

# ENVISION CAMBRIDGE

## Public Meeting

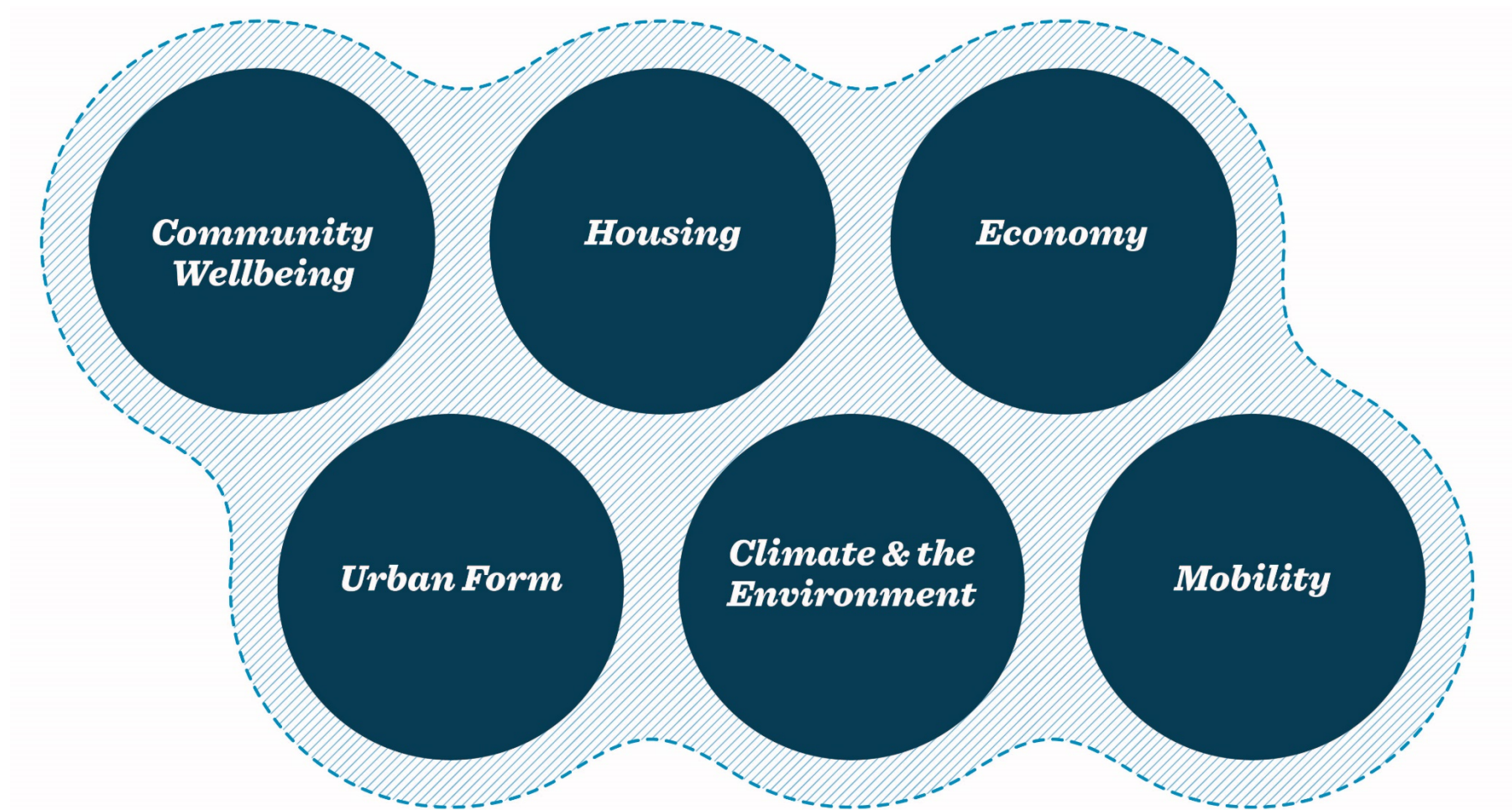
September 20, 2018



# Agenda

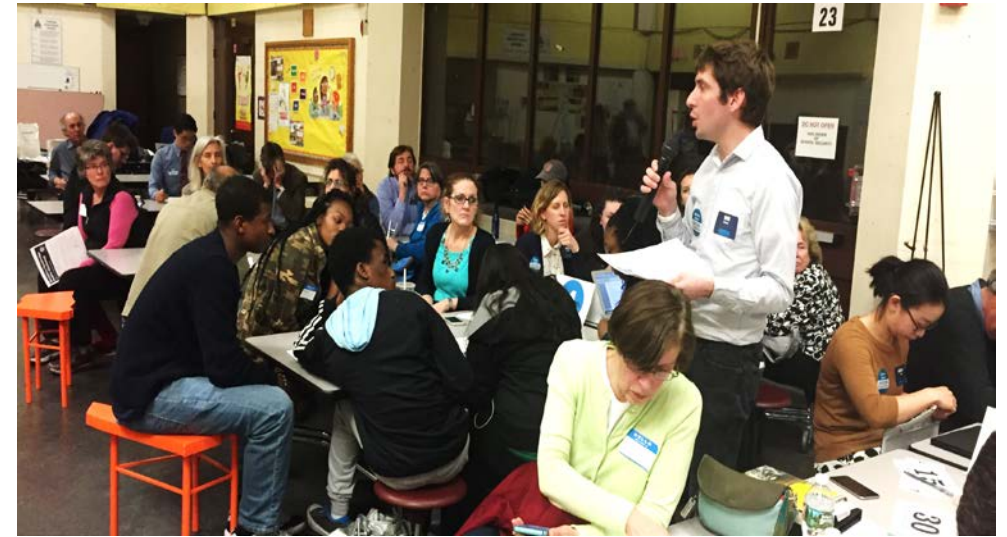
- New Policy Ideas Generated from the Envision Cambridge Process
- 100% Affordable Citywide Overlay Analysis
- Development Projections Comparing Current Zoning and New Policy Ideas:
  - Super-inclusionary housing program
  - Environmental performance incentive
- Small group discussions
- Report back

# Planning Topics



# Hundreds of new policy and program ideas were generated from a wide-reaching engagement process

- Advisory committee and working groups
- Public workshops
- Street team events
- Focus groups
- Youth workshops
- Online and paper surveys
- Digital engagement
- Walking tours



# Housing: What we heard from you!

Increase existing City funds dedicated to affordable housing...

Change zoning to enable more housing, including affordable housing, to be built along major corridors and in other transforming areas that have the capacity to accommodate growth...

Create an incentive for developments to construct more affordable units than required

Change base zoning to require that developers of multi-family projects... provide a certain amount of family-sized units...

Offer density bonuses and relief from other dimensional regulations for fully affordable housing developments.

Require the creation of significant new housing in areas that are being rezoned.

Identify opportunities to require local academic institutions to use their assets, especially their land, to build more housing

Engage housing and service providers to produce quality permanent supportive housing for the homeless and other vulnerable populations

Evaluate gaps in supportive housing services provided by the City, increase capacity...to address identified gaps, and increase awareness of available services.

# Economy: What we heard from you!

Undertake targeted business recruitment efforts to attract firms that offer low barrier-to-entry jobs...

Change zoning to increase density and achieve a mix of uses along Mass Ave. and Cambridge St. that builds the customer base for retail

Explore financing mechanisms to support the industrial economy through infrastructure funding or land assembly, supporting firms that provide light industrial jobs, and encouraging the development of a manufacturing incubator space.

Provide funding to help eligible businesses make marketing, interior, or exterior façade improvements

Provide funding for STEAM internship opportunities for Cambridge students

Expand capacity and funding to provide additional “earn and learn” opportunities with local employers for Cambridge residents...

Conduct a needs assessment of the training and education needs of low/moderate income residents

Implement vacant property activation strategies that support property owners with retail vacancies

# Climate and Environment: What we heard from you!

Develop disaster preparedness plans at the neighborhood level in conjunction with neighborhood organizations, service providers, public housing residents and other vulnerable populations

Incorporate green infrastructure into city sidewalk and street reconstruction projects as conditions and space allow

Procure 100% of municipal electricity from renewable sources

Develop an Urban Forest Master Plan that establishes tree canopy expansion and tree planting goals by neighborhood

Leverage new communication technologies to alert residents and workers, by geography, of risks in the event of an emergency (e.g. text message, smartphone app)

Purchase additional land reserved to be used as open space

Offer a density bonus incentive for net zero projects

Establish a cool roof requirement for new construction in all zoning districts

# Mobility: What we heard from you!

Develop an implementation plan and increase funding to complete gaps in the updated Bicycle Network Plan...

Prepare transportation infrastructure to be more resilient to periodic flooding...

Implement bus priority treatments on key bus corridors at points of recurrent delay to increase transit speed and reduce traffic delays.

Install co-located carshare, bikeshare, and transit nodes in areas that are currently underserved...

Increase funding to improve multimodal access to key public facilities...by adding crosswalks, bus shelters, bike lanes, and bike parking, etc.

Increase funding to improve intersection safety in locations with high rates of crashes.

Better manage freight movement and delivery to improve safety and efficiency...

Carry out the Vision Zero Plan to meet the goal of zero fatalities and severe injuries

# Urban Form: What we heard from you!

Build the connections to integrate “Alewife Square” into the fabric of the City...

Establish development standards to promote street-activating uses (such as retail) on ground floors, including minimum ground-floor heights, limitations on the frontage length occupied by lobbies, etc....

Design and implement clear wayfinding for biking and walking routes to the City’s open spaces and other destinations.

Encourage family-friendly design in residential and commercial buildings and public realm improvements through development review (i.e. playgrounds, etc.)

Eliminate minimum parking requirements for development along the corridors.

Identify opportunities for increasing the amount of open space in or near growth areas

# Community Wellbeing: What we heard from you!

Expand City efforts, including targeted outreach and recruitment, to ensure diverse representation on City boards, commissions and advisory committees

Support Community Engagement Team, a multi-agency collaborative that reaches out to underserved Cambridge families and connects them to community events and resources, develops community leaders, and supports agencies in working with a diverse community.

Research and implement innovative and non-traditional engagement tools and partnerships

Adopt an urban agriculture ordinance to increase local food production

Increase capacity to conduct ongoing racial equity analyses of new and existing policies, programs, services, procurement practices, and community engagement

# We want to test the effectiveness of priority zoning-related ideas

- Some recommendations have a large-scale, measurable effect on development and its outcomes across all planning topics.
- Additional analysis is needed to understand range of impacts.

## Ideas to test include:

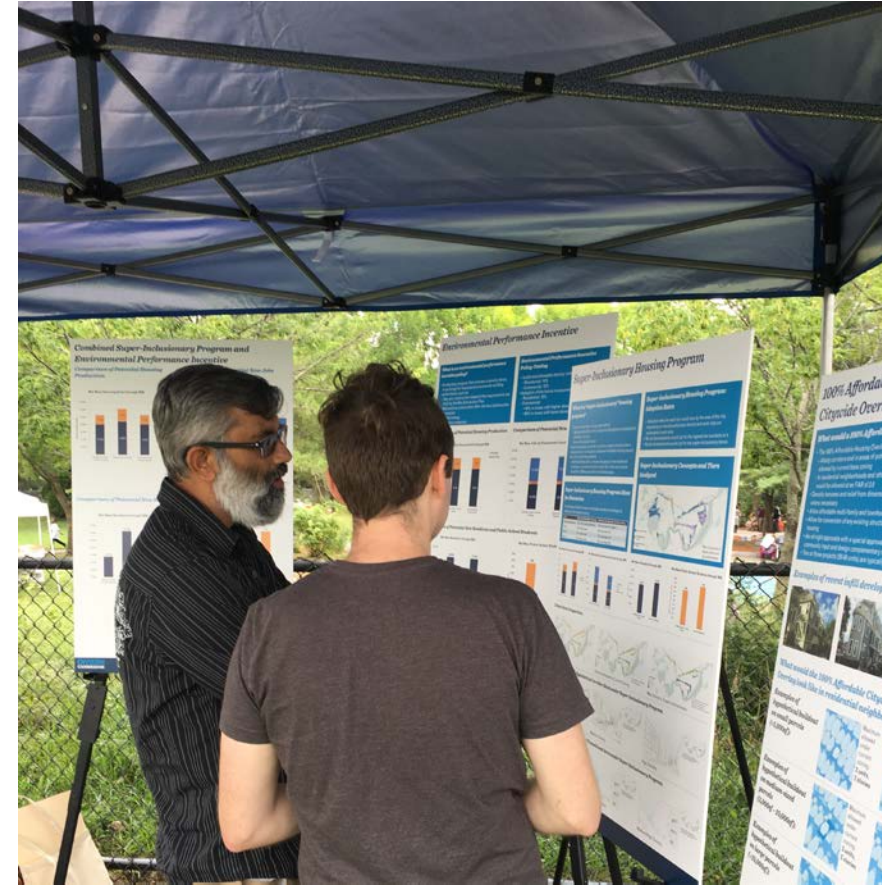
- 100% affordable housing overlay
- “Super-inclusionary” housing program
- Environmental performance incentive



Members of the public discussed proposed recommendations at a public meeting in July.

# What are we asking of you today?

- Tell us what you think about these ideas
  - What do you like about these ideas?
  - What do you dislike about these ideas?
  - What changes to these ideas would you make, if any?
- These aren't necessarily either-or choices. You can like (or dislike) one or more of the ideas.



Members of the public have already started to weigh in on this analysis

# Analysis of Working Groups' New Policy Ideas



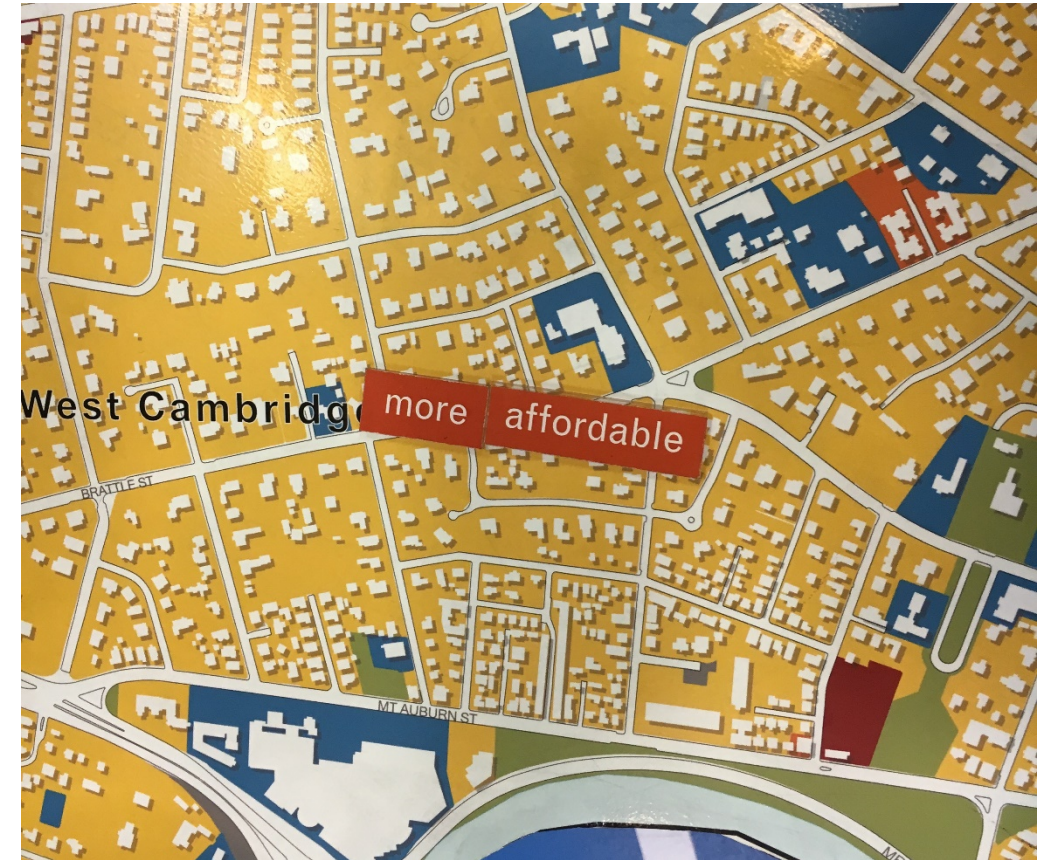
# 100% Affordable Citywide Overlay Analysis



# Why study a 100% Affordable Housing Citywide Overlay?

## **Advances Envision Cambridge shared community goals:**

- Foster neighborhoods of opportunity and equitable distribution of affordable housing citywide.
- Provide a variety of housing options for people of different socioeconomic levels, life stages, and physical needs.
- Expand affordable rental and homeownership opportunities to enable Cambridge to thrive as a mixed-income community.
- Provide access to opportunities for all people regardless of differences.
- Work toward addressing race-based disparities and racial equity.
- Maintain the existing patterns of the city through a mix of preservation and complementary infill development.



# 100% Affordable Housing Citywide Overlay: Background

- The City already partners with affordable housing developers (usually local nonprofits).
  - Development is subsidized by federal, state, and city government.
  - “Affordable” housing is income-restricted housing where housing costs are affordable to low-, moderate, and middle-income people
  - Two or three projects are typically completed each year (approx. 50-60 affordable units)



625 Putnam Ave is an example of a 100% affordable housing development built by a nonprofit developer in Cambridge.

# Why study a 100% Affordable Housing Citywide Overlay?

- Challenges to building affordable housing:
  - High land costs and competition from market-rate developers
  - Appeal of discretionary approvals can add significant cost, long delays, and significant risk to affordable housing developers.
  - More difficult to build affordable housing in some areas of the city given zoning limitations (i.e. density is limited in Residence A and B districts, where high land costs make development infeasible for affordable housing developments without discretionary approvals and significant zoning relief)
- 100% Affordable Housing Citywide Overlay would:
  - Remove permitting uncertainty and subsequent additional costs, delays, and risks to make it easier to complete 100% affordable housing
  - Enable affordable housing developers to better compete with market-rate developers
  - Expand affordable housing's viability in areas where it's been more difficult to create new affordable units
  - Help reduce costs for affordable housing development by balancing land costs with the number of units needed to make projects feasible and lowering soft costs through an expedited approval process

# What would the 100% Affordable Housing Citywide Overlay entail?

## **For 100% affordable housing developments only:**

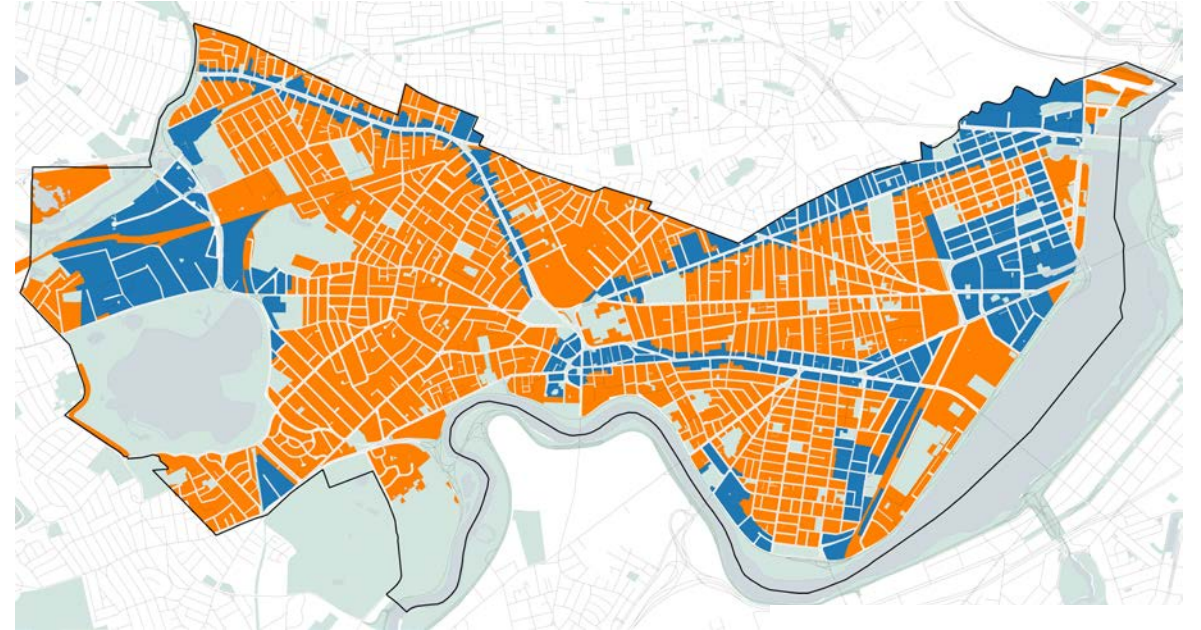
- Offer density bonuses and relief from dimensional standards (height, setbacks, open space) and parking where necessary (varies by zoning district)
- Allow for as-of-right approvals with required design review and community input instead of discretionary permitting approvals
- Allow affordable multi-family and townhouse developments in all districts (e.g. not currently an allowed use in Residence A and B districts);
- Allow for conversion of any existing structure (including existing residential) to affordable multi-family housing
- A design review process would ensure good design without creating uncertainty about a project's fundamental viability



Huron Ave. at Vassal Ln. has different densities together in close proximity.

