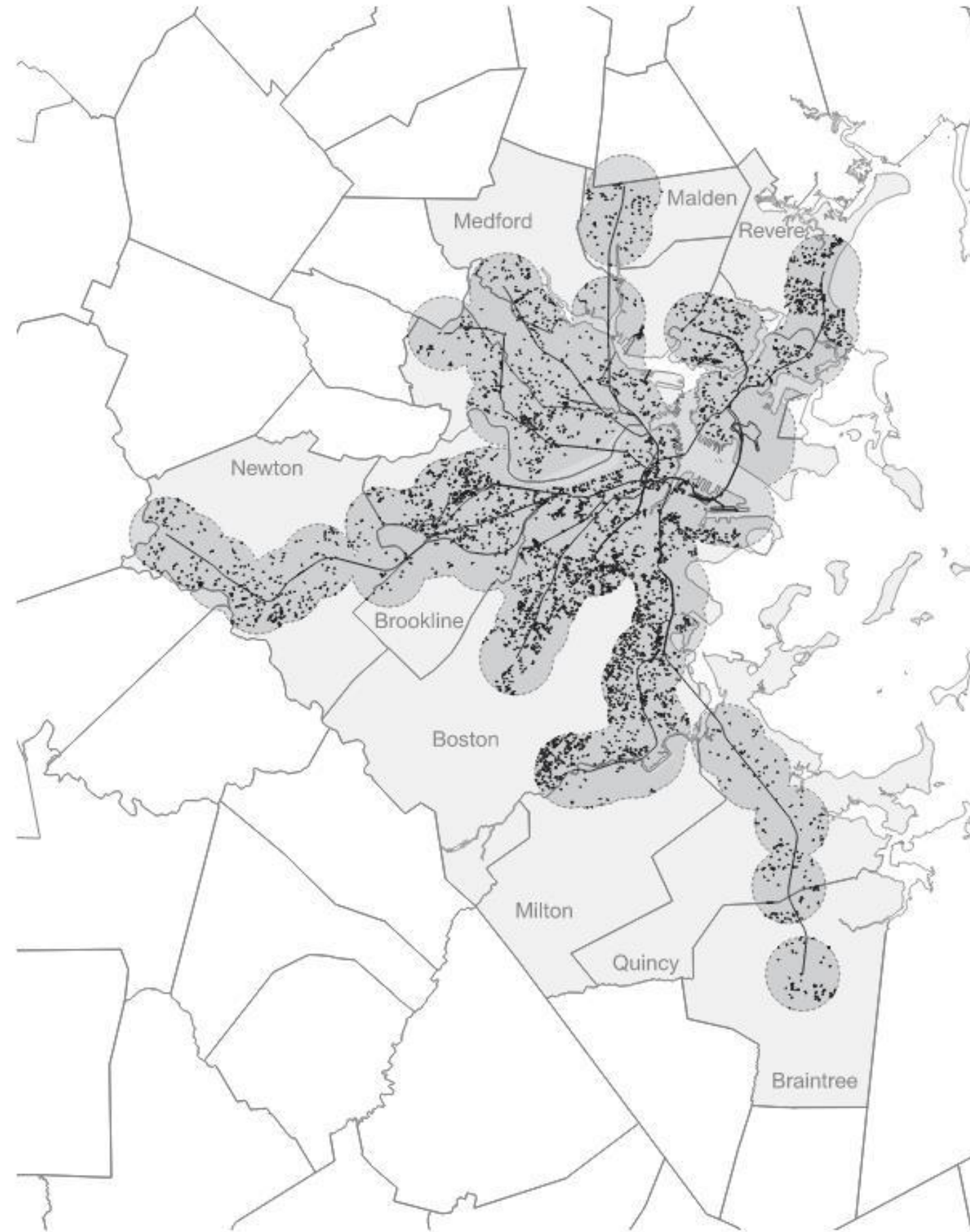




# Development Ready Small to Medium Parcels

- 0.1 FAR
- 15 min. walk to T stop
- Remove open space / parks
- Remove un-buildable geometries

