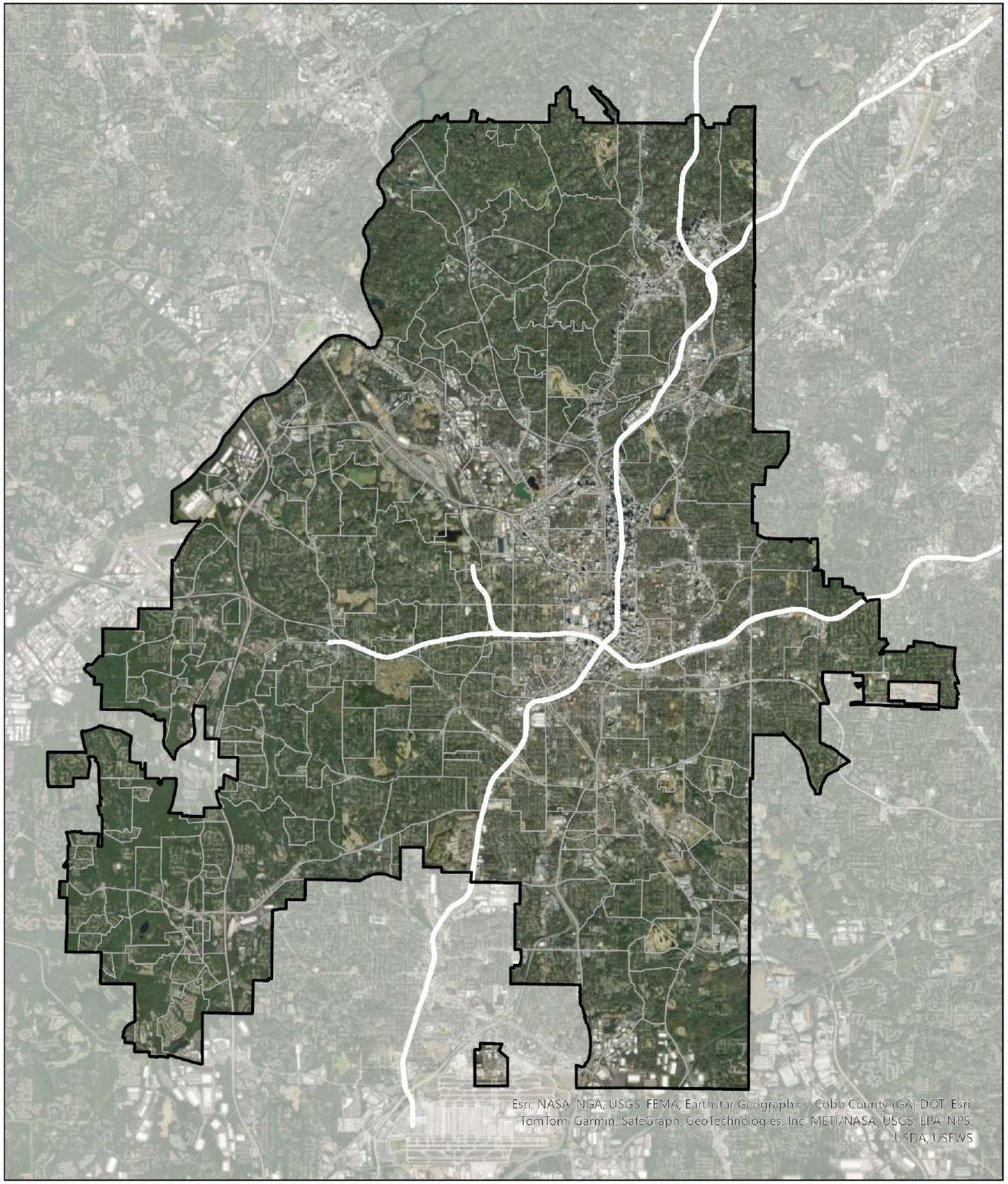
Research Question: How can the existing planning codes in climate migration receiving cities like Atlanta prepared to accommodate the anticipated population influx in terms of affordable housing and resilient infrastructure?