# 100% Affordable Housing Overlay Ideas for Discussion

- The 100% Affordable Housing Overlay could apply to the entire city
  - In higher-density areas such as commercial corridors and areas of potential change, affordable developments would need 2.5 times the density allowed by current base zoning to be competitive in the market
  - In residential neighborhoods and other areas, affordable developments would need an FAR of 2.0 to be financially feasible in all areas



- Residential Neighborhoods
- Corridors and Areas of Potential Change

# 100% Affordable Housing Overlay Ideas for Discussion

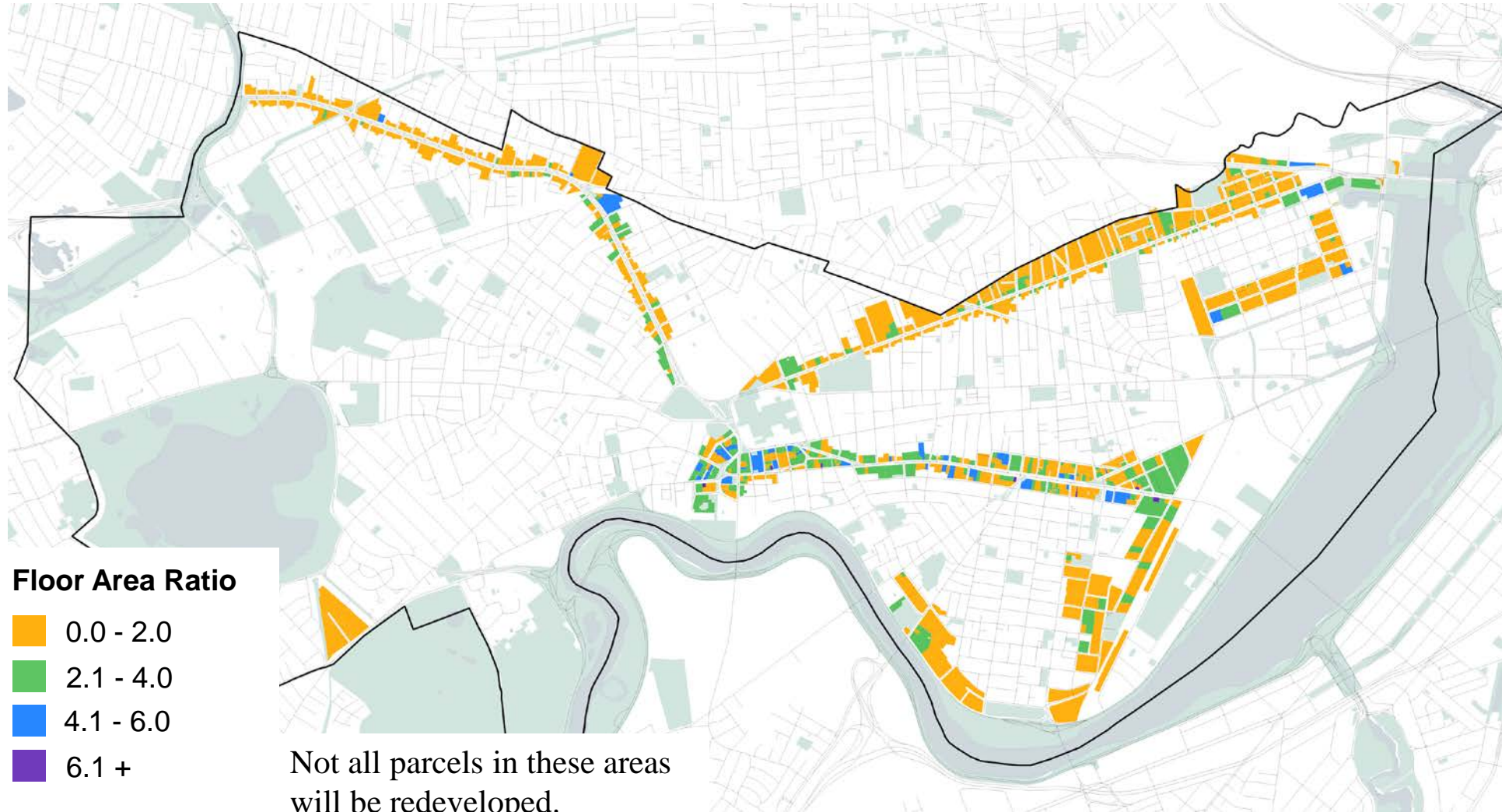
- The overlay does not change the number of units produced because affordable housing production is determined by the availability of funding.
- Main objectives are to:
  - Expand affordable housing's viability in areas where it's been more difficult to create new affordable units
  - Enable affordable housing developers to better compete with market-rate developers in growth areas

# Examples of recent infill development in Cambridge

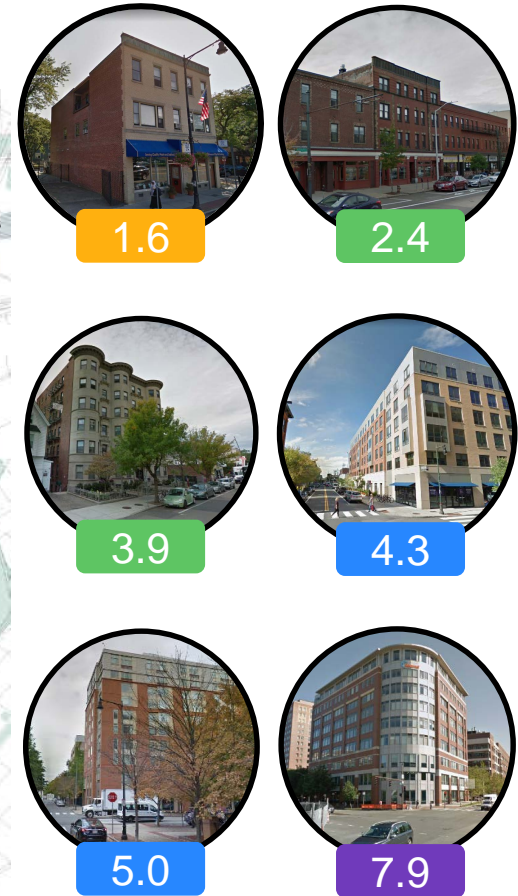
In these examples, the new developments are at a higher density than the surrounding buildings.



# Urban Form Comparison – Existing Built Density



## Floor Area Ratio Precedents



FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Density Allowed by Current Zoning (Residential)

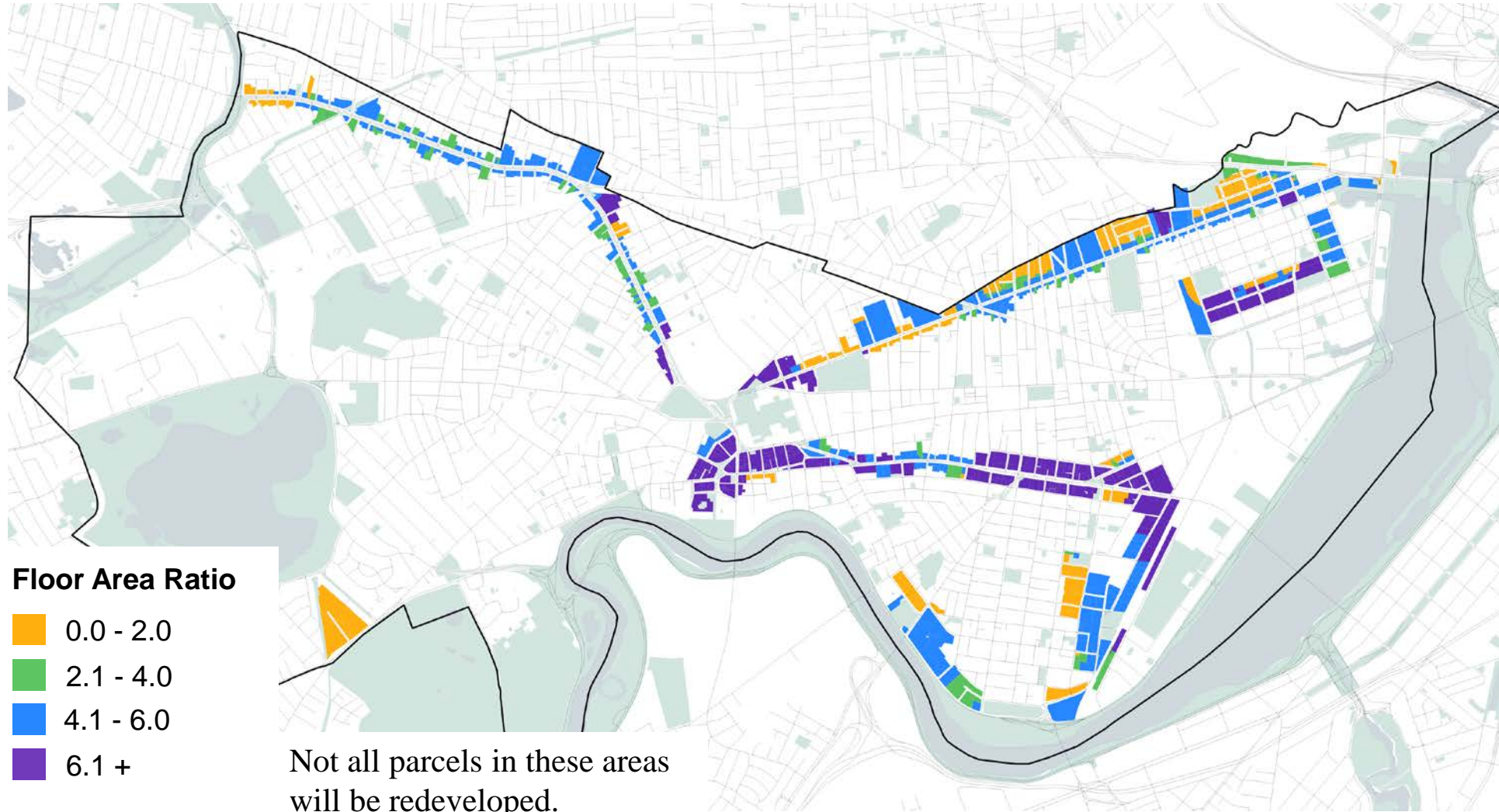


## Floor Area Ratio Precedents

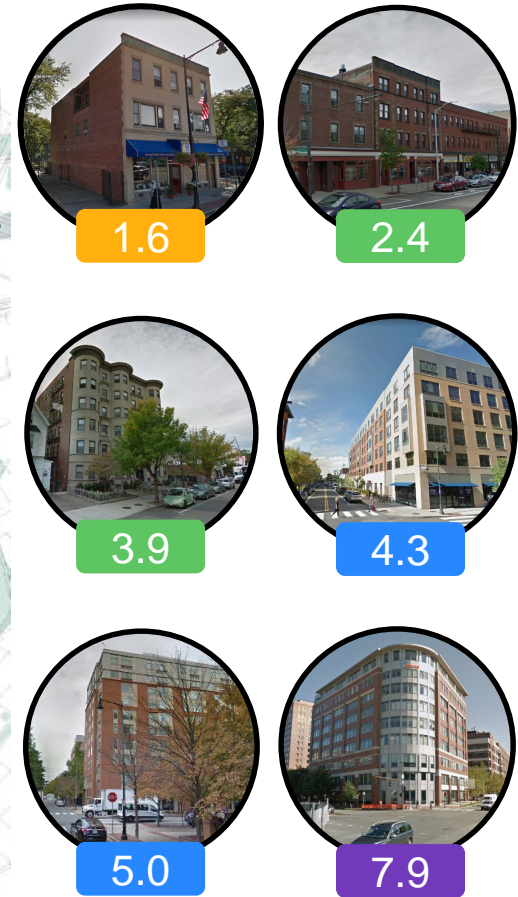


FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Max. Density under 100% Affordable Overlay



## Floor Area Ratio Precedents

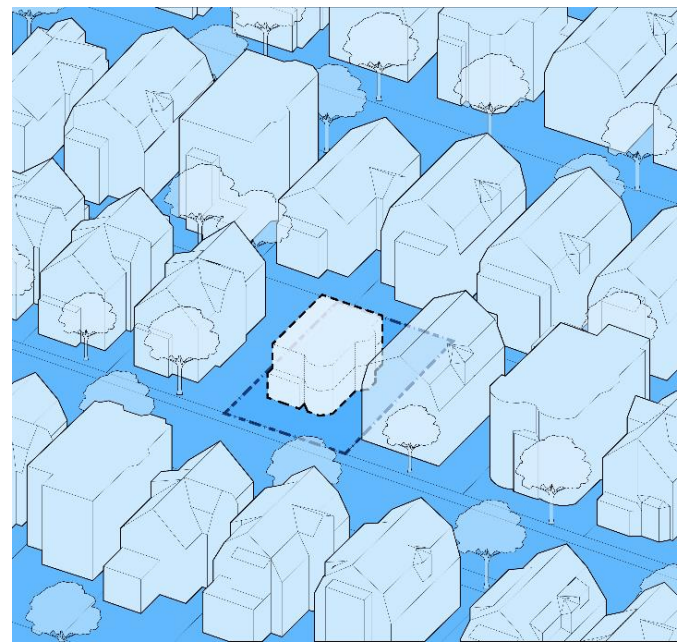


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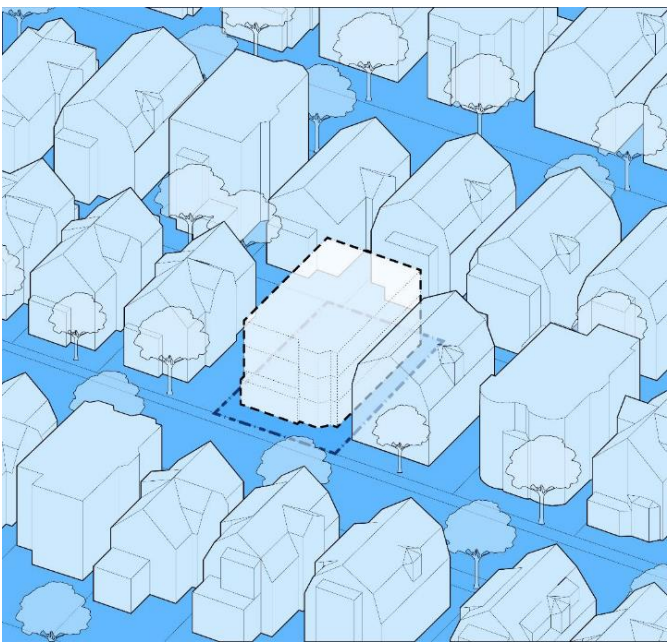
# What would the 100% Affordable Citywide Overlay look like in residential neighborhoods?

100% Affordable Housing developments in residential zoning districts would take the form of mid-rise multifamily buildings, consistent with the historic mix of densities found throughout Cambridge.

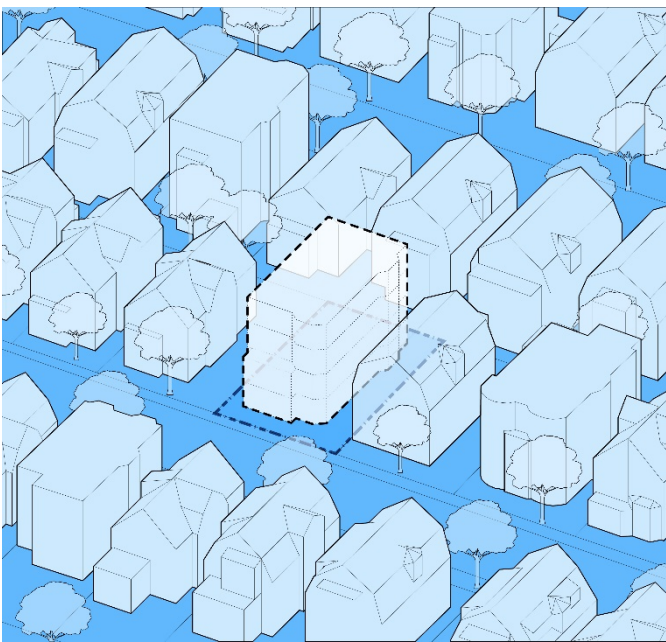
## Examples of hypothetical buildout on small parcels (<5,000sf):



Maximum allowed under current zoning  
(many existing buildings are non-compliant)  
2 units, 2 stories



Example of buildout under 100%  
Affordable Citywide Overlay  
7 units, 3 stories



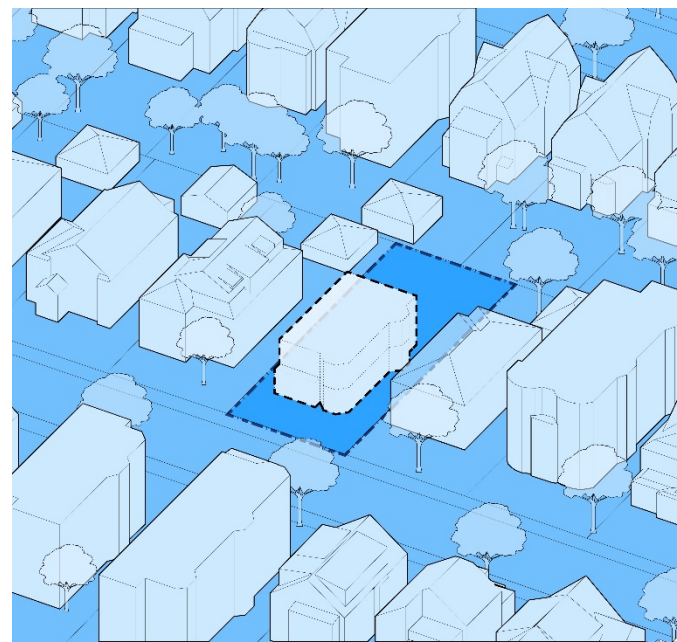
Example of buildout under 100%  
Affordable Citywide Overlay  
8 units, 4 stories

69% of existing buildings in residential neighborhoods are not zoning compliant, due to height, density, or both

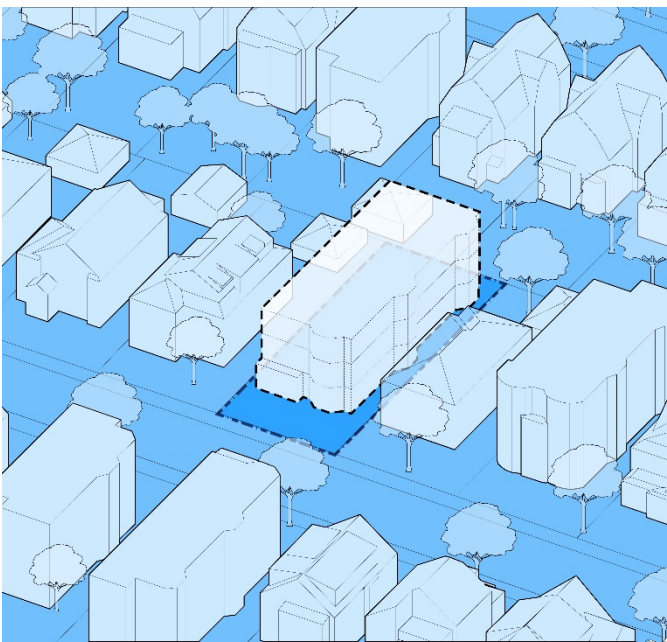
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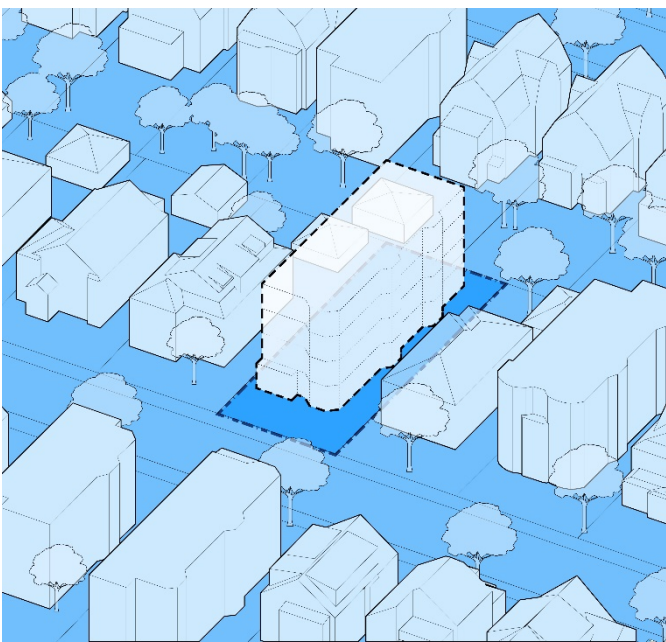
## Examples of hypothetical buildout on medium-sized parcels (5,000sf – 10,000sf):



Maximum allowed under current zoning  
(many existing buildings are non-compliant)  
2 units, 2 stories



Example of buildout under 100%  
Affordable Citywide Overlay  
10 units, 3 stories



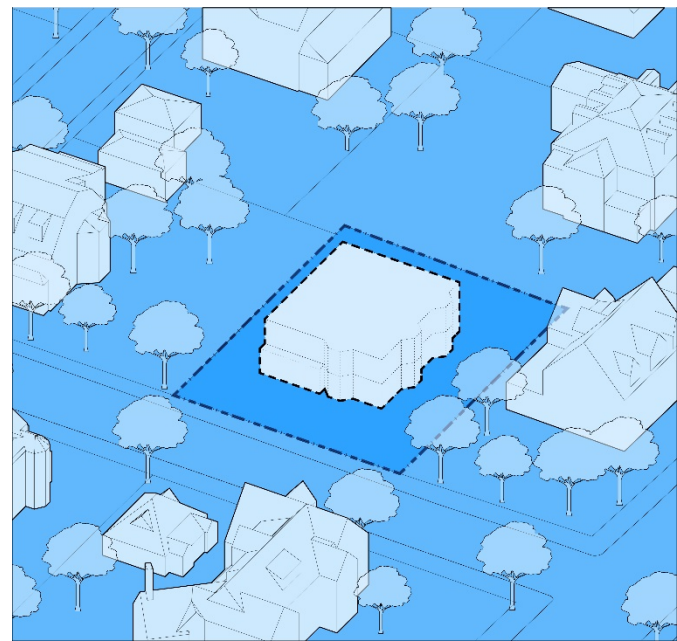
Example of buildout under 100%  
Affordable Citywide Overlay  
12 units, 4 stories

69% of existing buildings in residential neighborhoods are not zoning compliant, due to height, density, or both

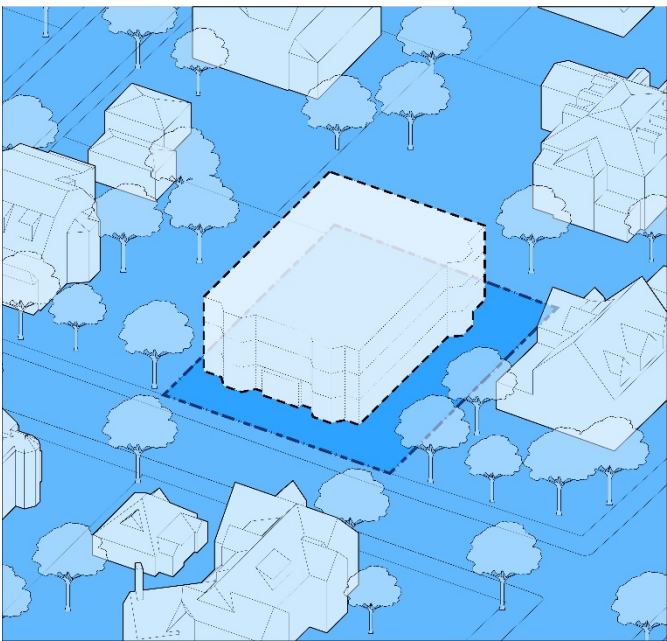
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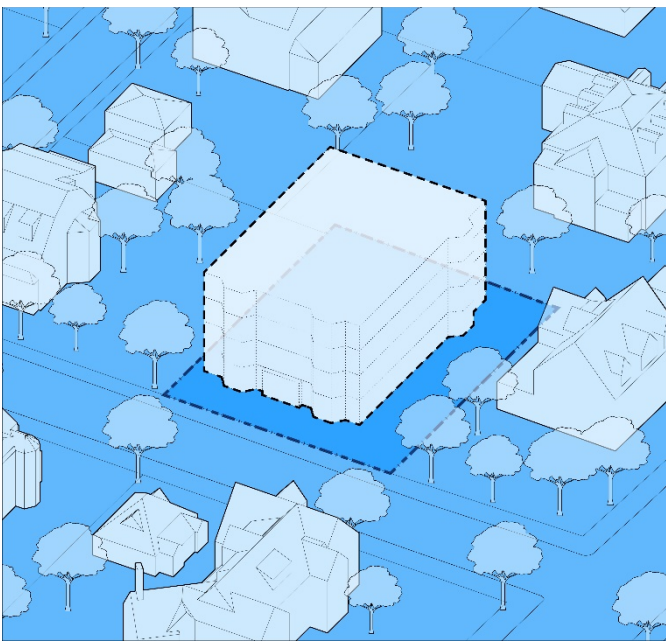
## Examples of hypothetical buildout on large parcels (>10,000sf):



**Maximum allowed under current zoning  
(many existing buildings are non-compliant)**  
1 unit, 2 stories



**Example of buildout under 100%  
Affordable Citywide Overlay**  
17 units, 3 stories



**Example of buildout under 100%  
Affordable Citywide Overlay**  
23 units, 4 stories

69% of existing buildings in residential neighborhoods are not zoning compliant, due to height, density, or both

# How does the 100% Affordable Housing Citywide Overlay relate to the other new policy ideas that were tested?

- The 100% Affordable Housing Citywide Overlay does not change the number of units produced because affordable housing production is determined by the availability of funding.
- The number of **City-subsidized** affordable units is therefore the same under all of the other policy ideas that were tested.
- City funding typically allows 50-60 affordable units to be created through new construction and acquisition of existing multi-family properties each year.