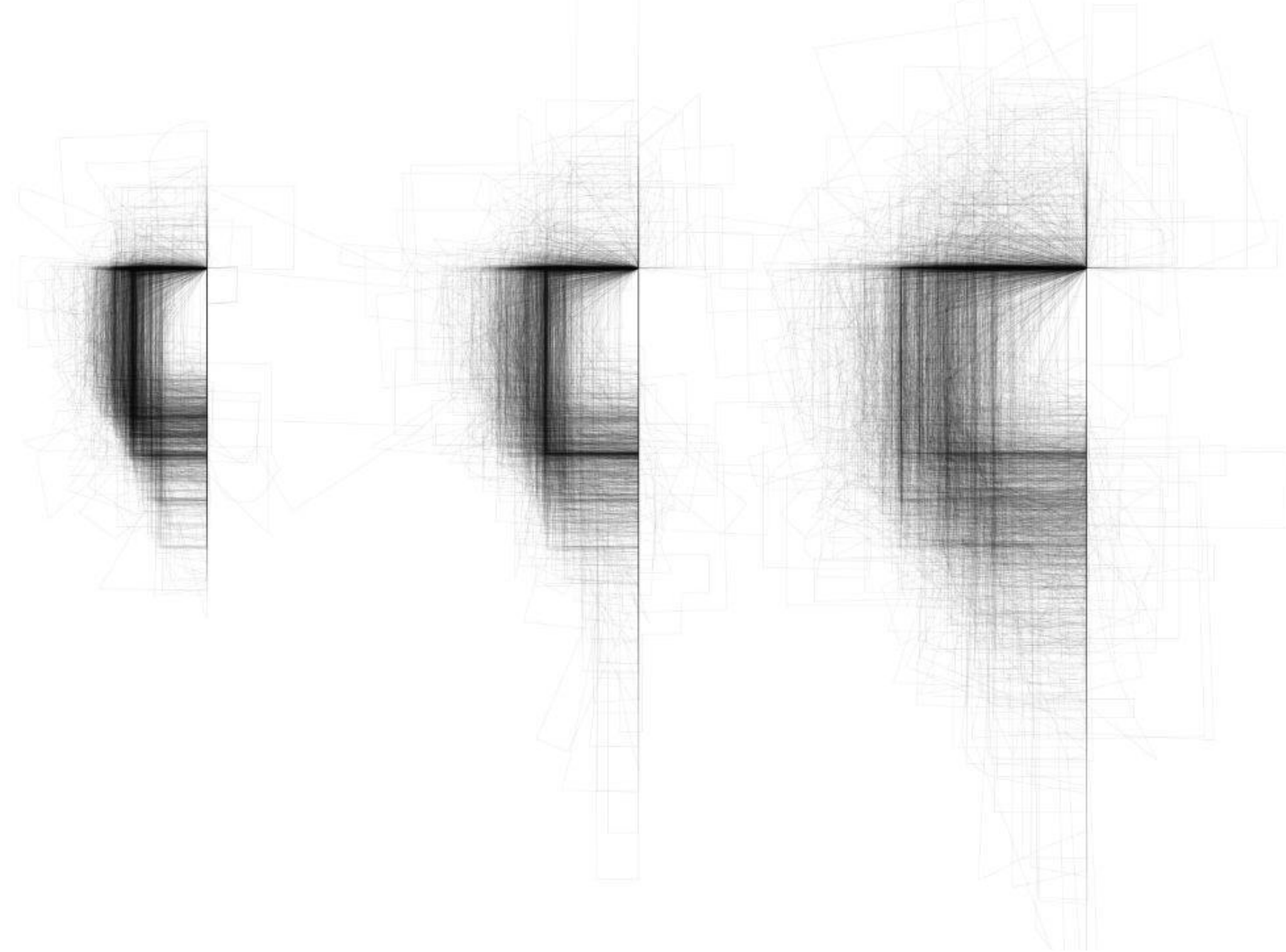
Small to Medium Developable Parcels



# 4,955 Parcels

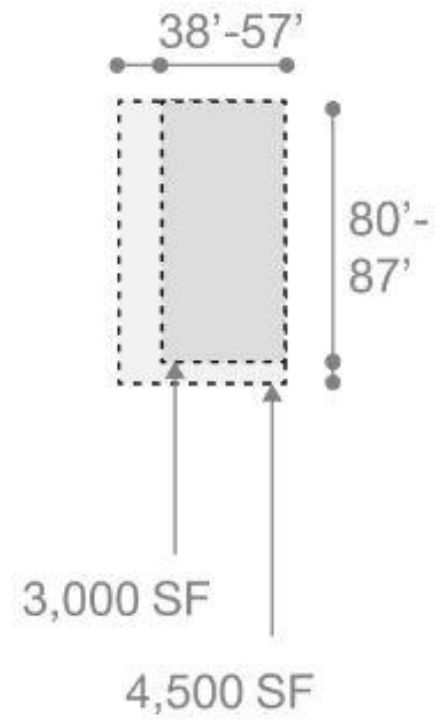
## Parcel Shapes

| Extra-Small        | Small              | Medium              |
|--------------------|--------------------|---------------------|
| 3,000 – 4,500 SF   | 4,500 – 7,500 SF   | 7,500 – 15,000 SF   |
| 1,665 Parcels*     | 1,538 Parcels*     | 1,680 Parcels*      |
| 6,106,461 Total SF | 8,816,113 Total SF | 17,988,213 Total SF |