NITIKSHA MOTA

MS Urban Design
Independent Study, Fall 2025
Georgia Institute of Technology

Advisors:
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Dr. Patrick Kastner (SOA)

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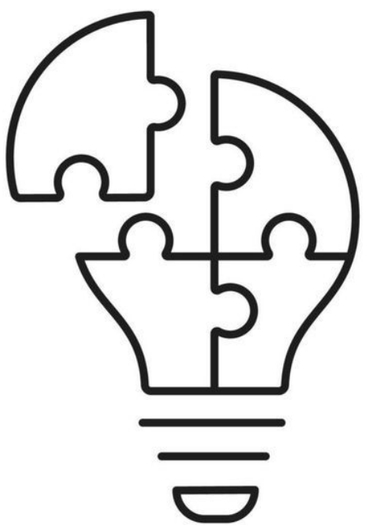


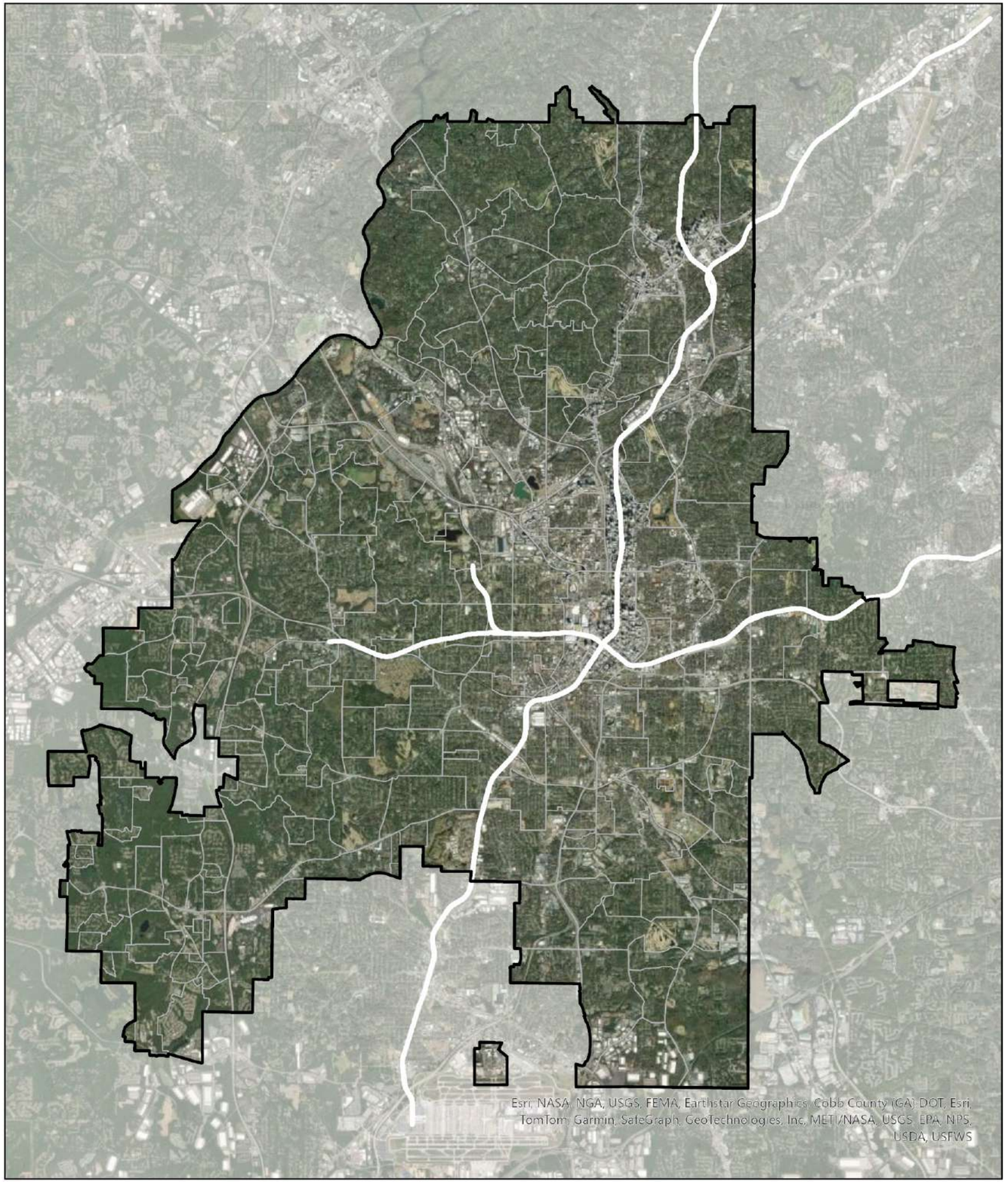
1

Research Framework

1.1 Research Question
1.2 Sub-questions
1.3 Abstract
1.4 Migration Trends + Drivers

1.1 RESEARCH QUESTION

How can the existing planning codes in climate migration receiving cities like Atlanta prepared to accommodate the anticipated population influx in terms of affordable housing and resilient infrastructure?



Existing Marta Transit Routes

1.2 FURTHER SPLITTING OUT THE RESEARCH QUESTION

1. Why do we need to think about **increasing density in Atlanta?**

2. Where is vacant/under-utilized housing today, why is it vacant, and where is **"naturally affordable"** stock?

3. Where can new **mixed-use, transit-supportive density** go under current (and draft) codes?

4. What are the **micro-climate + street-level effects** of adding that density (heat, wind, shade, comfort) and the access to jobs?