Huron Ave. at Vassal Ln. has different densities together in close proximity.

# Development Projections



# Testing the impact of community-generated ideas

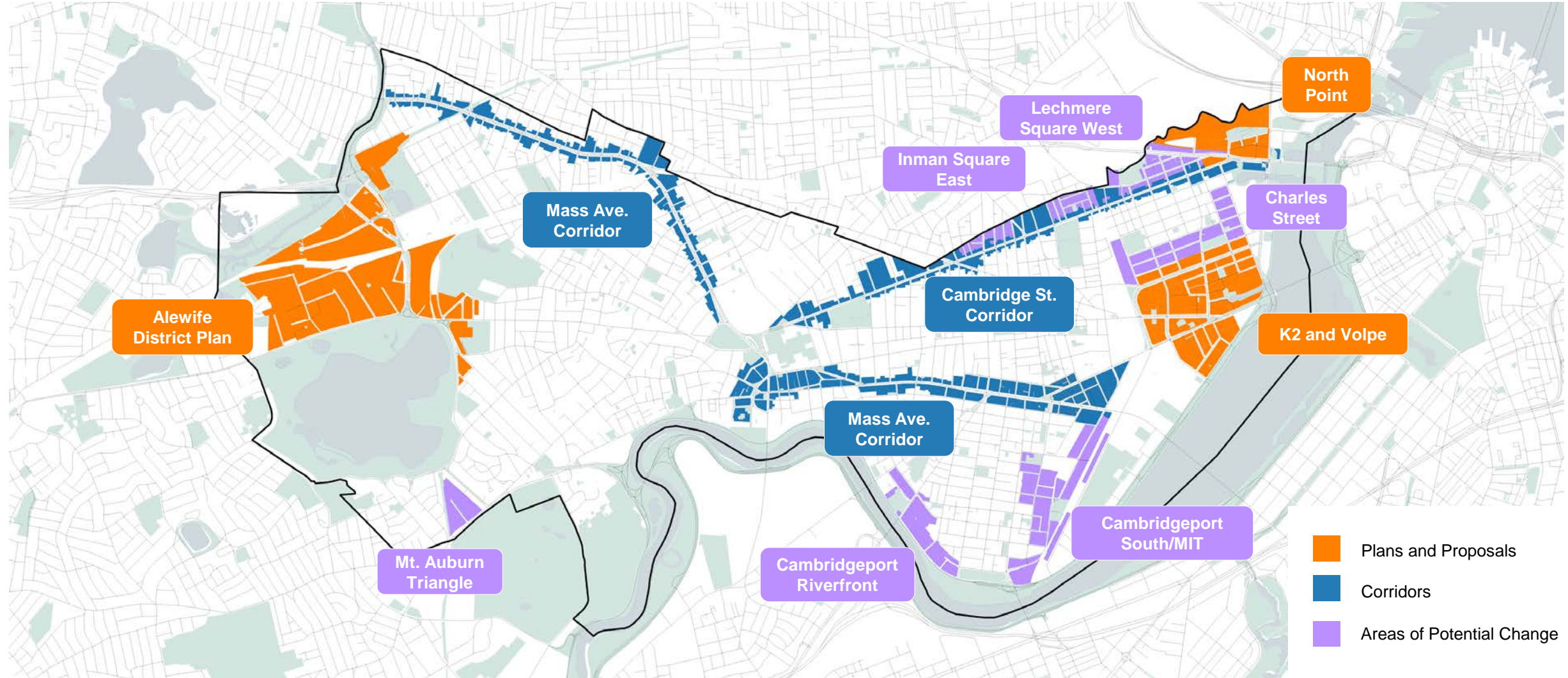
## How do we test these ideas?

- Compare development projections through 2030 under current zoning and new policy ideas.
- Measure the hypothetical impact of these projections to enable a discussion about tradeoffs.

## These tests are analysis, **NOT** recommendations or proposals.

- They **do not** address the effects of all regulations. Zoning laws are always more nuanced than what we can test.
- They **are not** perfect predictions of what will occur. The tests are based on various assumptions, and we cannot predict how individual landowners will act or how the real estate market might change over time.

# Study areas for development projections



# What to consider when evaluating new policy ideas



## Housing

- Housing units
- Affordable units



## Mobility

- Auto traffic impacts



## Urban Form

- Relationship to existing context
- Experience from the street



## Climate and Environment

- Greenhouse gas emissions



## Economy

- Commercial space
- Jobs



## Community Wellbeing

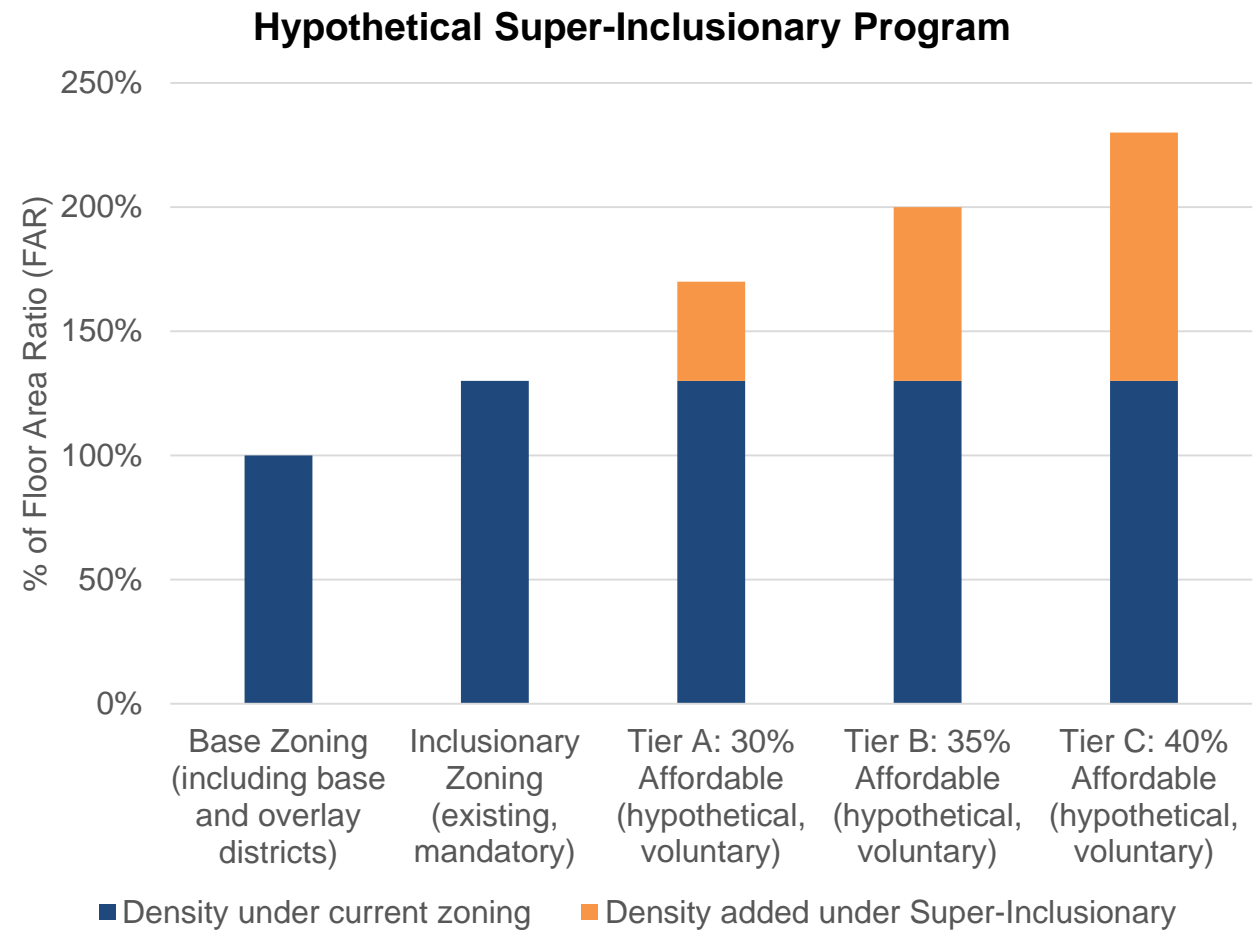
- Residents
- Public school students

# Super-Inclusionary Housing Program



# What is a “super-inclusionary” housing program?

- Current inclusionary zoning requirements:
  - Requires that 20% of new residential development is dedicated to affordable housing.
  - Gives a 30% density bonus
- Super-Inclusionary would be a voluntary program that provides a larger density bonus in exchange for additional affordable housing beyond the city’s current requirements
  - Like the existing policy, it would only apply to new residential buildings or conversions which create 10 or more new units or more than 10,000 square feet of residential space



# Why study super-inclusionary housing program?

## **Advances Envision Cambridge shared community goals:**

- Increase the overall housing supply and produce new affordable housing.
- Provide a variety of housing options for people of different socioeconomic levels, life stages, and physical needs.
- Expand affordable rental and homeownership opportunities to enable Cambridge to thrive as a mixed-income community.
- Foster neighborhoods of opportunity and equitable distribution of affordable housing citywide.
- Provide access to opportunities for all people regardless of differences.
- Work towards addressing race-based disparities and racial equity.
- Builds customer base for retail to attract and retain small businesses

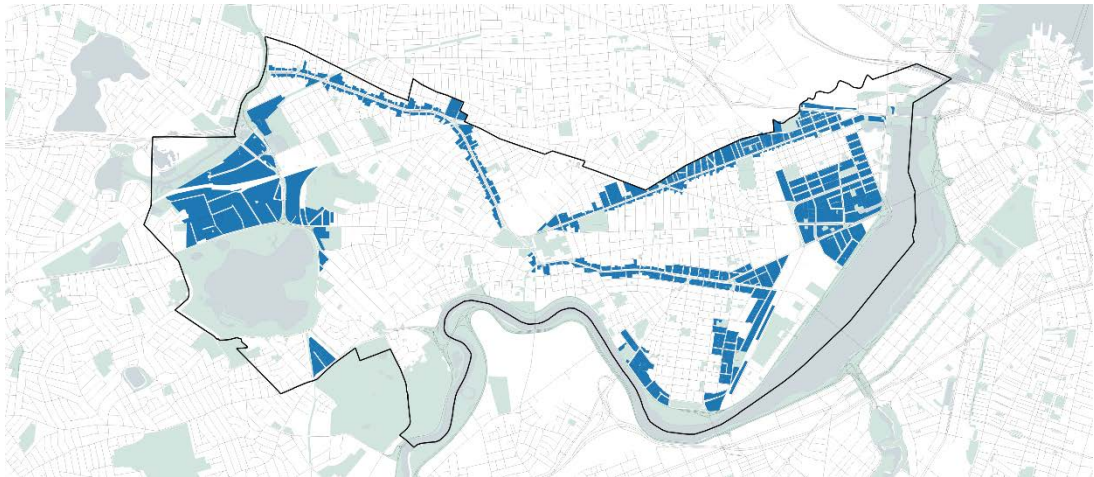
## **Other benefits:**

- Inclusionary Zoning is a major driver of affordable housing development
- Leverages private investment for public benefit (no public subsidy)
- City-regulated program

# Super-Inclusionary Housing Program Ideas for Discussion

- A voluntary, tiered increase to allowable density in exchange for additional affordable housing
  - Each density bonus was set to the minimum amount that allows the additional market-rate units to subsidize the affordable units and ensure that the incentive is financially viable
  - Special permit rules would not be changed. The present approval process would be maintained.
- Several different tiers of super-inclusionary incentives were tested:

Tier	Required Affordable Housing	Density increase over current zoning
Current Inclusionary	20% of floor area (mandatory)	30% over base FAR (given)
Tier A	30% of floor area	70% over base FAR
Tier B	35% of floor area	100% over base FAR
Tier C	40% of floor area	130% over base FAR



The Super-Inclusionary Housing Program would be along corridors and in areas of potential change.

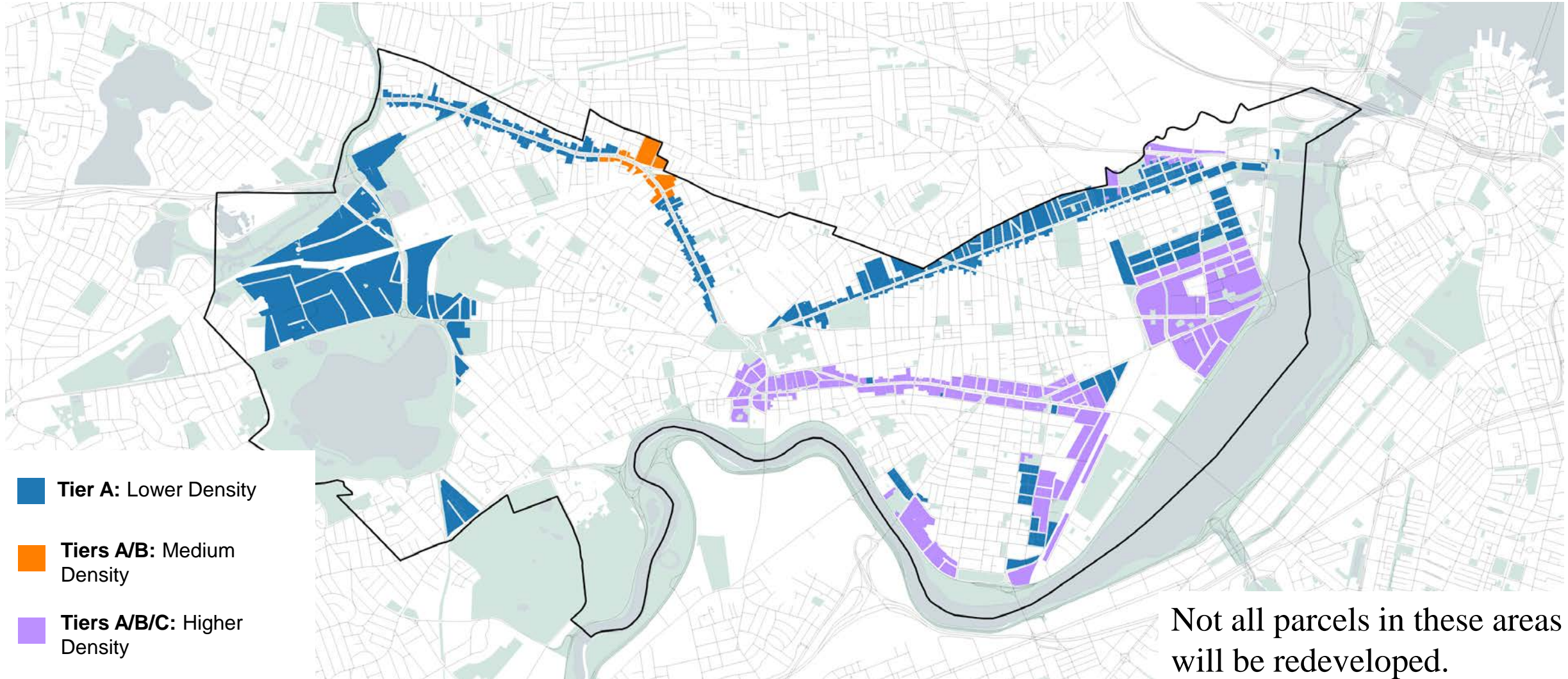
# Super-inclusionary Housing Program: Adoption Rates

- Tier A is available in all parts of the city except traditional residential neighborhoods
- In the areas where the character and access to amenities can support additional density, higher tiers are available in order to produce a higher percentage of affordable units
- Adoption rates for each tier would vary by the area of the city, depending on the allowable base density and rents that are achievable in each area.
- Not all developments would opt for the highest tier available to it.
- Not all developments would opt for *any* super-inclusionary bonus.

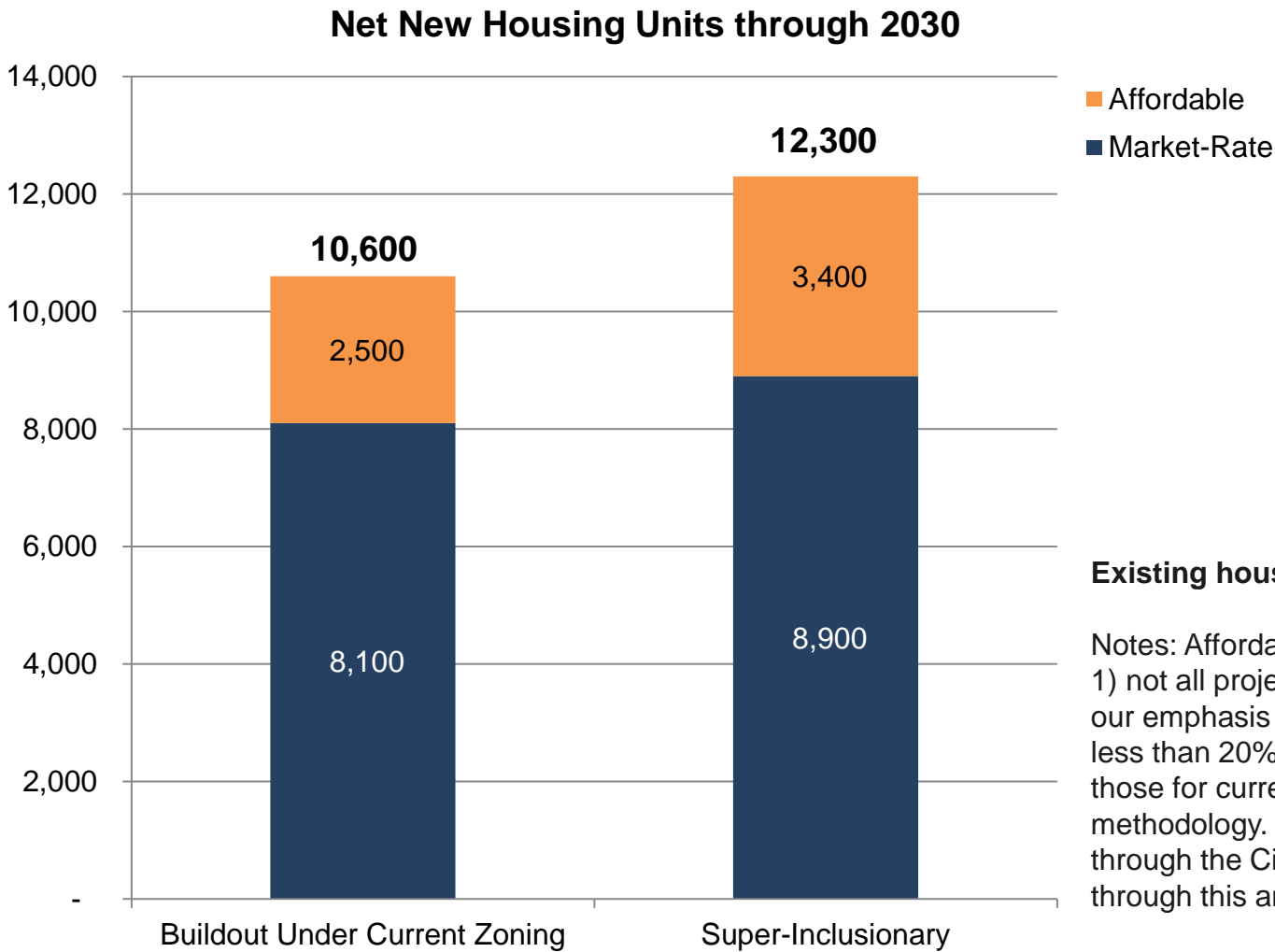
**Tested adoption rates:**

Area	Buildout under Current Zoning: 20% Affordable	Tier A: 30% Affordable	Tier B: 35% Affordable	Tier C: 40% Affordable
Lower density	50%	50%	0% (not allowed)	0% (not allowed)
Medium Density	50%	30%	20%	0% (not allowed)
Higher density	25%	30%	20%	25%