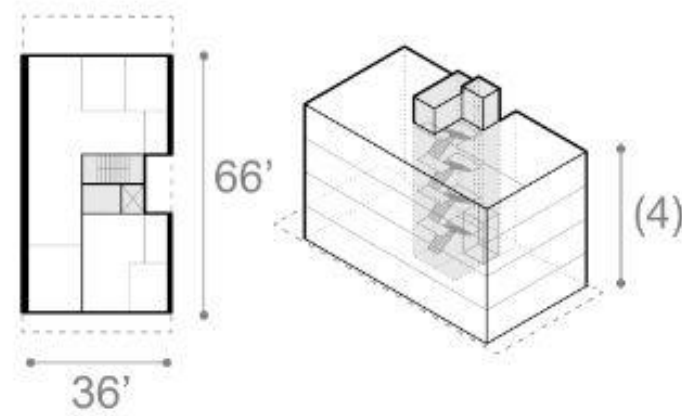


# Extra-Small

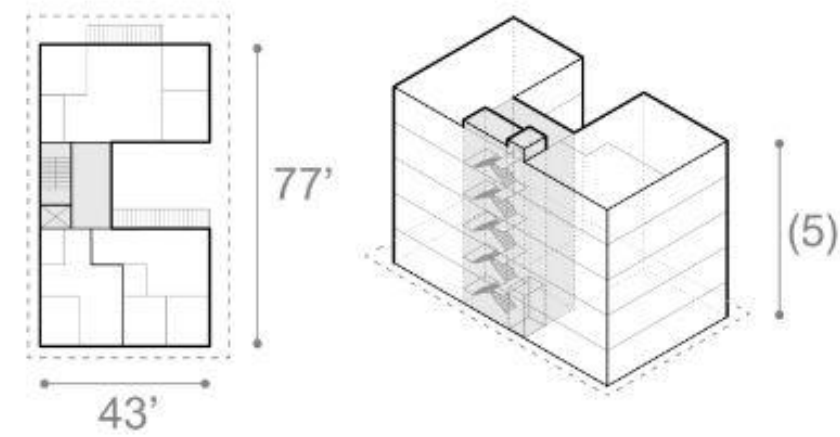
Extra-Small



(XS) Parcel  
3,100 SF Parcel  
2,300 SF Floor Plate  
+/- 8 Units



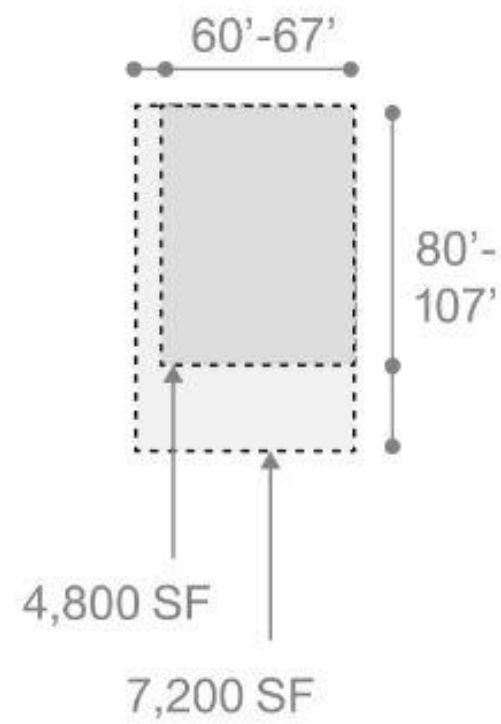
(XS) Parcel  
4,500 SF Parcel  
2,700 SF FP  
+/- 15 Units