1.3 ABSTRACT

Climate migration is expected to add hundreds of thousands of new residents to Atlanta. (City-Data Forum. 2014. “American Migration Map: See How Metro Atlanta Is Doing.” Posted July 7, 2014.) This project investigates how existing zoning and overlays can absorb future population growth without massive redevelopment. Using Reynoldstown, Vine City, and Midtown as case studies, it analyzes zoning capacity, vacancy patterns, TOD overlays, and micro-climate effects. The study demonstrates that Atlanta can add more than 500 new units using missing-middle infill in Reynoldstown and Vine City while preserving neighborhood character, improving transit orientation, and minimizing environmental impacts.

REASONING TO SITE SELECTION

These 3 neighborhoods provide a typical case of each scenario which can be treated as a tool kit for scaling it in the rest of the city.

1. **Reynoldstown**: Beltline overlay, Historic Neighborhood, Limited Vacant lots

2. **Vine City:** 0.5 Miles of Marta, New Development on vacant lots, Existing zoning only allows single familt development

3. **Midtown:** Urban Core, Commercial district, partially historic, Existing zoning codes alot vacant lots to only commercial development

AIMS

To find where Atlanta can immediately support more housing within the current zoning and overlays.
To demonstrate that climate-migration readiness does not require large-scale redevelopment.
To test missing-middle + ADU strategies in real neighborhoods.

OBJECTIVES

Analyze zoning scenarios + overlays (R-5, BeltLine, SPI-19, SPI-16).

Measure vacancy + underutilized land near transit.

Propose density strategies for 3 neighborhoods.

Evaluate micro-climate effects (solar/shadow/heat).

Compare existing conditions vs. proposed density.

KEY FINDINGS

Atlanta has high latent capacity via vacancy + backyard infill
Existing zoning already supports missing-middle in multiple districts
Missing-middle adds +480 units across two neighborhoods:

230 in Reynoldstown (ADUs + duplexes)

196 in proposal 1 and 263 in proposal 2 in Vine City (ADU + SF + MF + apartments)

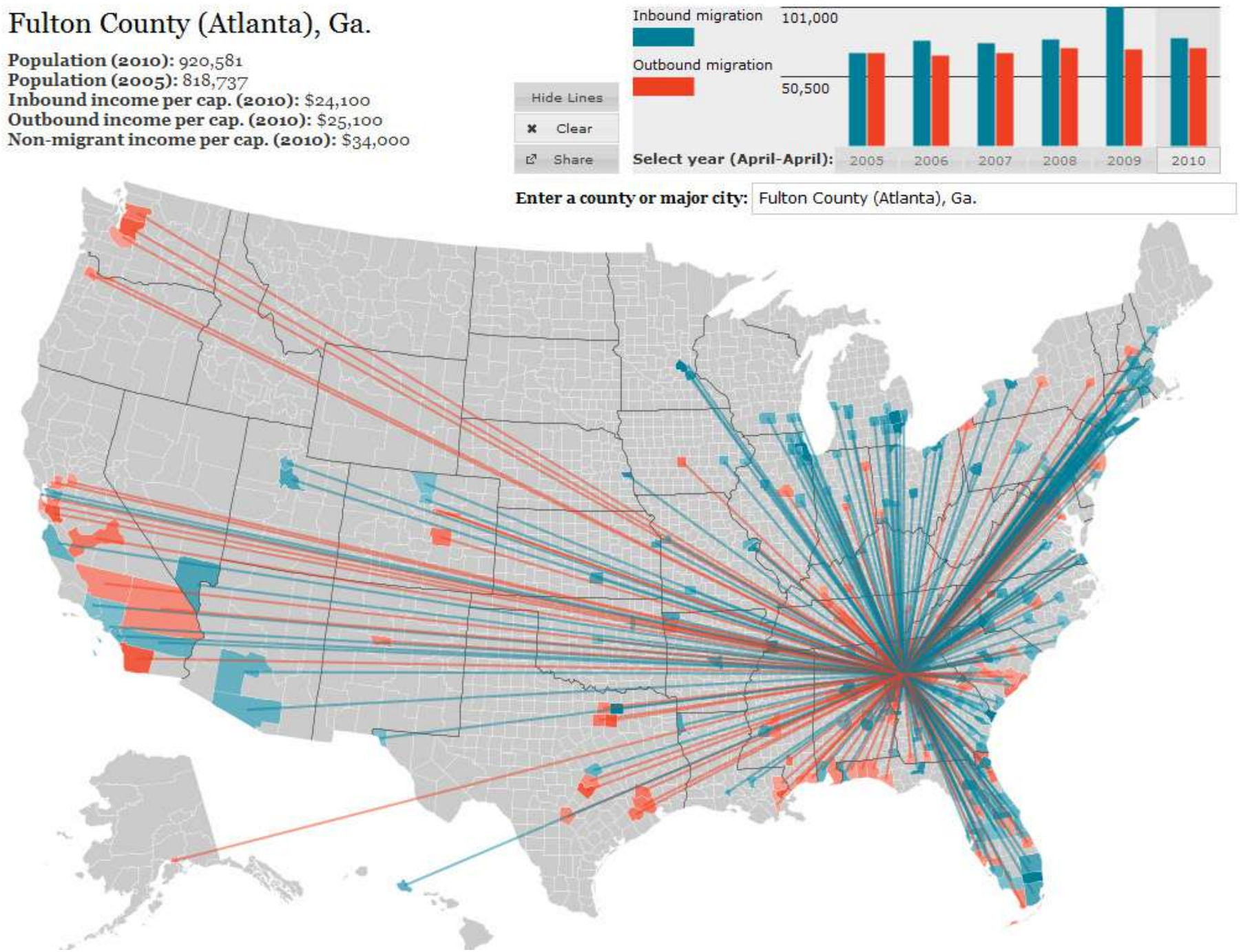
Microclimate effects remain manageable (no major loss of solar exposure).
Transit overlays (BeltLine + SPI-19) directly encourage these forms.
Reynoldstown = retrofit model; Vine City = rebuilding model.