# Super-Inclusionary Concepts and Tiers Analyzed



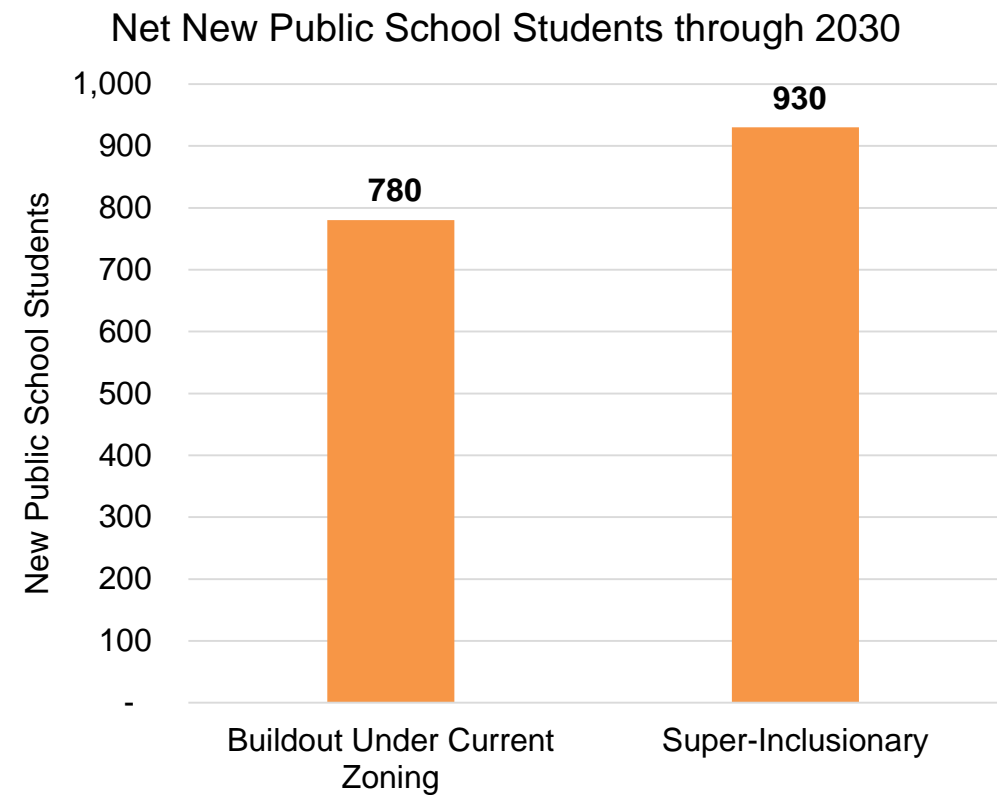
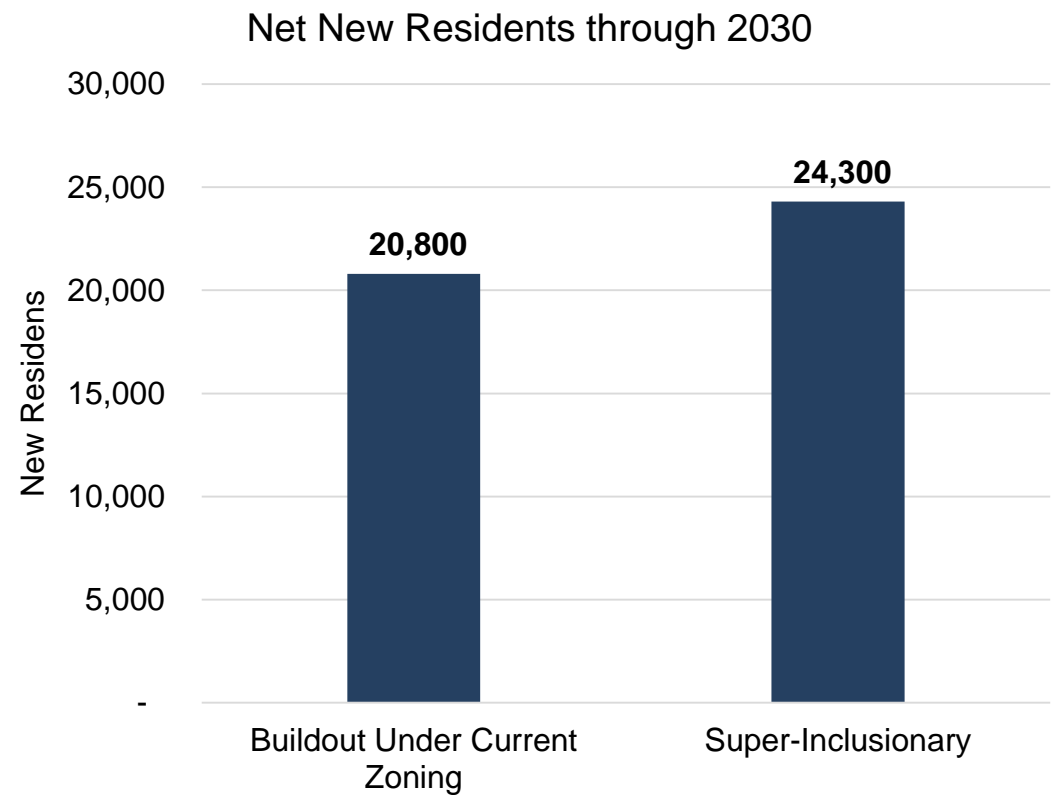
# Comparison of Potential Housing Production – Super-Inclusionary



**Existing housing stock: approximately 53,000 units**

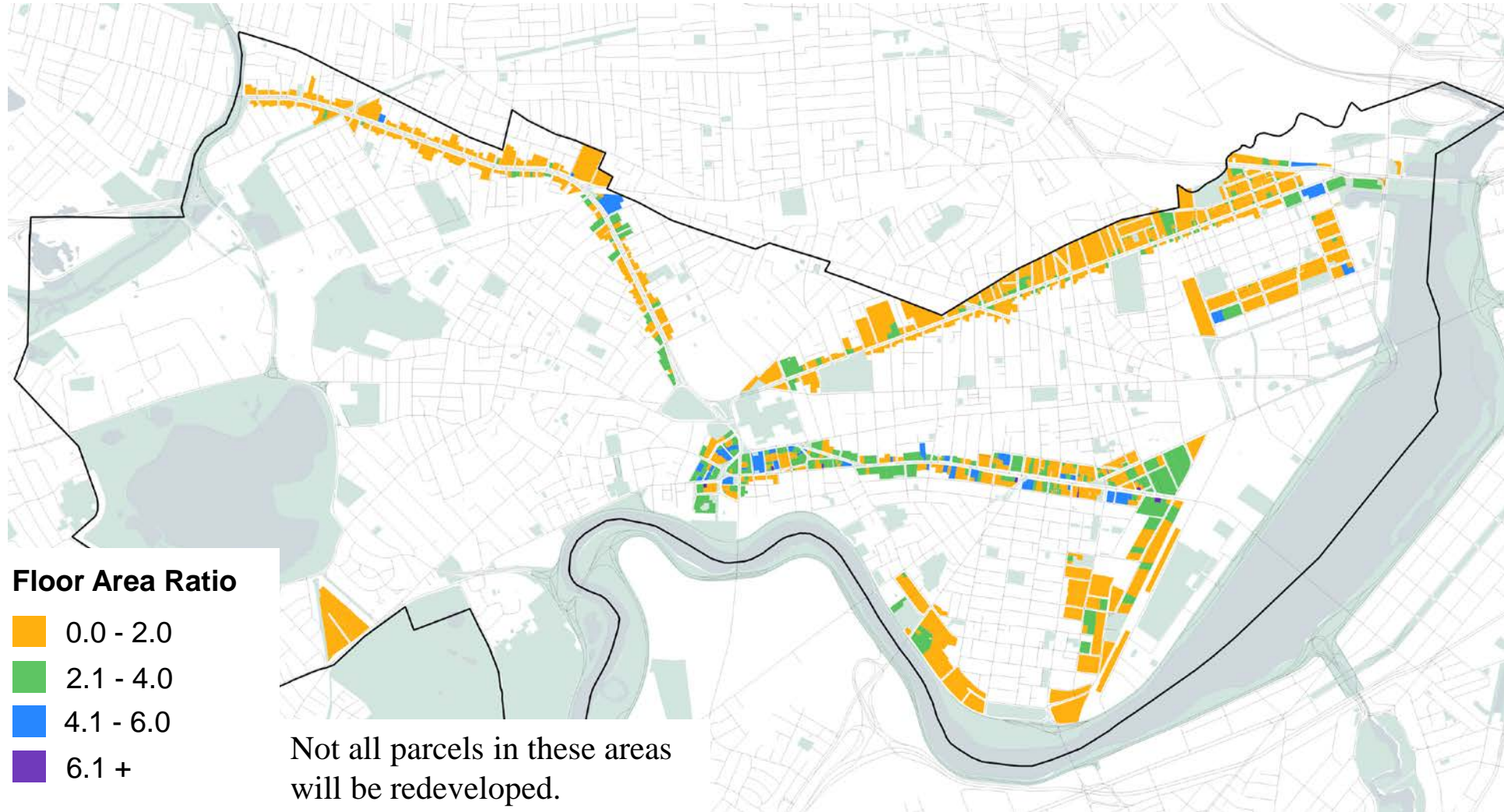
Notes: Affordable percentage for non-pipeline projects is assumed at 17.5% since 1) not all projects trigger IZ and 2) the IZ is 20% of square footage, not units. Given our emphasis on family sized units, the percentage of affordable units is likely to be less than 20% of total new housing units. All figures are rounded. Figures, including those for current zoning, will vary from past estimates due to changes in methodology. Figures include estimated affordable development that is funded through the City, in addition to the market and affordable development projected through this analysis.

# Comparison of Potential New Residents and Public School Students

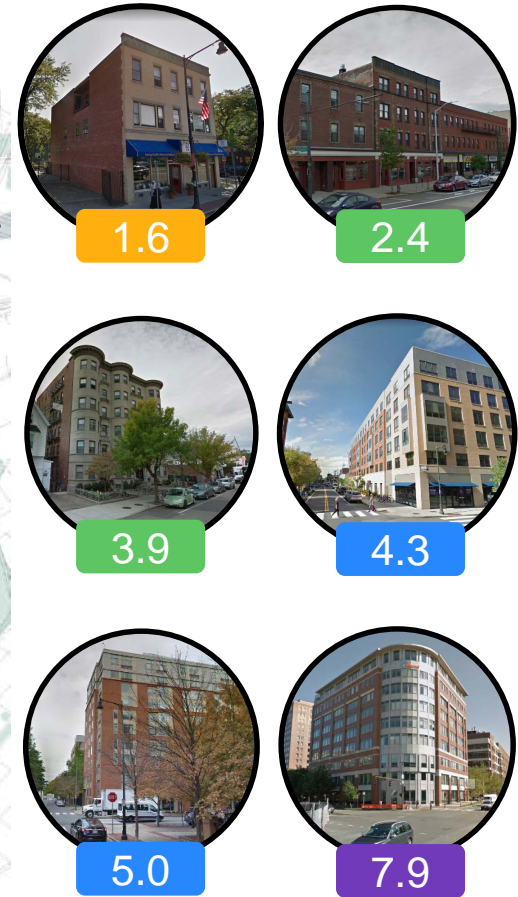


Figures, including those for current zoning, will vary from past estimates due to changes in methodology.

# Urban Form Comparison – Existing Built Density

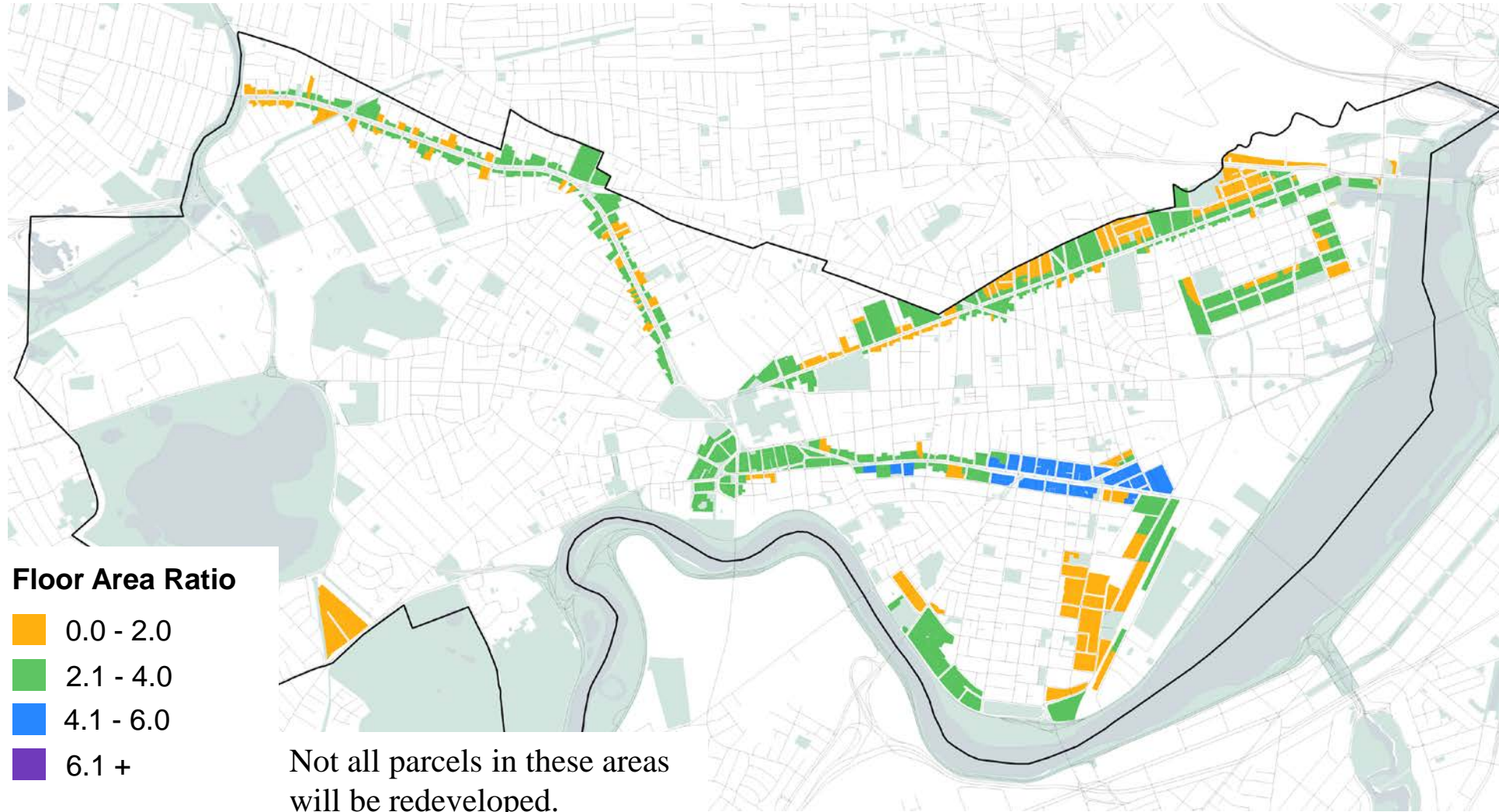


## Floor Area Ratio Precedents

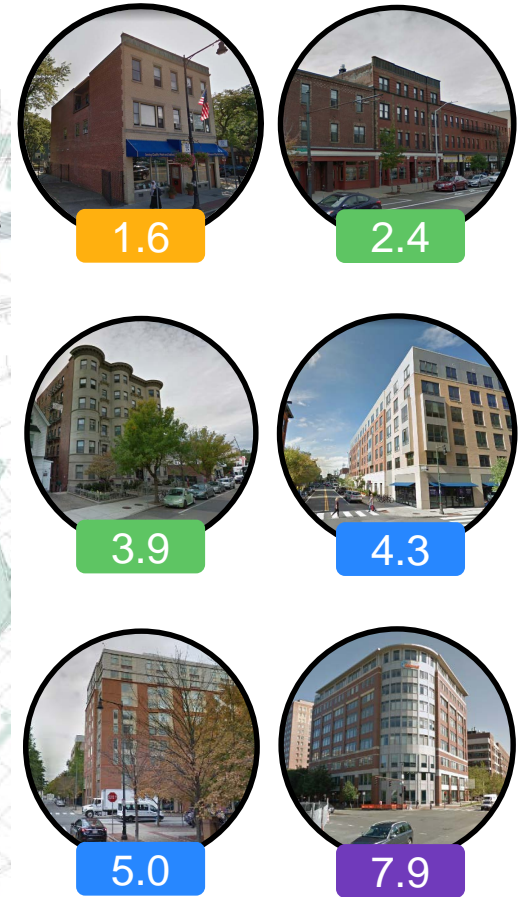


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# Urban Form Comparison – Density Allowed by Current Zoning (Residential)

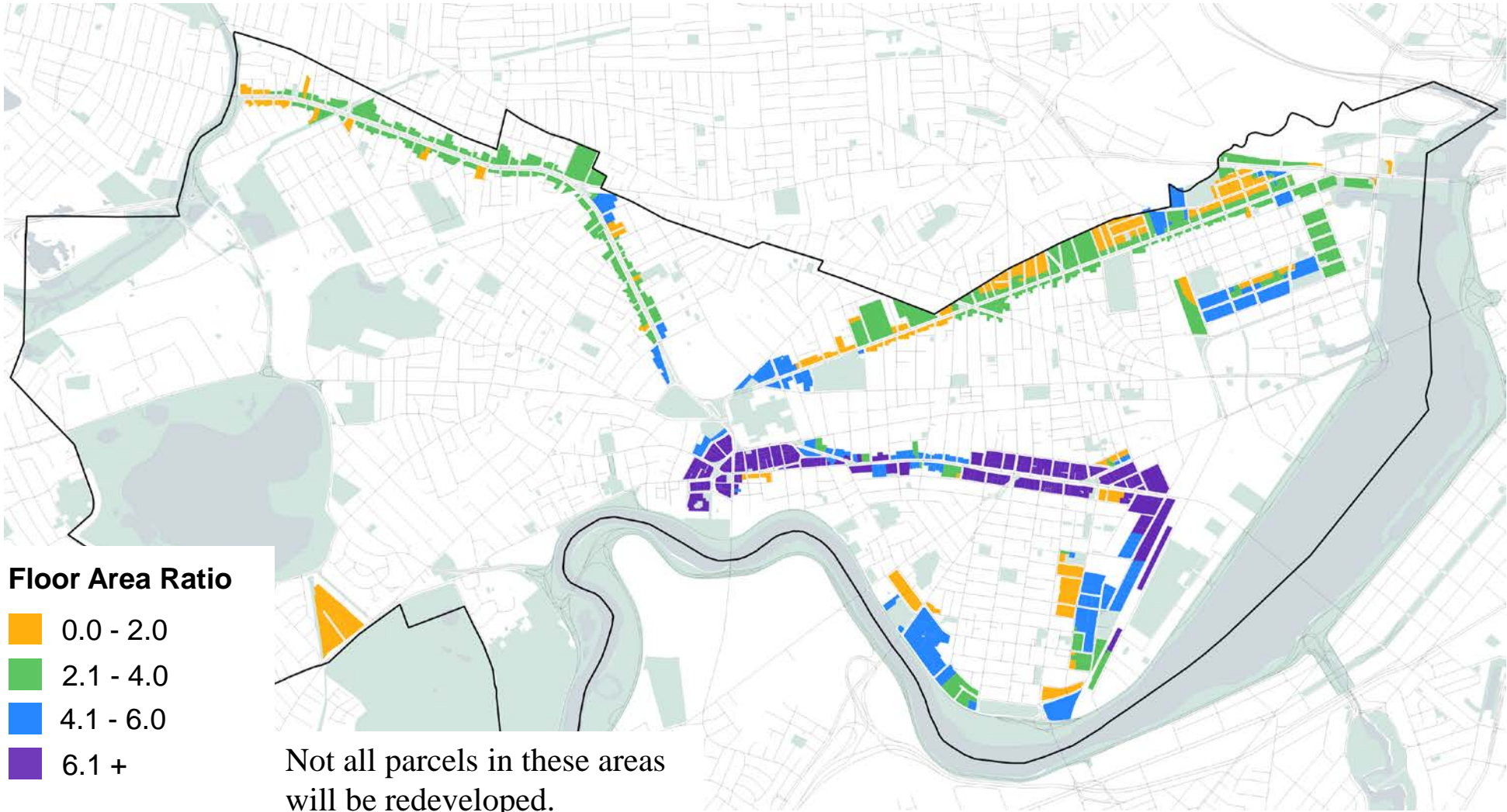


## Floor Area Ratio Precedents



FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Max. Density under Super-Inclusionary



## Floor Area Ratio Precedents



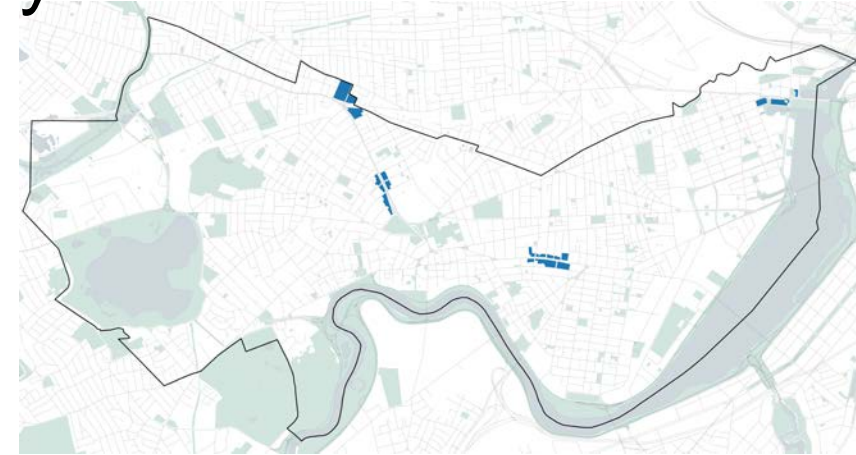
FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Outcomes: Hypothetical Corridor Block under Super-Inclusionary Program – Low Density



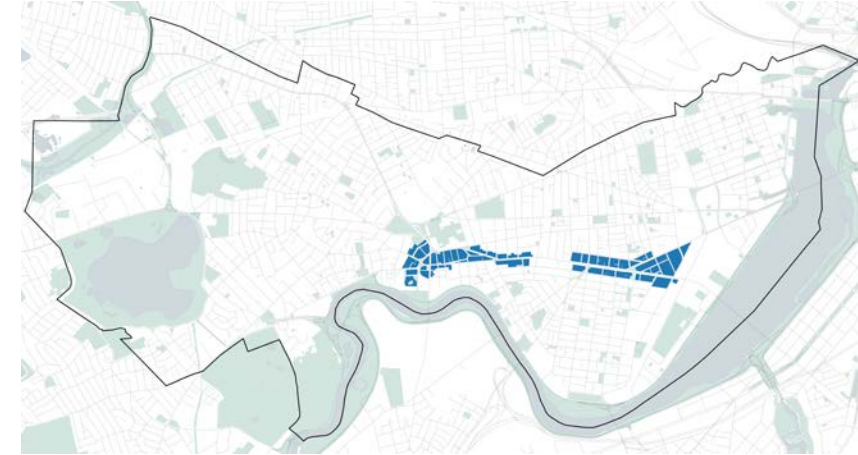
Study areas shown in the map have maximum super-inclusionary densities that might result in the density shown.

# Urban Form Outcomes: Hypothetical Corridor Block under Super-Inclusionary Program – Medium Density



Study areas shown in the map have maximum super-inclusionary densities that might result in the density shown.

# Urban Form Outcomes: Hypothetical Corridor Block under Super-Inclusionary Program – High Density

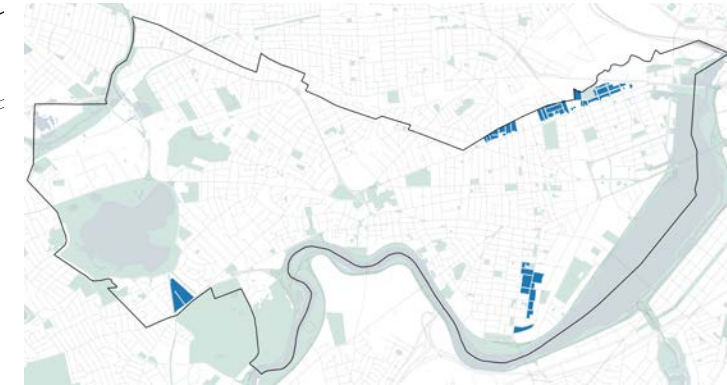


Study areas shown in the map have maximum super-inclusionary densities that might result in the density shown.