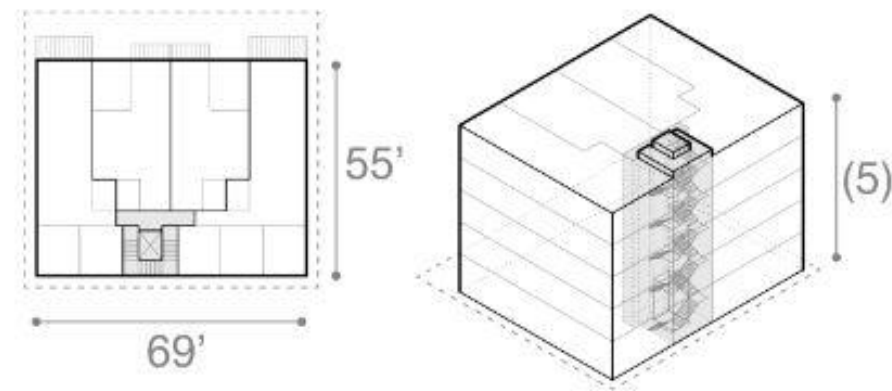


# Small

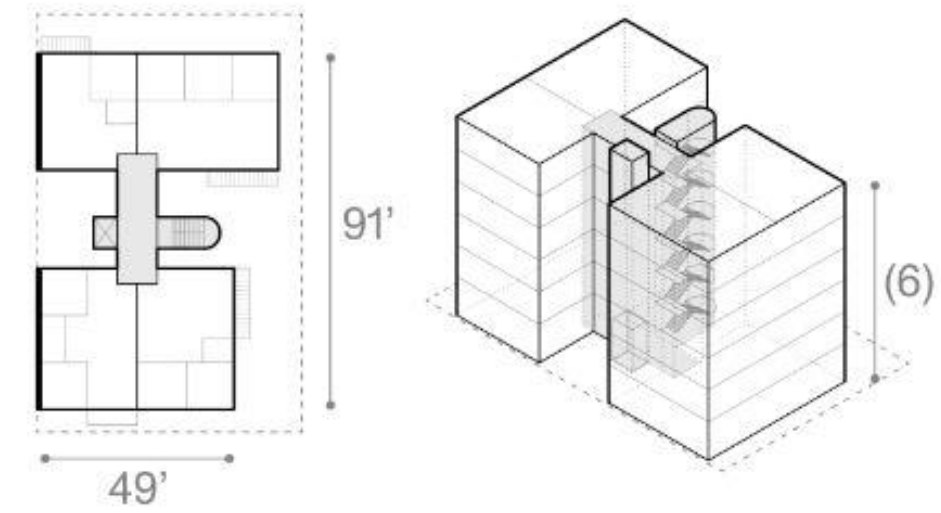
Small



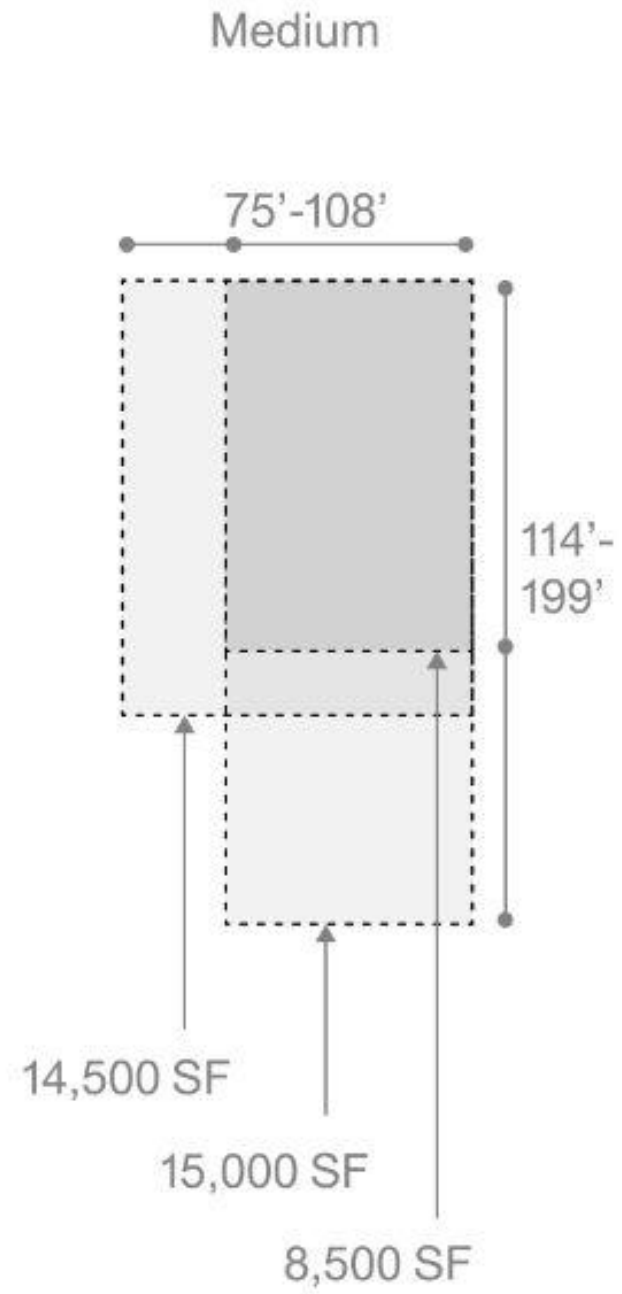
(S) Parcel  
5,200 SF Parcel  