# Urban Form Outcomes: Hypothetical Transitional Area under Super-Inclusionary Program – Existing Condition

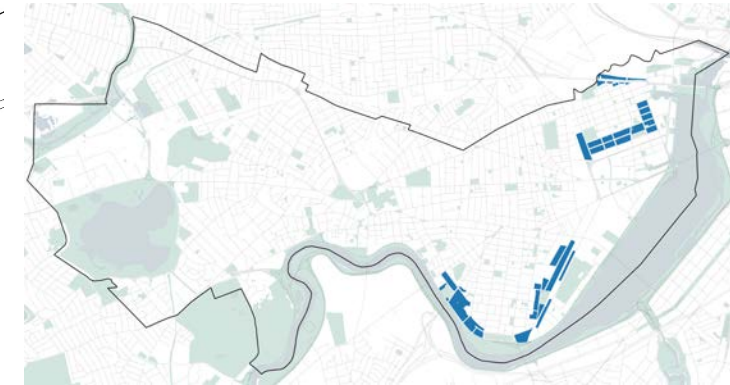


# Urban Form Outcomes: Hypothetical Transitional Area under Super-Inclusionary Program – Low/Medium Density



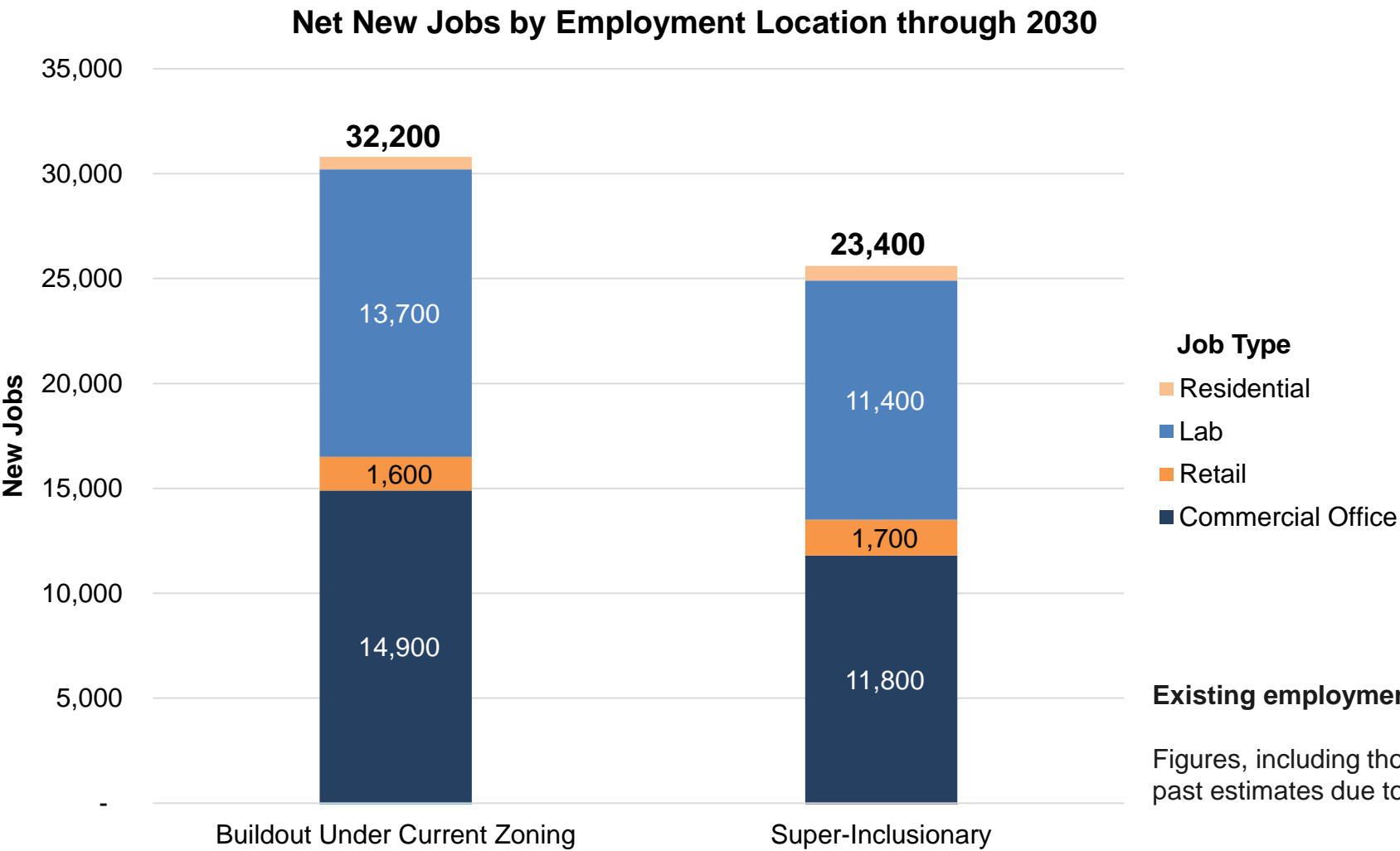
Study areas shown in the map have maximum super-inclusionary densities that might result in the density shown.

# Urban Form Outcomes: Hypothetical Transitional Area under Super-Inclusionary Program – Medium/High Density



Study areas shown in the map have maximum super-inclusionary densities that might result in the density shown.

# Comparison of Potential New Jobs – Super-Inclusionary

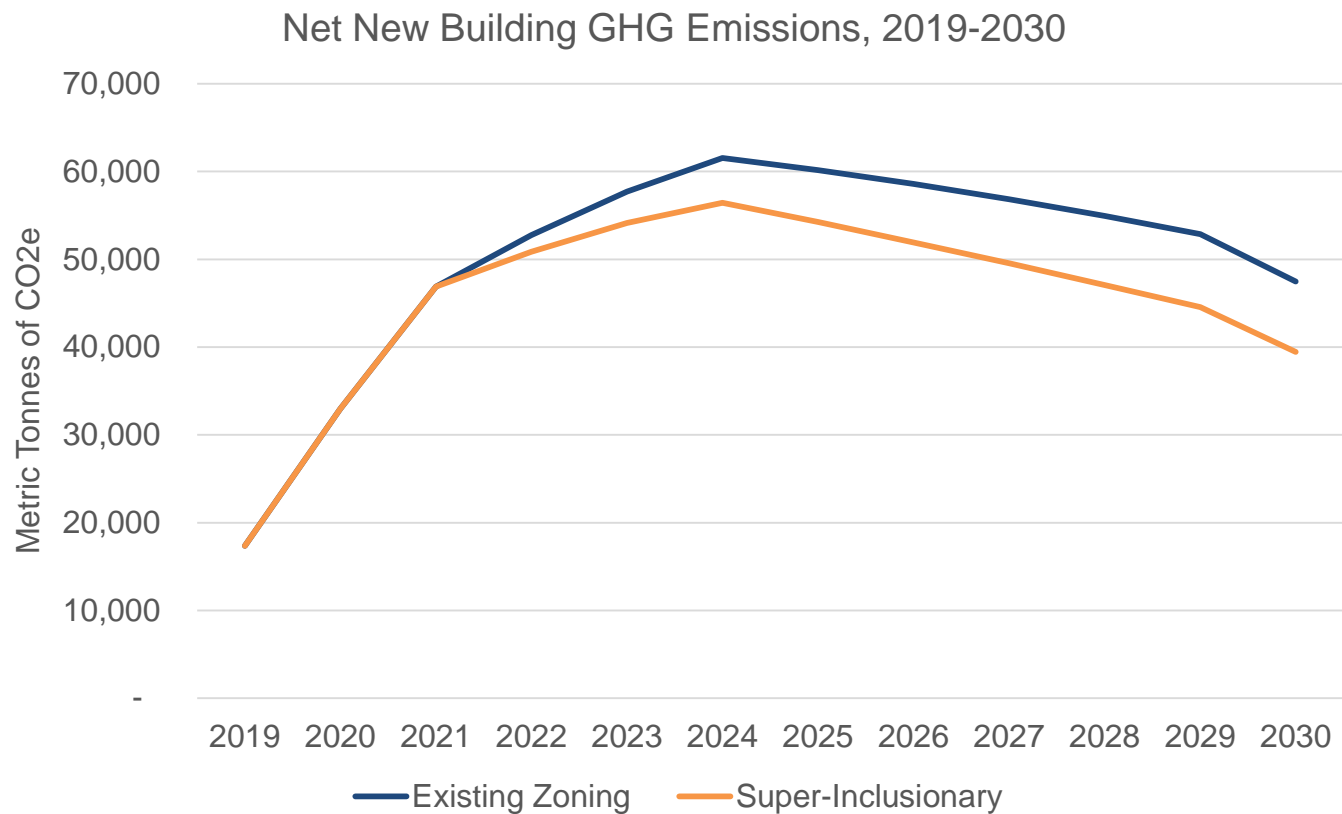


- Both current zoning and a Super-Inclusionary Policy would result in net new jobs.
- Net new jobs are lower under the Super-Inclusionary Program because residential construction is incentivized compared to commercial.

**Existing employment: approximately 124,000 jobs**

Figures, including those for current zoning, will vary from past estimates due to changes in methodology.

# Comparison of GHG Emissions – Super-Inclusionary



**Existing Building Emissions: approx. 1 million tonnes**

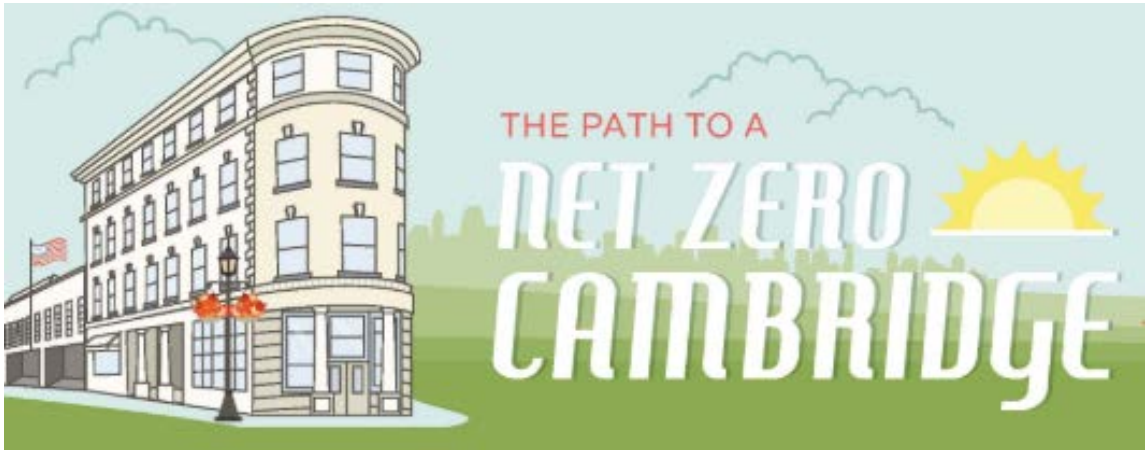
Figures assume individual electrification of buildings (using Cambridge's Low Carbon Energy Supply Strategy scenario 1), improvements in the electric grid, and the energy use intensity targets called for in the Net Zero Action Plan. Figures show GHG emissions from operations.

# Environmental Performance Incentive



# What is an environmental performance incentive policy?

- A voluntary program that provides a density bonus in exchange for improved environmental building performance, such as:
  - Net zero construction ahead of the requirements set forth by the Net Zero Action Plan
  - Net positive construction after net zero construction is required
  - District energy
  - Resiliency measures



Cambridge's 2015 *Getting to Net Zero Framework* is an action plan to get all buildings to net zero GHG emissions by mid-century.

## Current Net Zero Action Plan requirements by use:

Type:	Municipal	Small Residential (1-4 units)	Multifamily	Commercial	Institutional	Laboratory
Target Year:	2020	2022	2025	2025	2025	2030

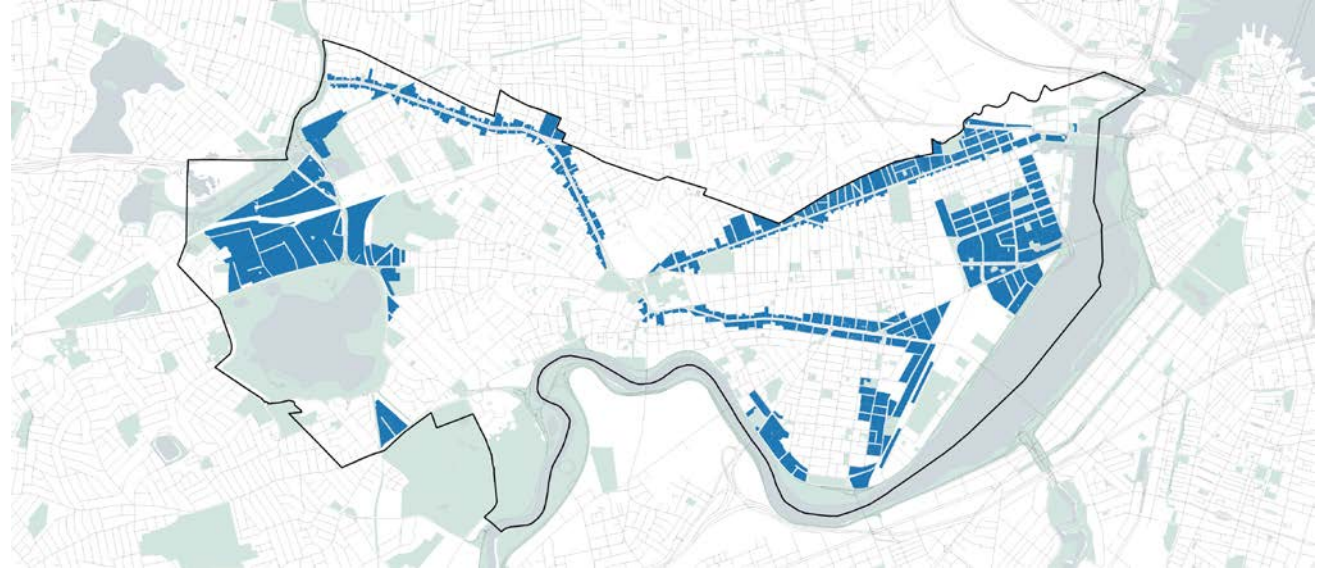
# Why study an environmental performance incentive program?

## **Advances Envision Cambridge shared community goals:**

- Prepare for impacts of climate change
- Accelerate net zero adoption
- Reduce building energy consumption
- Transition away from fossil fuels

# What would the Environmental Performance Incentive entail?

- The incentive would require adoption of net zero construction for new buildings in the years before net zero is mandated, net positive construction after the mandates go into effect, or other measures that would increase environmental performance at a large scale.
- Limited to areas with the highest likelihood of change (not available in traditional residential neighborhoods).

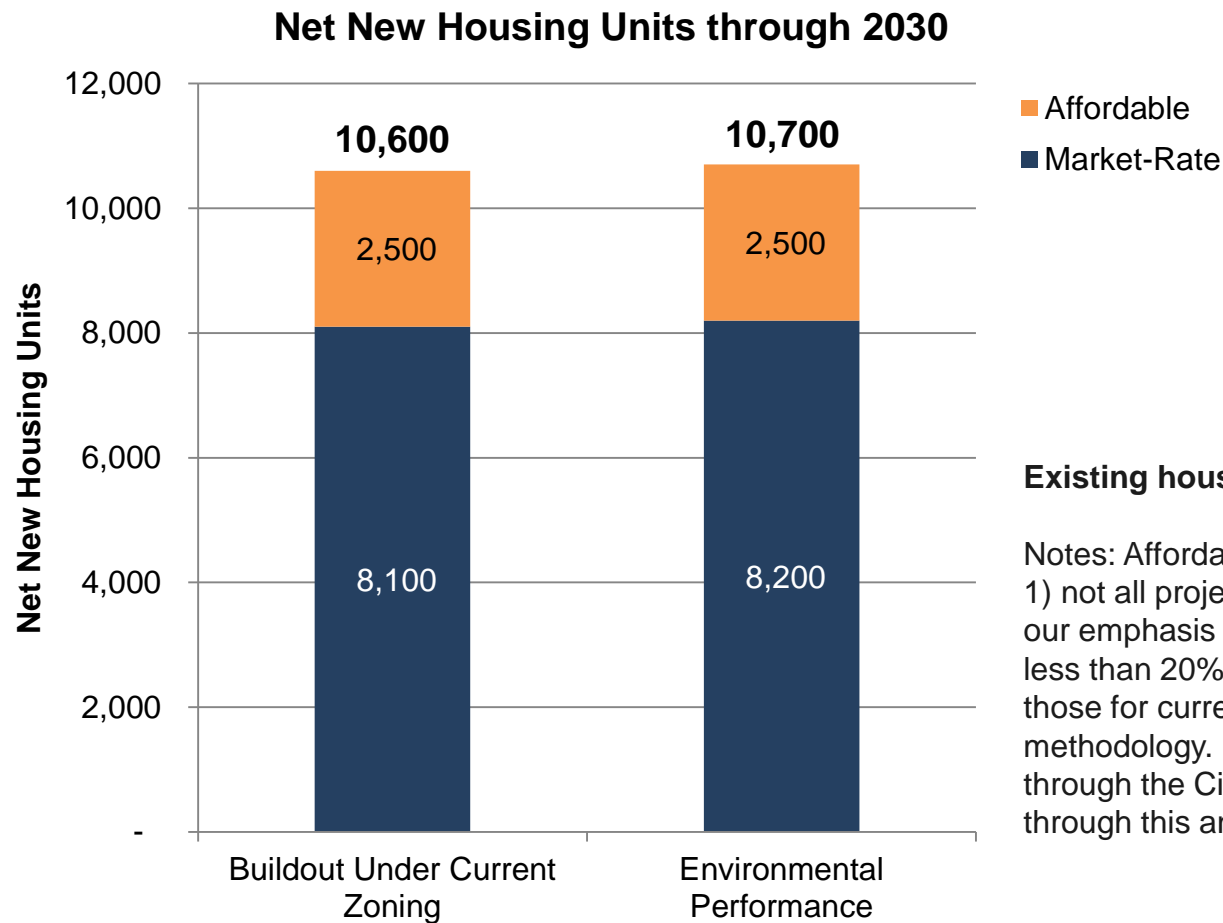


The Super-Inclusionary Housing Program would apply along corridors and in areas of potential change.

# Environmental Performance Incentive Policy: Testing

- This analysis tested a version of a Environmental Performance Incentive bonus that offers a bonus to both residential and non-residential development
- Additional allowable density under this bonus:
  - Residential: 10%
  - Commercial: 15%
- Adoption of the bonus is assumed to be:
  - Residential: 70%
  - Commercial:
    - 40% in areas with higher density
    - 80% in areas with lower density

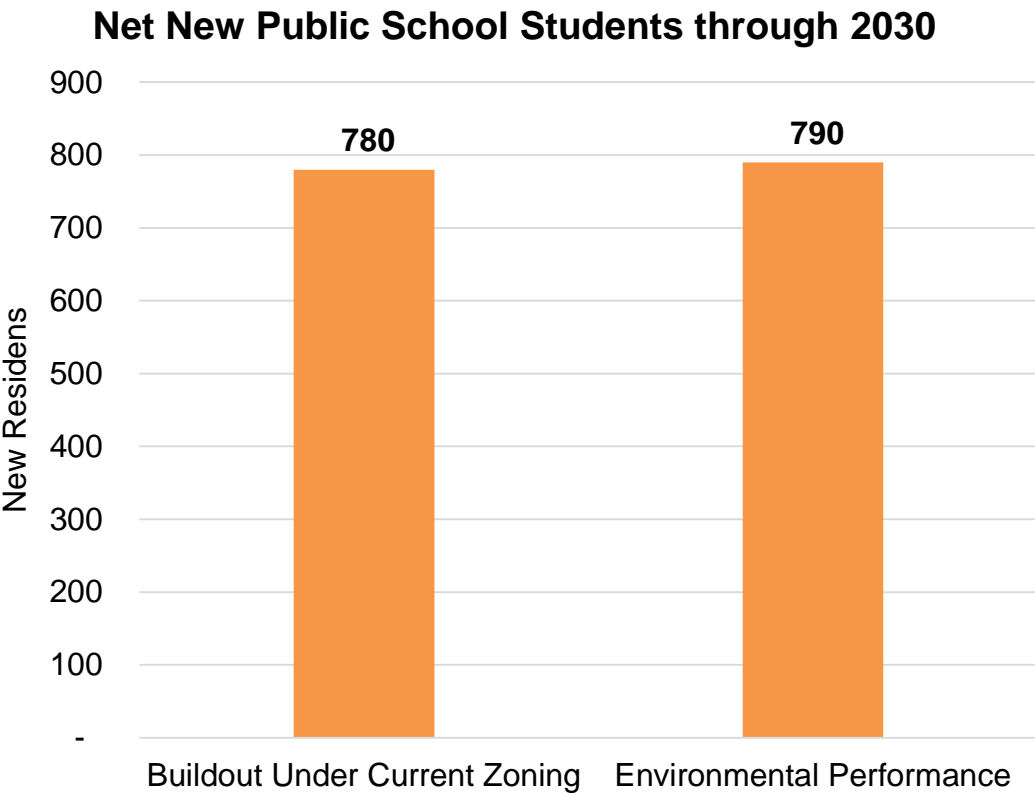
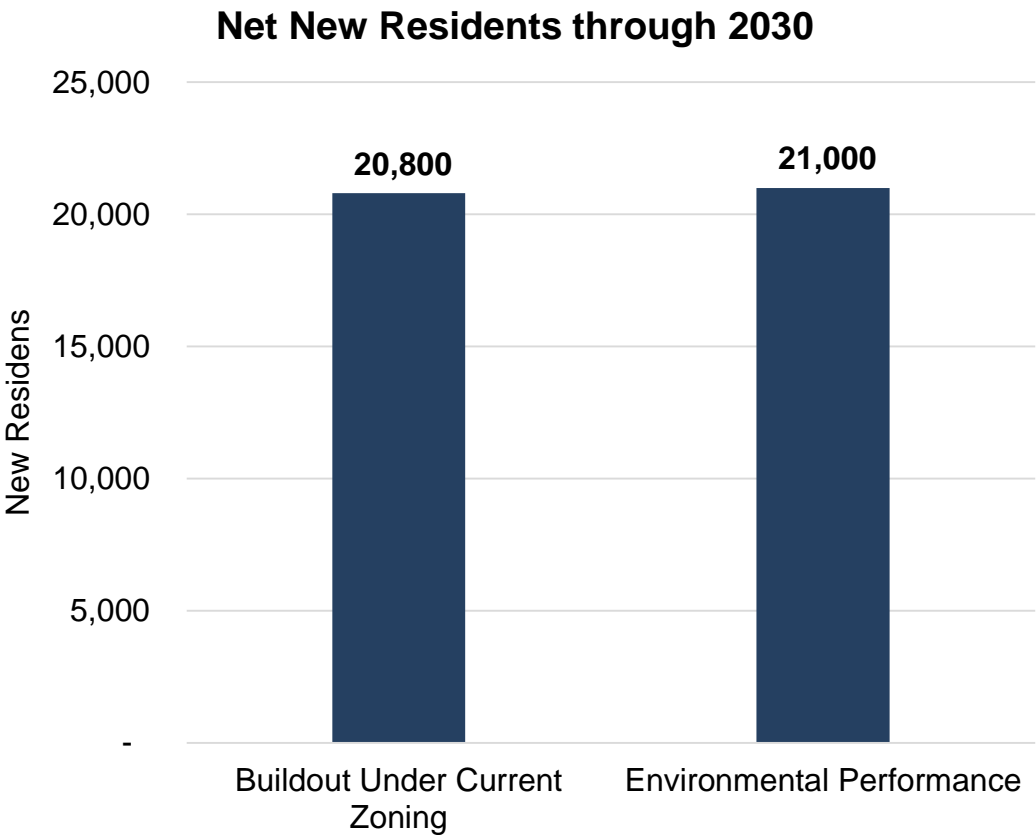
# Comparison of Potential Housing Production – Environmental Performance Incentive