3,600 SF FP  
+/- 20 Units



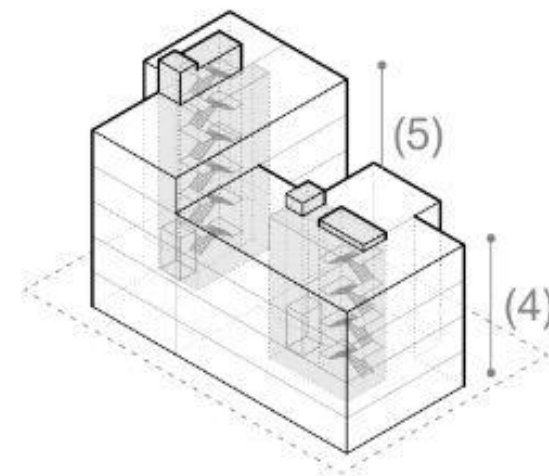
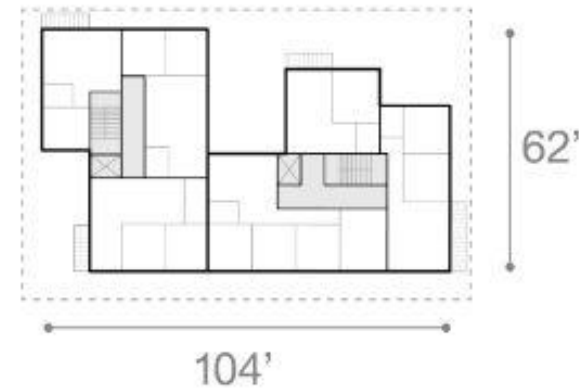
(S) Parcel  
7,200 SF Parcel  
4,000 SF FP  
+/- 24 Units