**Existing housing stock: approximately 53,000 units**

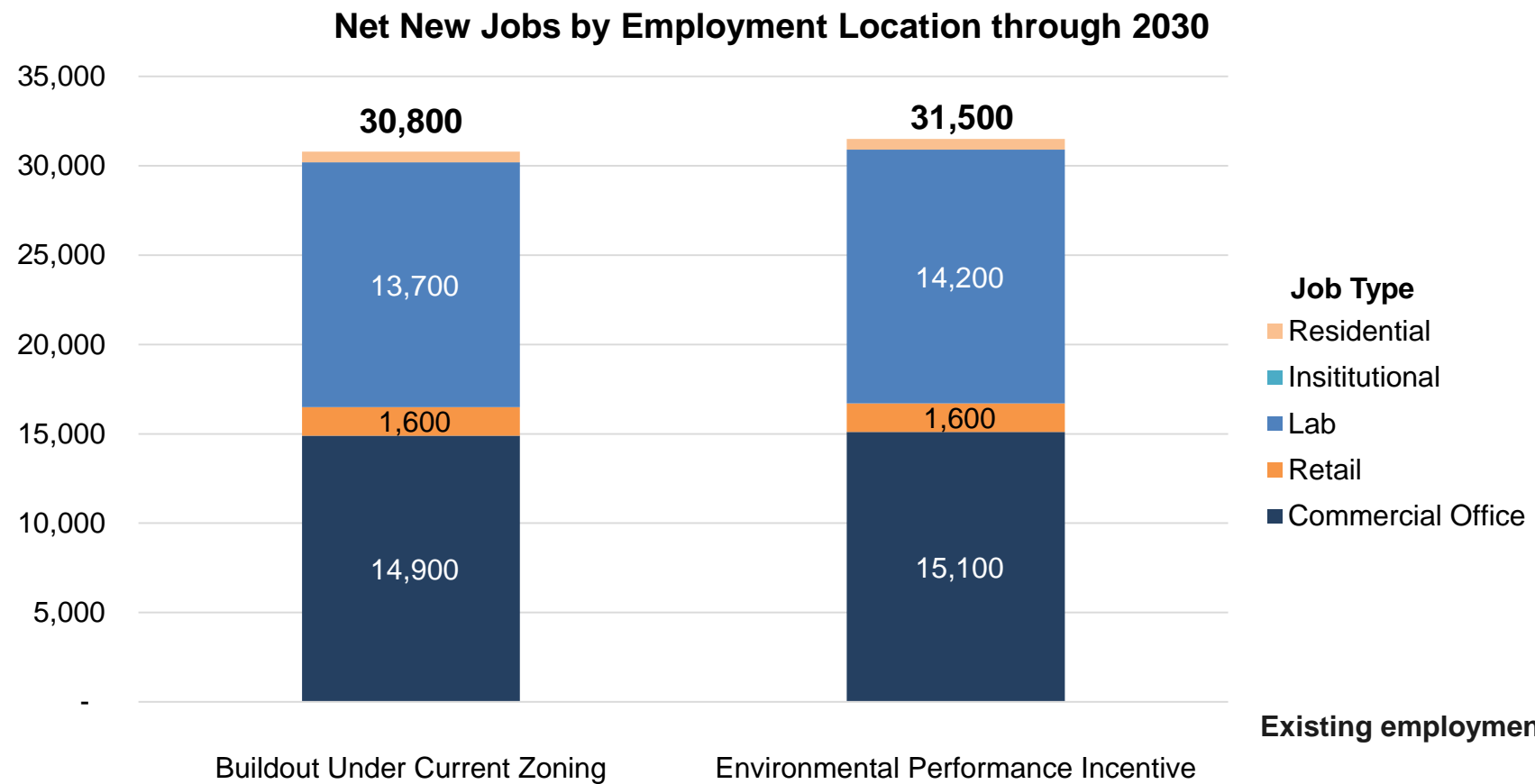
Notes: Affordable percentage for non-pipeline projects is assumed at 17.5% since 1) not all projects trigger IZ and 2) the IZ is 20% of square footage, not units. Given our emphasis on family sized units, the percentage of affordable units is likely to be less than 20% of total new housing units. All figures are rounded. Figures, including those for current zoning, will vary from past estimates due to changes in methodology. Figures include estimated affordable development that is funded through the City, in addition to the market and affordable development projected through this analysis.

# Comparison of Potential New Residents and Public School Students



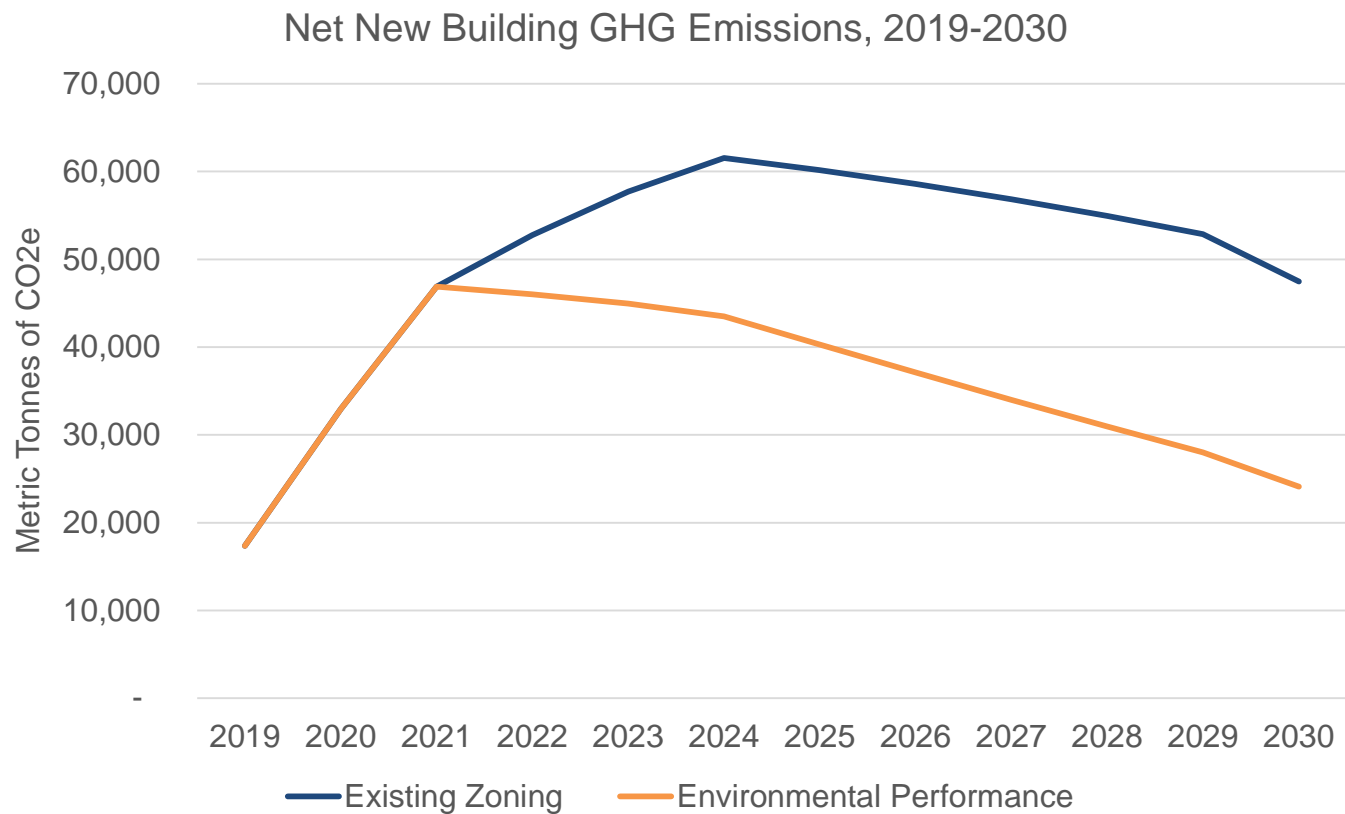
Figures, including those for current zoning, will vary from past estimates due to changes in methodology.

# Comparison of Potential New Jobs – Environmental Performance Incentive



Figures, including those for current zoning, will vary from past estimates due to changes in methodology.

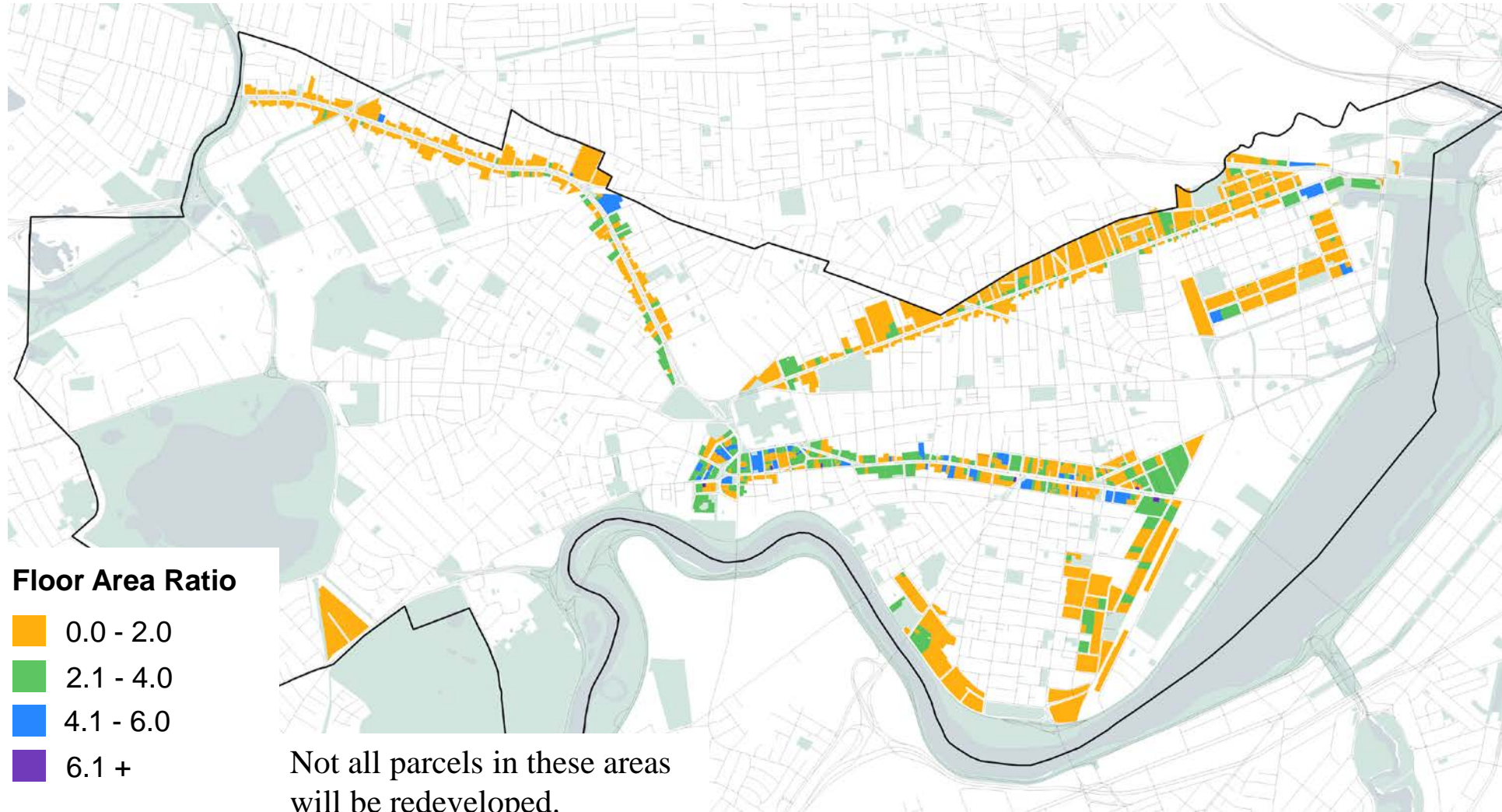
# Comparison of GHG Emissions – Environmental Performance



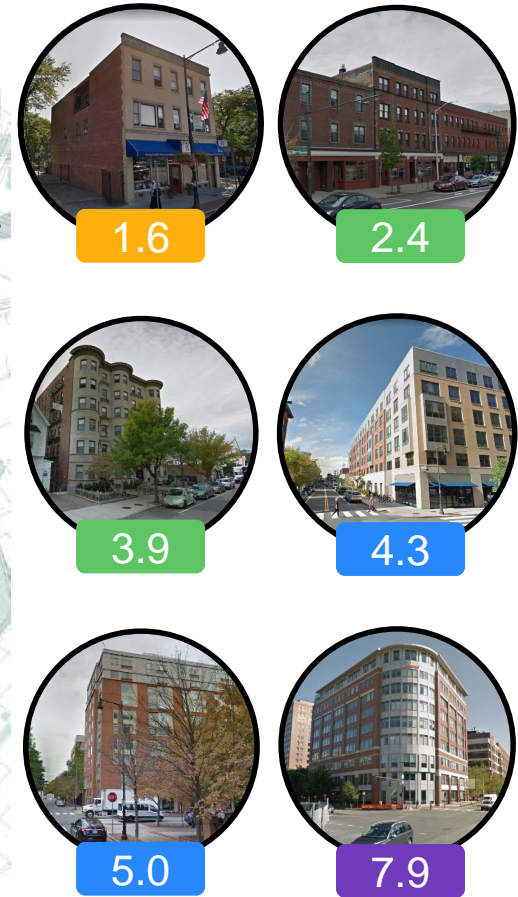
**Existing Building Emissions: approx. 1 million tonnes**

Figures assume individual electrification of buildings (using Cambridge’s Low Carbon Energy Supply Strategy scenario 1), improvements in the electric grid, and the energy use intensity targets called for in the Net Zero Action Plan. Figures show GHG emissions from operations.

# Urban Form Comparison – Existing Built Density

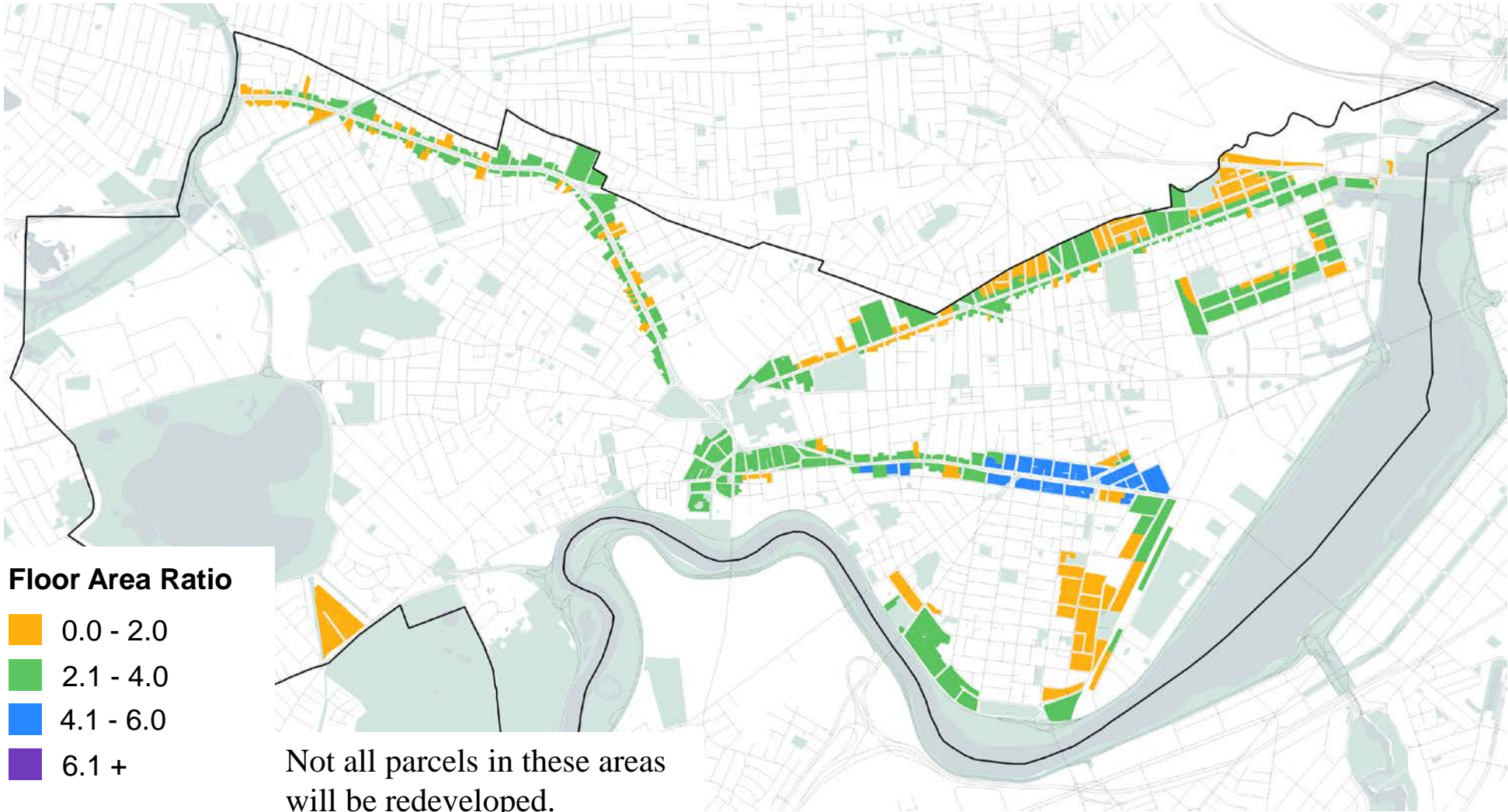


## Floor Area Ratio Precedents



FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Density Allowed by Current Zoning (Residential)

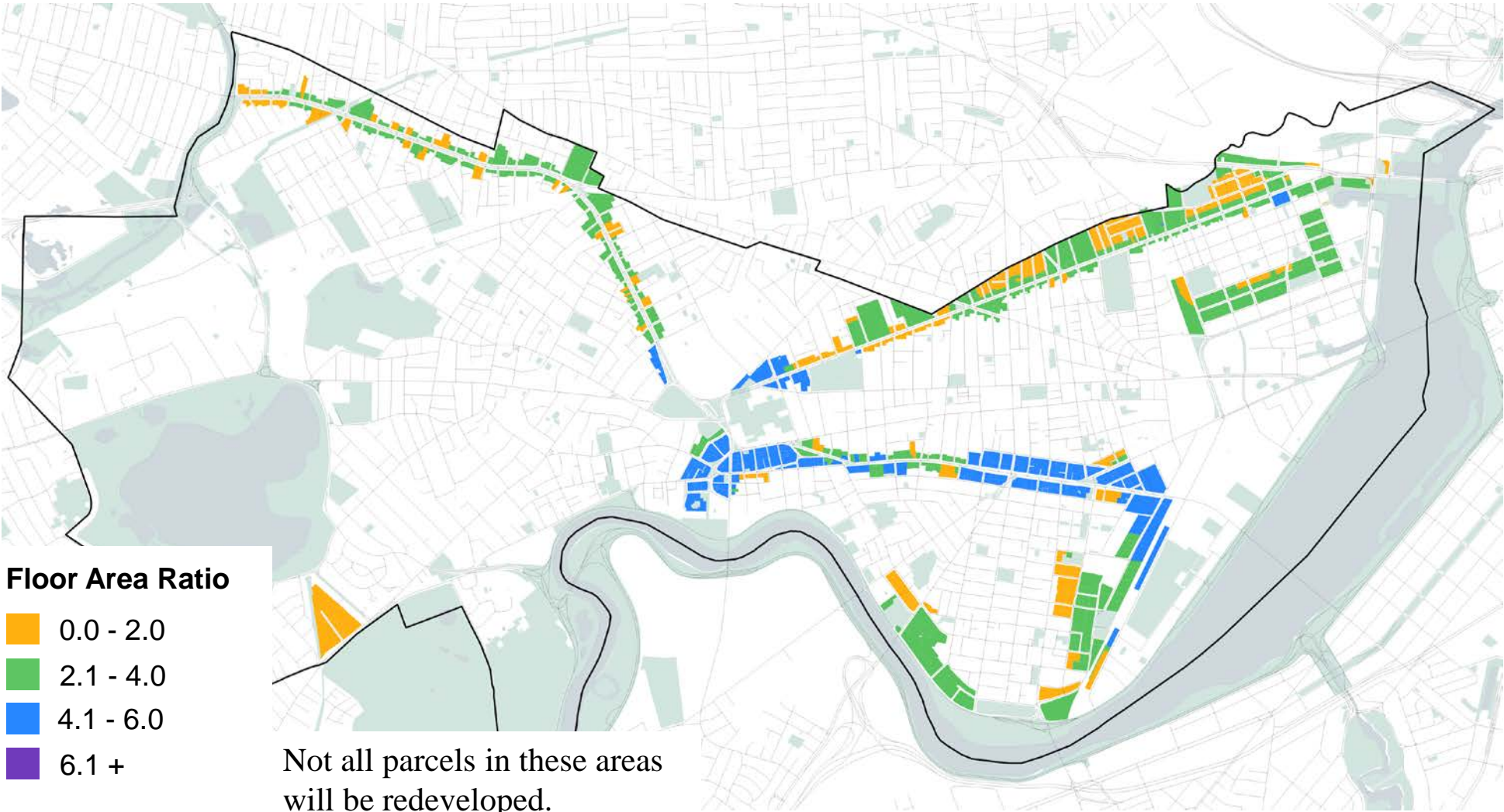


## Floor Area Ratio Precedents



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# Urban Form Comparison – Max. Density under Environmental Performance Incentive (Residential)