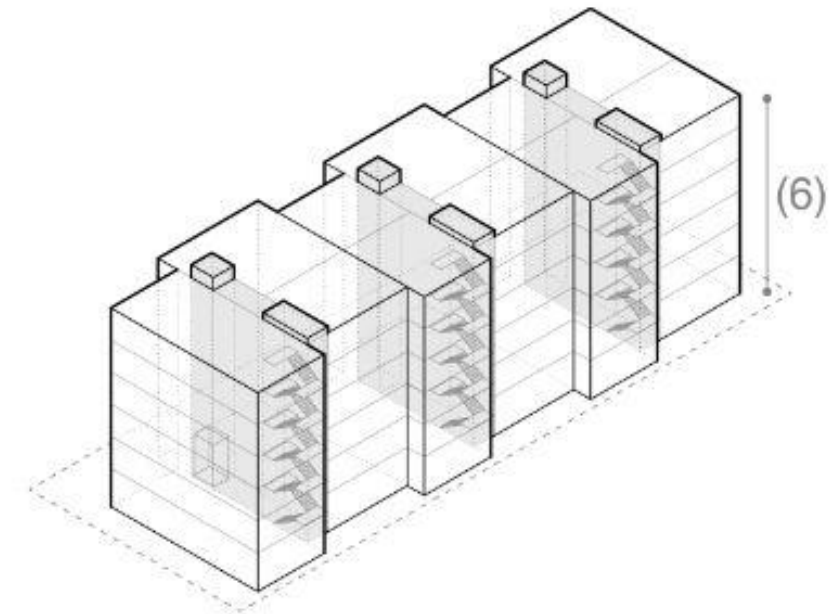
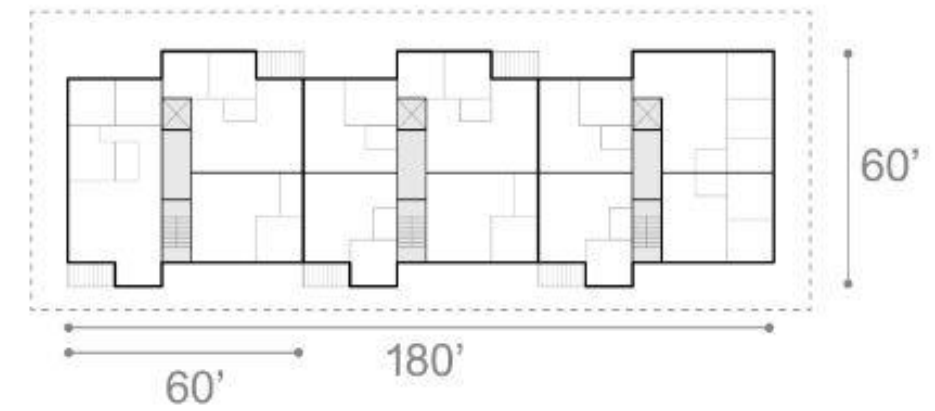
# Medium