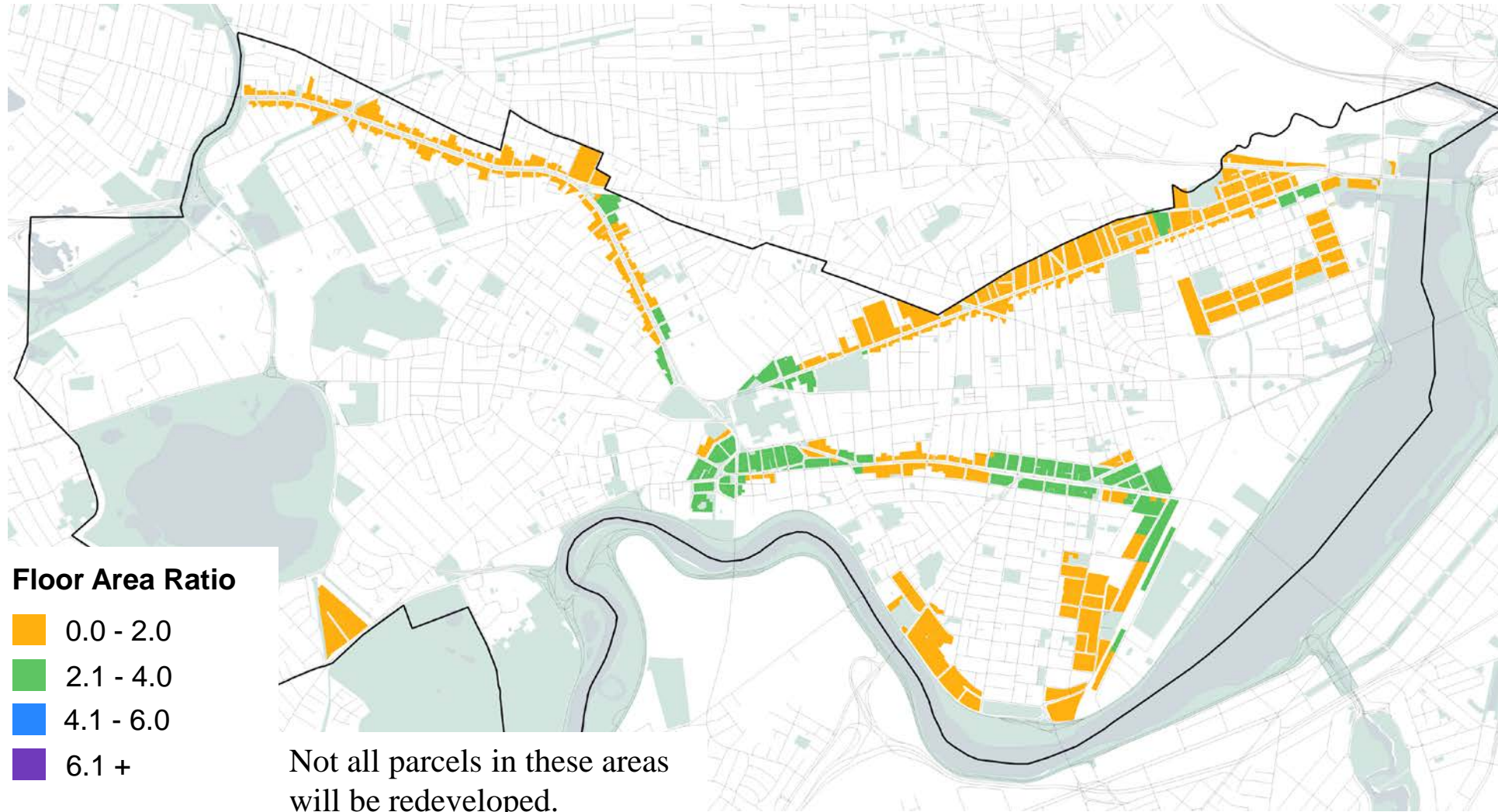


## Floor Area Ratio Precedents

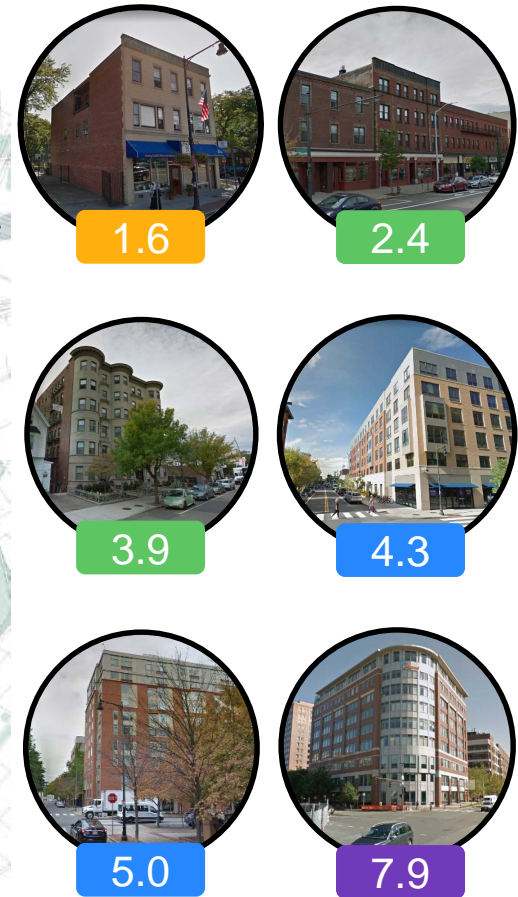


FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Density Allowed by Current Zoning (Non-Residential)



## Floor Area Ratio Precedents



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# Urban Form Comparison – Max. Density under Environmental Performance Incentive (Non-Resi.)



## Floor Area Ratio Precedents



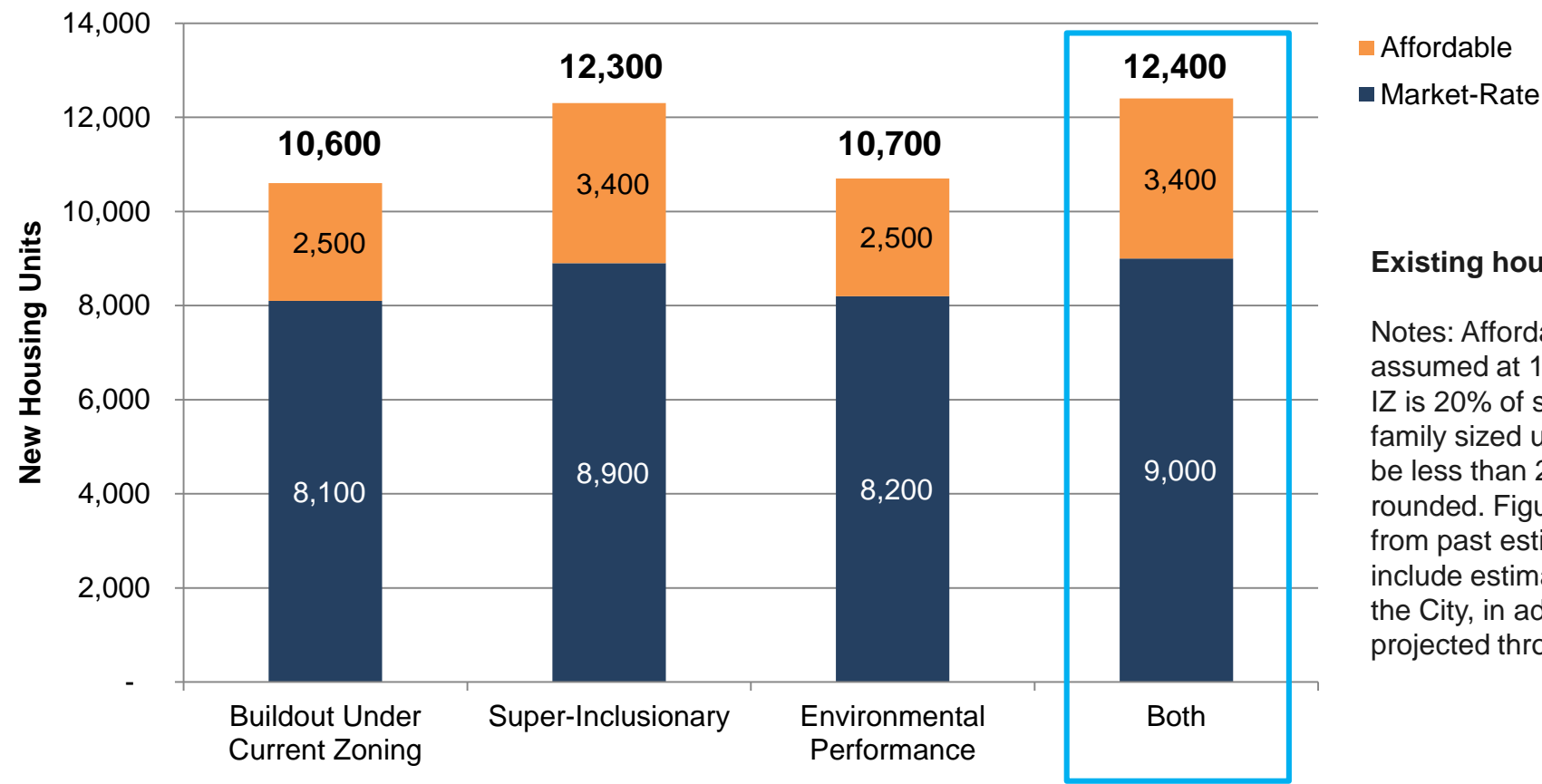
FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Combined Super-Inclusionary Program and Environmental Performance Incentive



# Comparison of Potential Housing Production – Super-Inclusionary plus Environmental Performance

Net New Housing Units through 2030

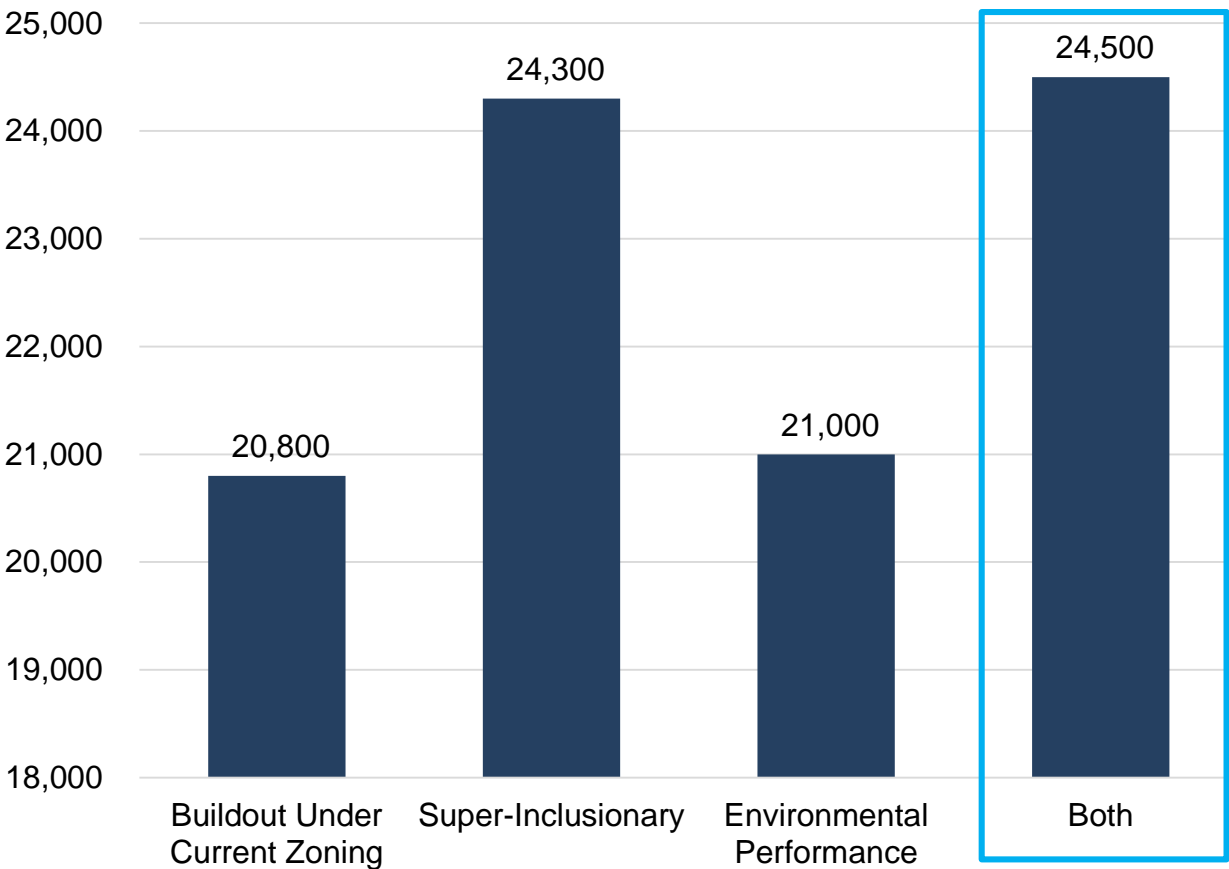


Existing housing stock: approximately 53,000 units

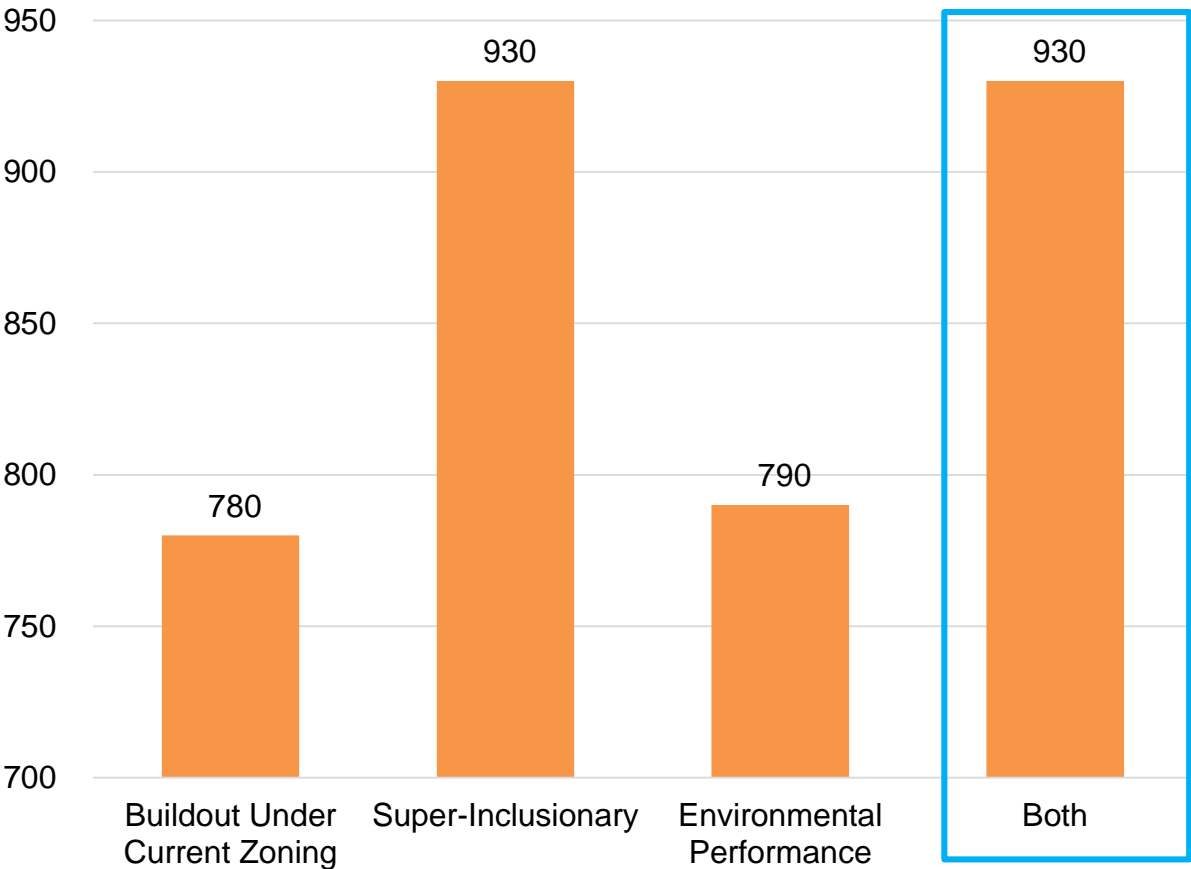
Notes: Affordable percentage for non-pipeline projects is assumed at 17.5% since 1) not all projects trigger IZ and 2) the IZ is 20% of square footage, not units. Given our emphasis on family sized units, the percentage of affordable units is likely to be less than 20% of total new housing units. All figures are rounded. Figures, including those for current zoning, will vary from past estimates due to changes in methodology. Figures include estimated affordable development that is funded through the City, in addition to the market and affordable development projected through this analysis.

# Comparison of Potential New Residents and Public School Students

Net New Residents through 2030

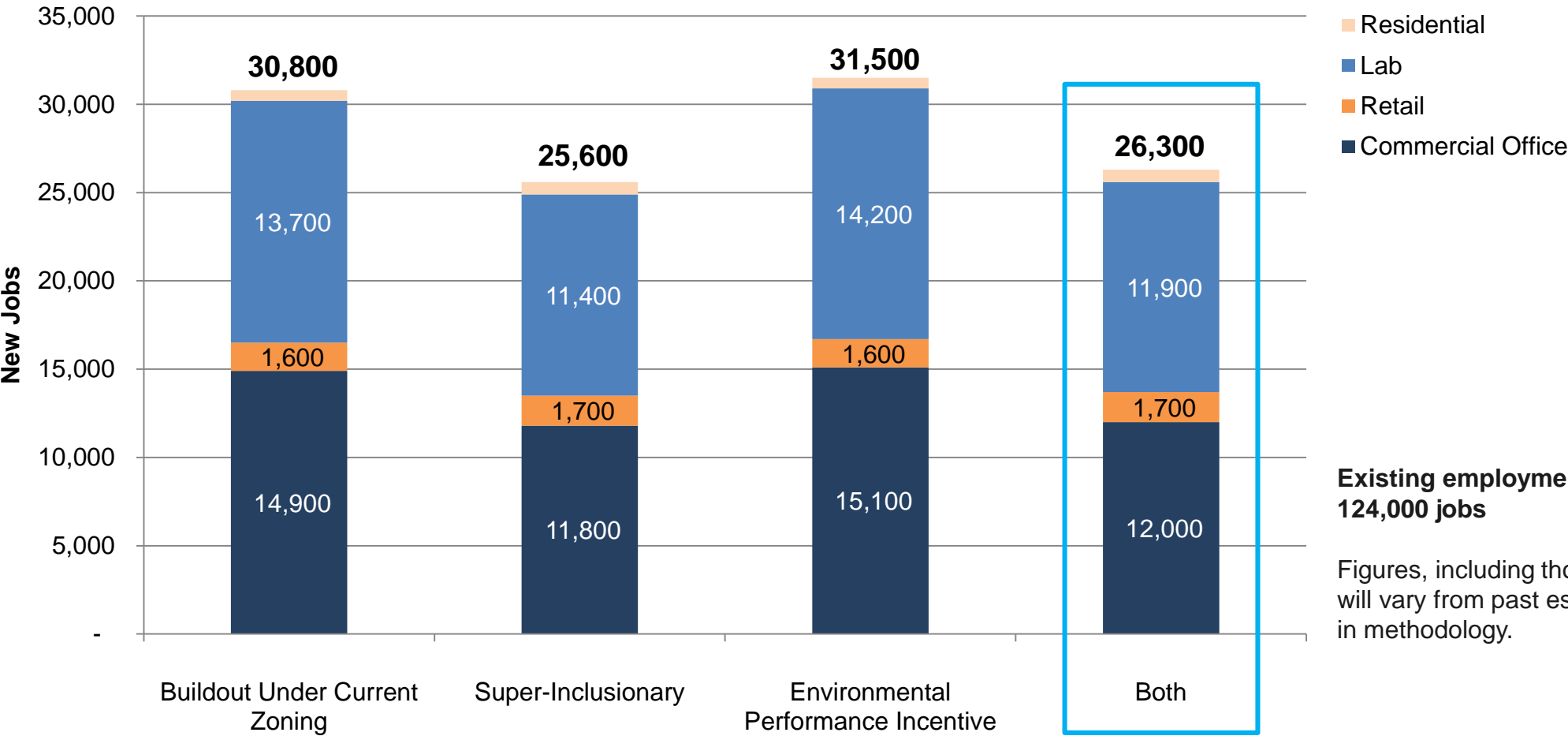


Net New Public School Students through 2030



# Comparison of Potential New Jobs

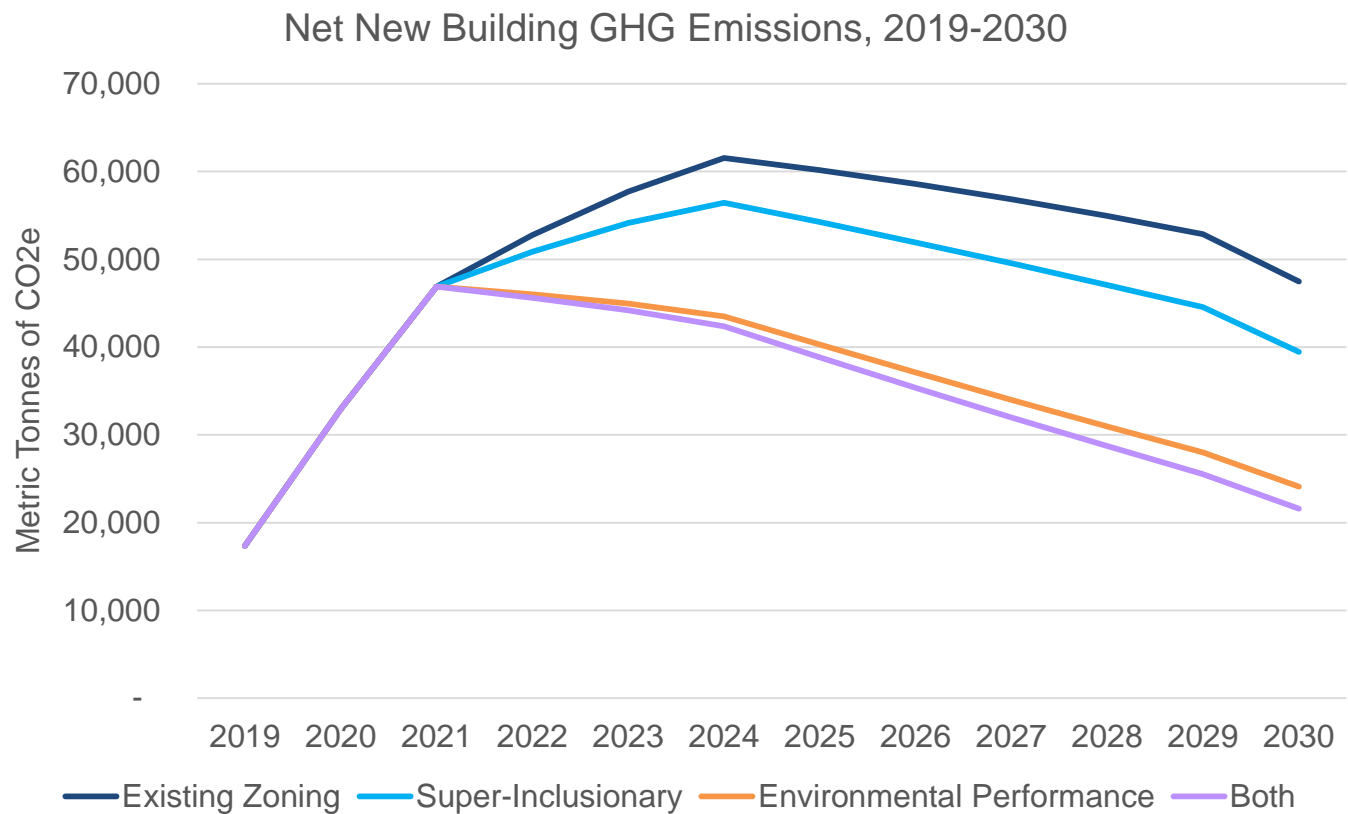
Net New Jobs by Employment Location through 2030



Existing employment: approximately 124,000 jobs

Figures, including those for current zoning, will vary from past estimates due to changes in methodology.

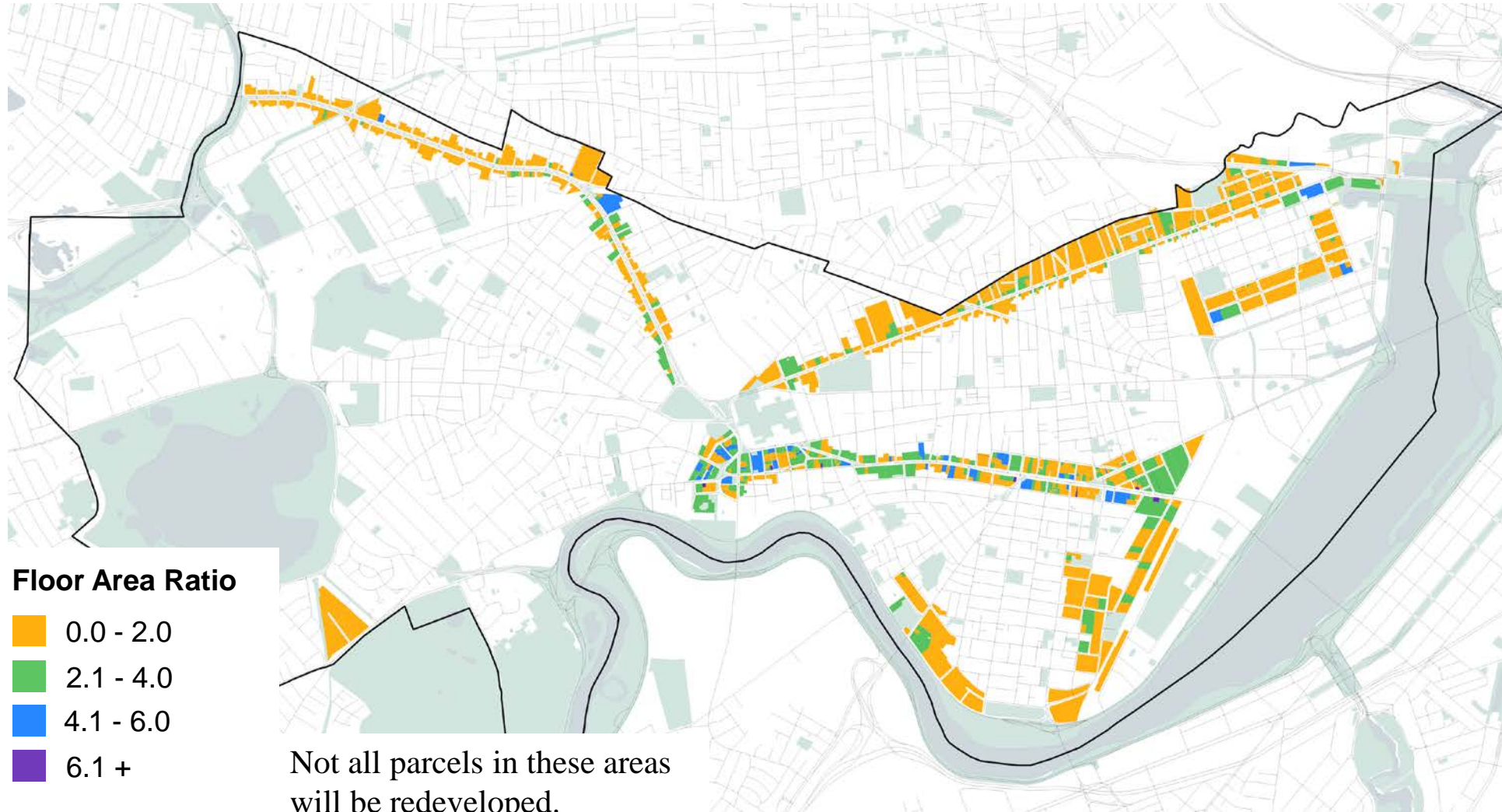
# Comparison of GHG Emissions



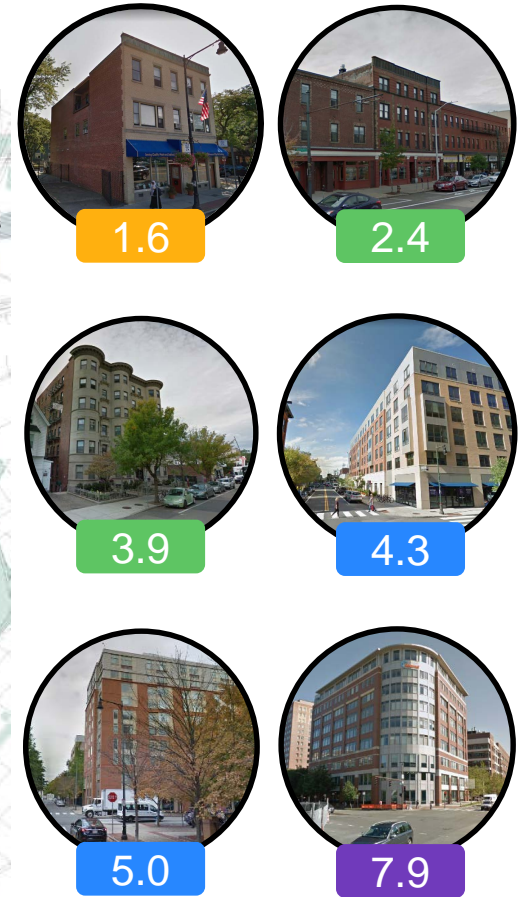
**Existing Building Emissions: approx. 1 million tonnes**

Figures assume individual electrification of buildings (using Cambridge's Low Carbon Energy Supply Strategy scenario 1), improvements in the electric grid, and the energy use intensity targets called for in the Net Zero Action Plan. Figures show GHG emissions from operations.

# Urban Form Comparison – Existing Built Density

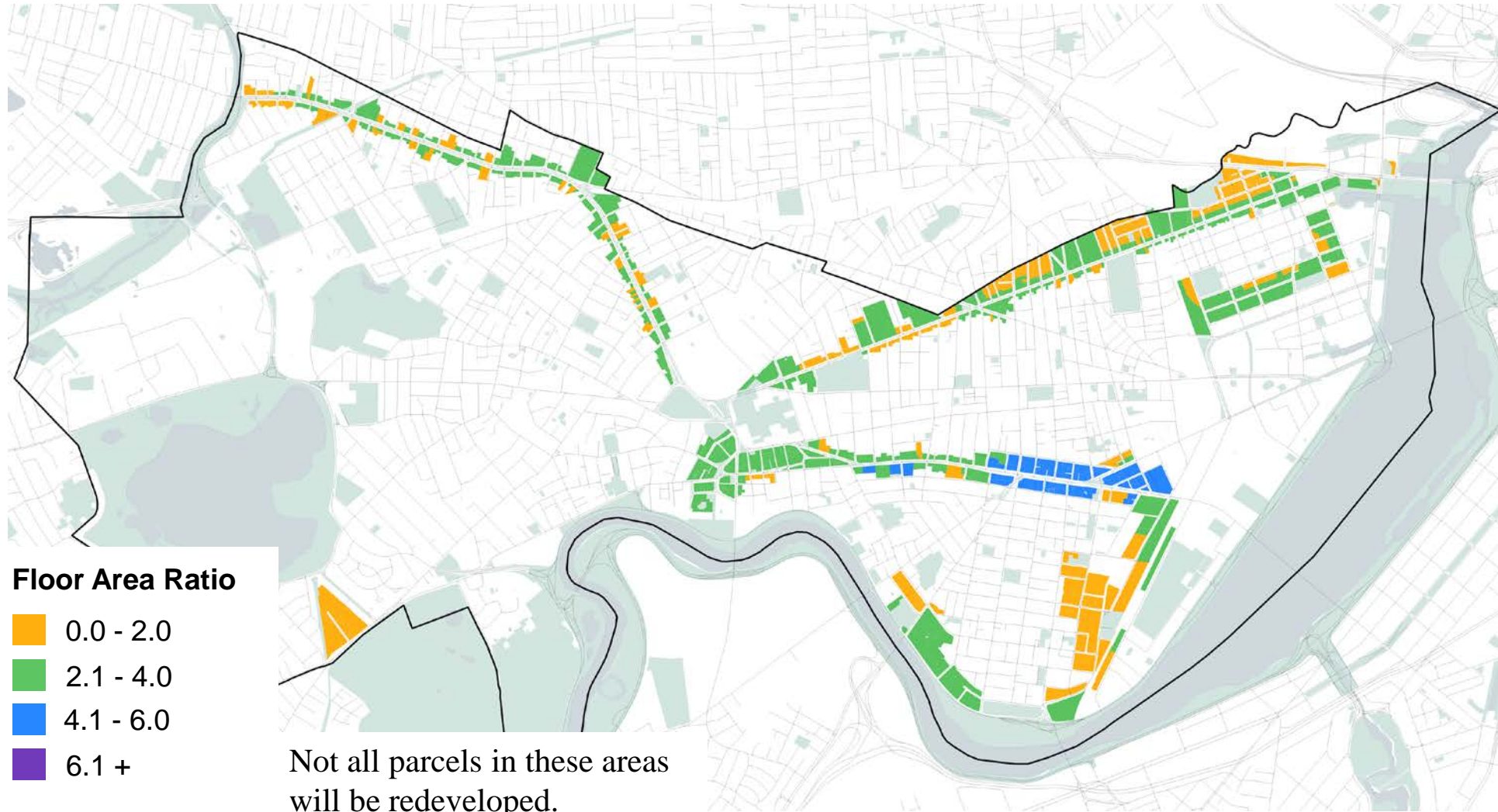


## Floor Area Ratio Precedents

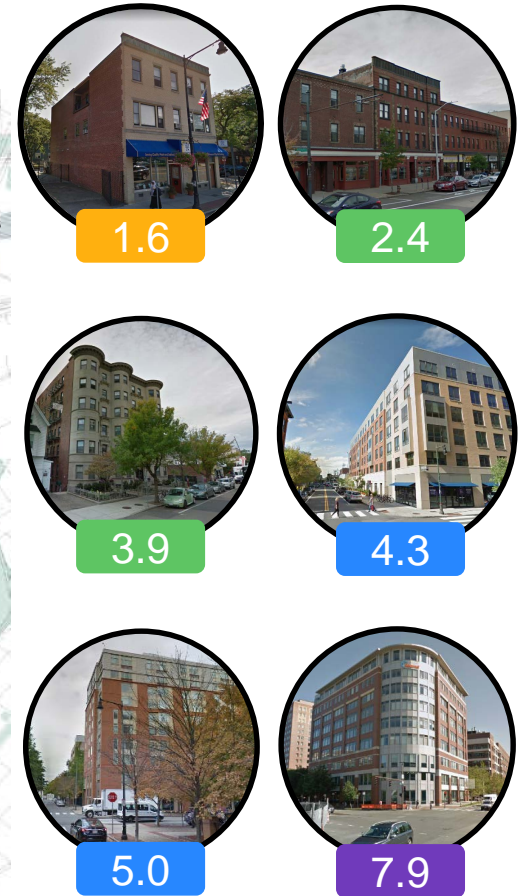


FAR is one of many urban form rules. FAR and rules about height, lot coverage, historic preservation, and design guidelines combine to manage the form of a building.

# Urban Form Comparison – Density Allowed by Current Zoning (Residential)

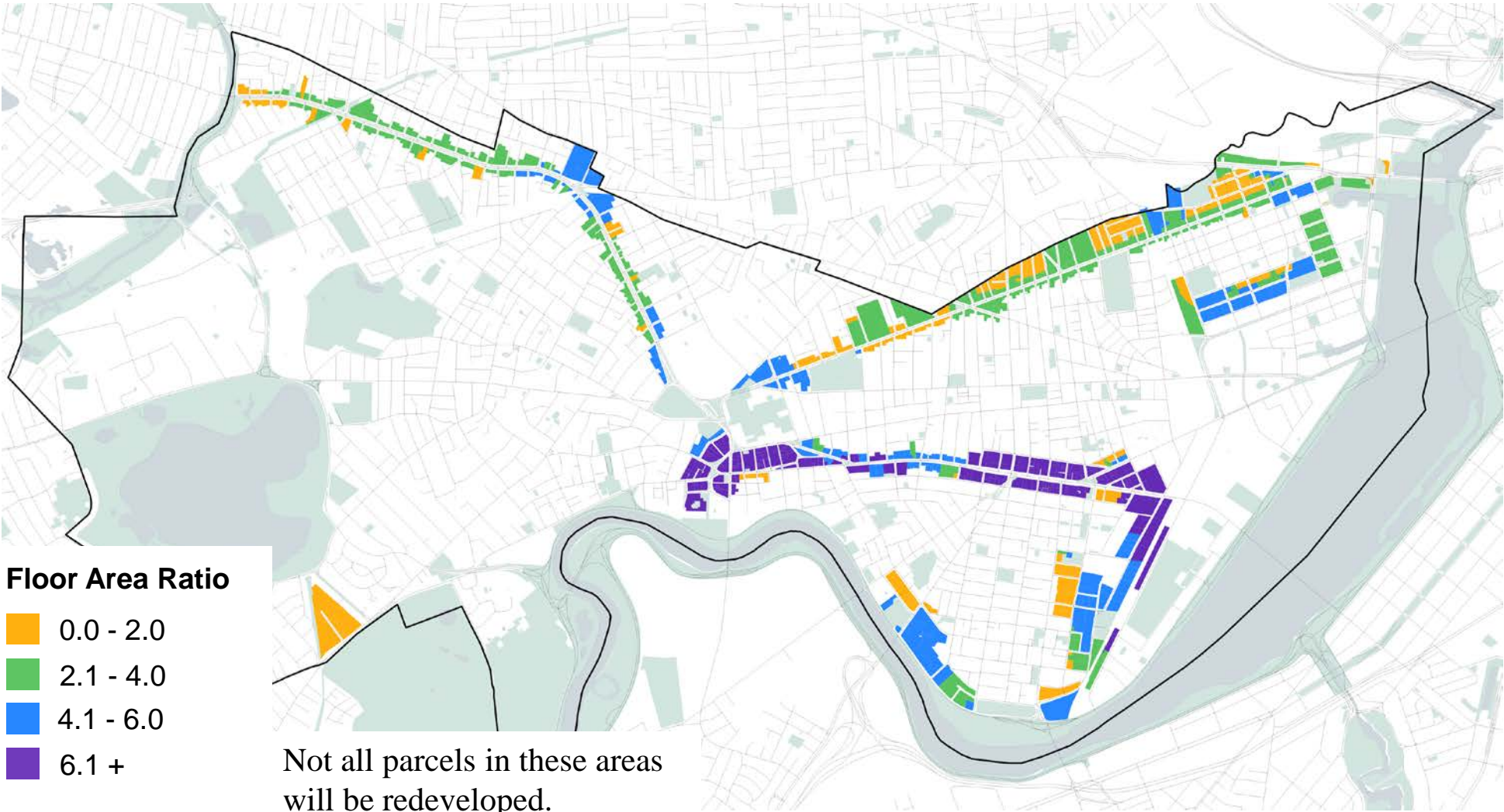


## Floor Area Ratio Precedents



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# Urban Form Comparison – Max. Density under Both Incentives



## Floor Area Ratio Precedents



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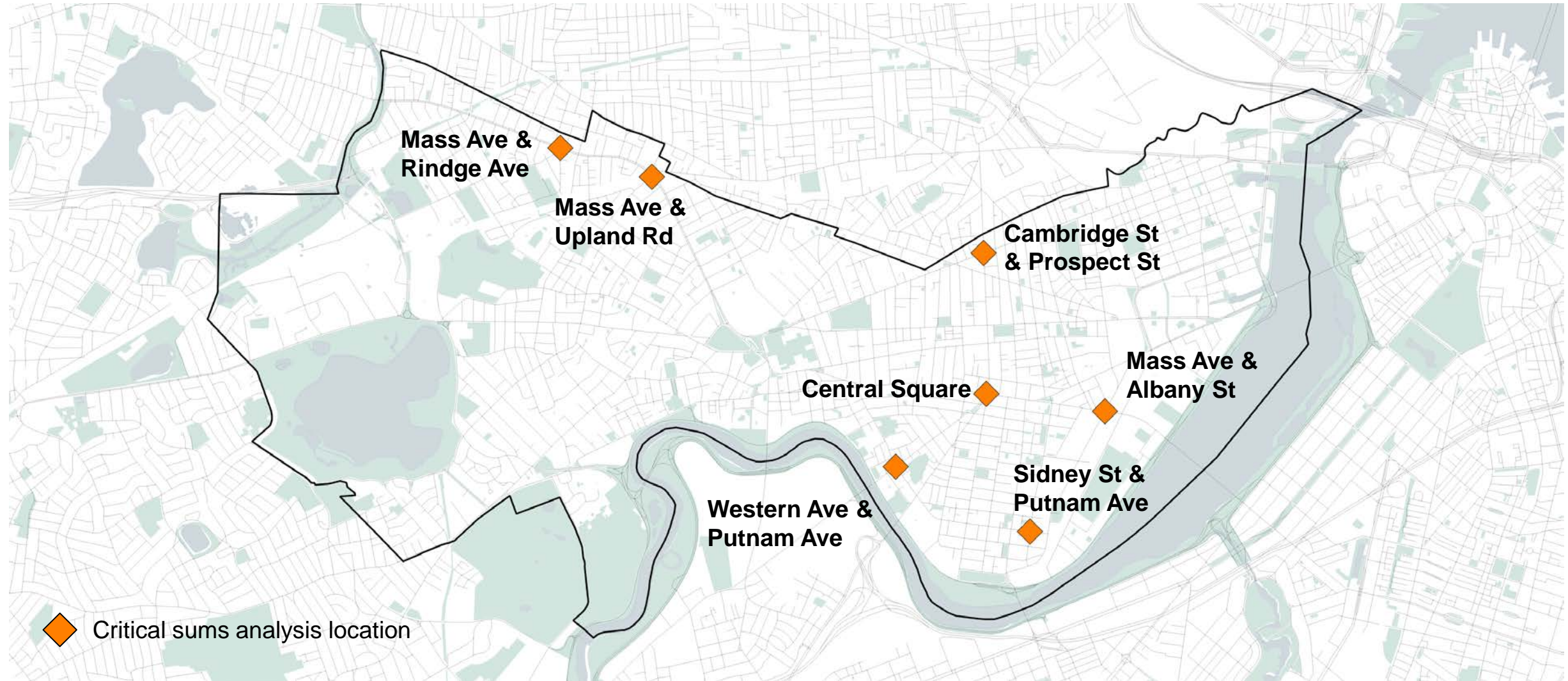
# Mobility Comparison: Critical Sums at Key Intersections

- Critical Sums Analysis is a planning tool used to compare build-out scenarios.
- This analysis compares how different levels of build-out impact specific intersections.
- Critical movement volume at an intersection is the sum of all conflicting traffic movements (vehicles per hour).
- Intersections with 1,500 or fewer critical movements per hour are considered to operate adequately, i.e. motorists will wait no more than two light cycles to get through the intersection.
- When the 1,500 vehicle threshold is exceeded, intersection operation starts to deteriorate exponentially.

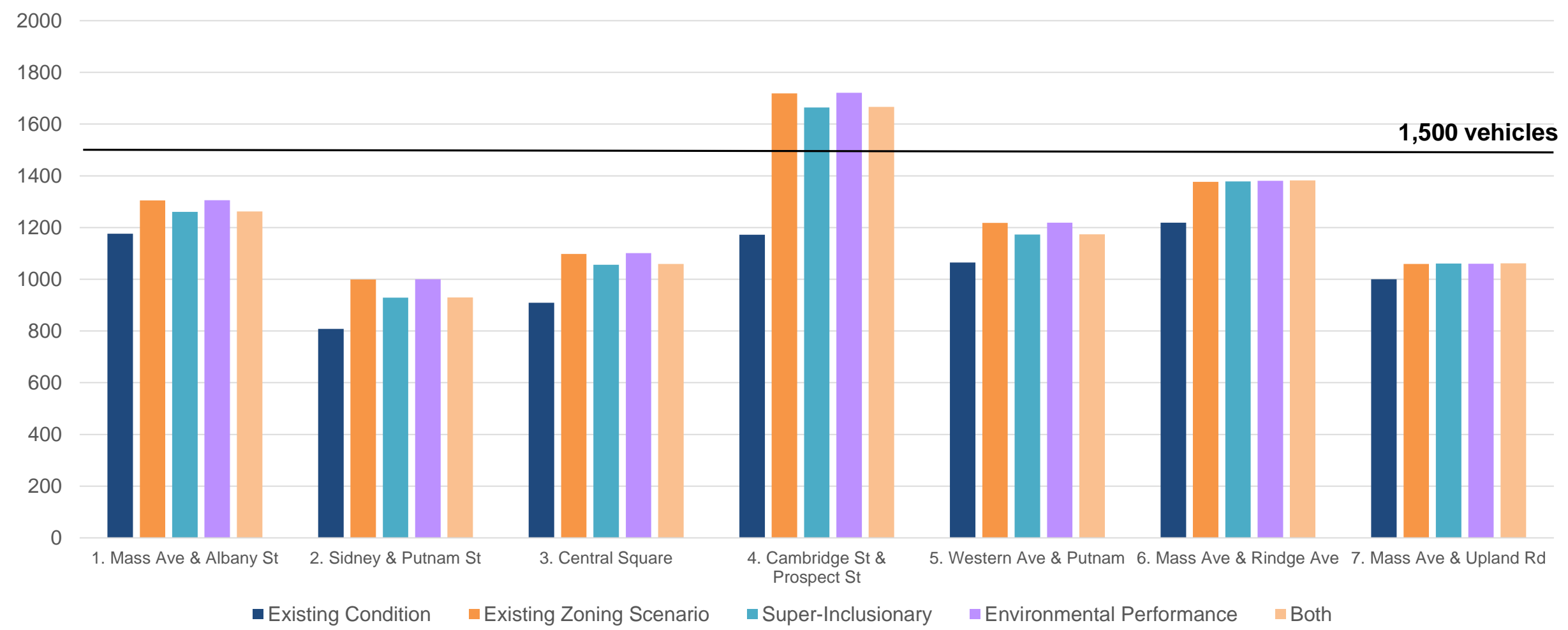


Conflicting traffic movements include left turns into a flow of traffic moving the opposite direction.

# Critical Sums Analysis Locations



# Mobility Comparison: Critical Sums at Key Intersections



Includes Single-Occupancy and High-Occupancy Vehicles

# Mobility Comparison: Critical Sums at Key Intersections

- Cambridge St & Prospect St is the only intersection to exceed critical sums thresholds in buildout scenarios
- This is largely a result of development in Kendall Square and East Cambridge subareas, much of which is already in the pipeline

# Discussion