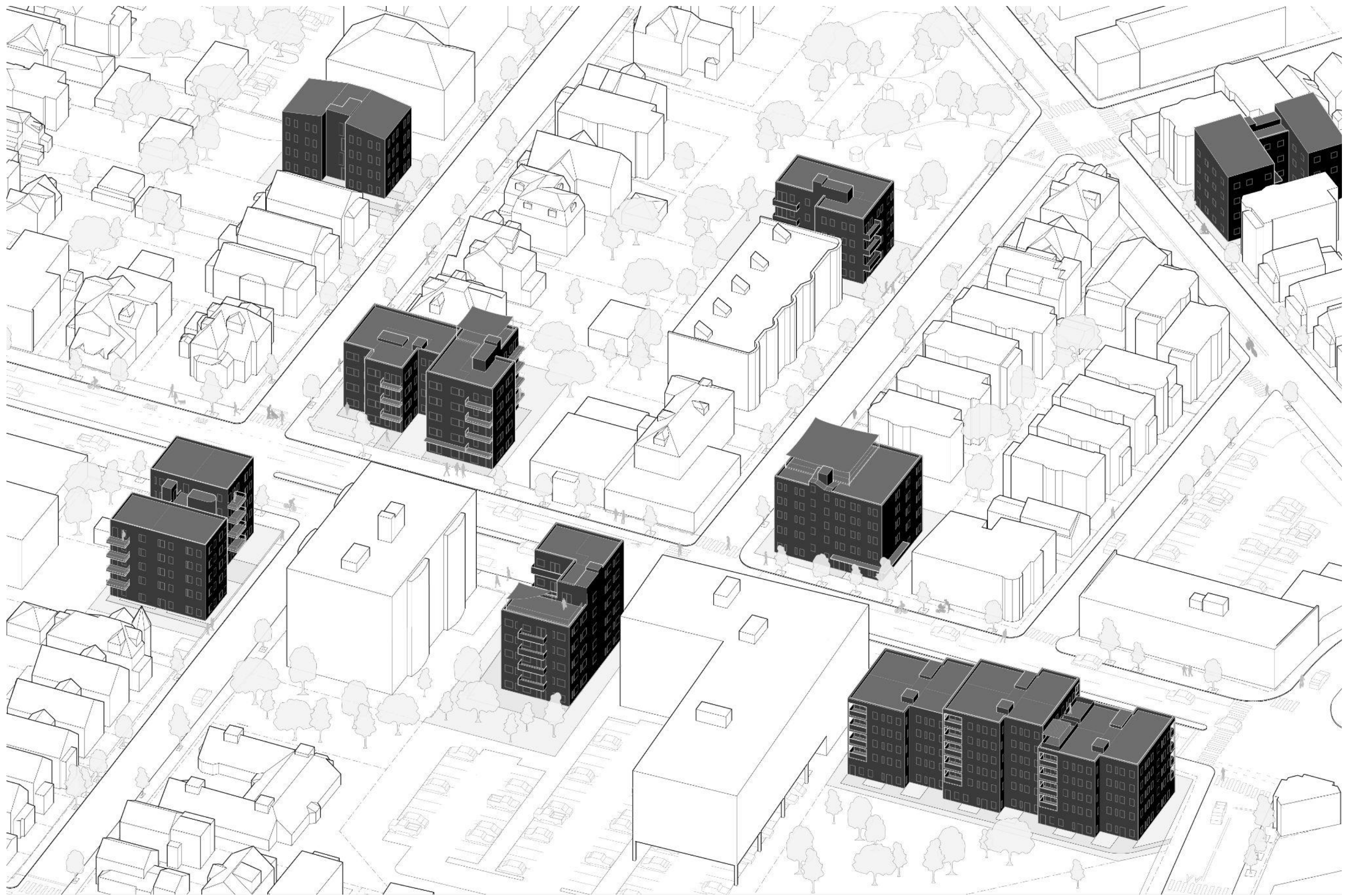
(M) Parcel  
8,500 SF Parcel  
2,200 + 2,600 SF FP  
+/- 27 Units



(M) Parcel  
4,500 SF Parcel  
4,300 (X3) SF FP  
+/- 66 Units









**Thank You!**