1.4 MIGRATION PATTERNS DRIVING ATLANTA'S GROWTH

This map highlights major

inbound migration

flows into Fulton County, reflecting Atlanta's appeal as a climate-resilient city with economic opportunities emphasizing the need to update planning codes for housing, infrastructure, and employment access.



City-Data Forum. 2014. "American Migration Map: See How Metro Atlanta Is Doing." Posted July 7, 2014.

KEY STRATEGIES TO ACCOMMODATE INCREASED URBAN DENSITY

1. Affordable Housing

Expand diverse, attainable housing options to meet growing demand.

2. Transit-Oriented Development

Focus growth around public transit to reduce car dependence.

3. Walkable Neighborhoods

Design compact, mixed-use areas that prioritize pedestrians.

4. Infrastructure Upgrades

Strengthen water, energy, and transportation systems to support higher density.

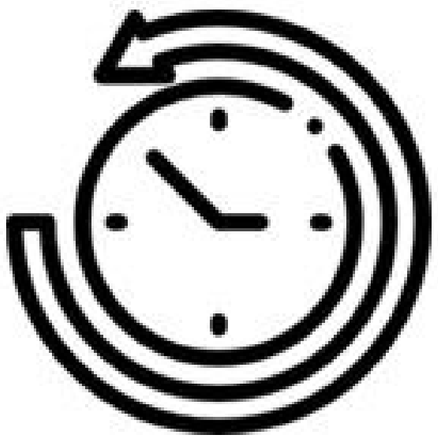
5. Public Realm & Social Infrastructure

Enhance parks, schools, and community facilities for quality urban living.

How do we measure readiness?

Readiness is assessed by evaluating how well current and proposed planning codes can absorb future population growth while maintaining

livability, equity, and resilience.



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Atlanta's Density & Policy Context

2.1 History of zoning + annexation
2.2 The need for density today
2.3 Single-family zoning + ADU permissions

2.1 HISTORY OF ZONING + ANNEXATION

Origins of Zoning: The 1929 Atlanta Ordinance

1929 ATLANTA ZONING ORDINANCE

(l) A "dwelling" is a building arranged, intended or designed to be occupied by not more than two families living independently of each other and doing their own cooking upon the premises.

(m) An "apartment house" is a building arranged, intended or designed to be occupied by three or more families living independently of each other and doing their own cooking upon the premises or by three or more individuals or groups of individuals living independently but having a common heating system and a general dining room.

however, be permitted as an accessory use. A store, trade or business shall not be permitted as an accessory use except that the office of a physician, dentist or surgeon may be located in the dwelling or apartment used by such physician, dentist or surgeon, as his private residence, and except that any person carrying on a customary home occupation, may do so in a dwelling or apartment used by him as his private residence. In a dwelling or apartment occupied as a private residence, one or more room may be rented or table board furnished. A restaurant or public dining room may be

Atlanta's first zoning code, adopted in 1929, limited most residential areas to two-family dwellings and strictly separated housing from commercial or mixed uses. These early rules established a low-density, exclusionary pattern that shaped the city's urban form restricting flexibility, reducing housing diversity, and creating the regulatory framework that today must evolve to meet climate-driven migration pressures.

Picture from the 1929 Atlanta Zoning Ordinance

In **1929 Atlanta,**
100% of land allowed houses, duplexes and ADUs

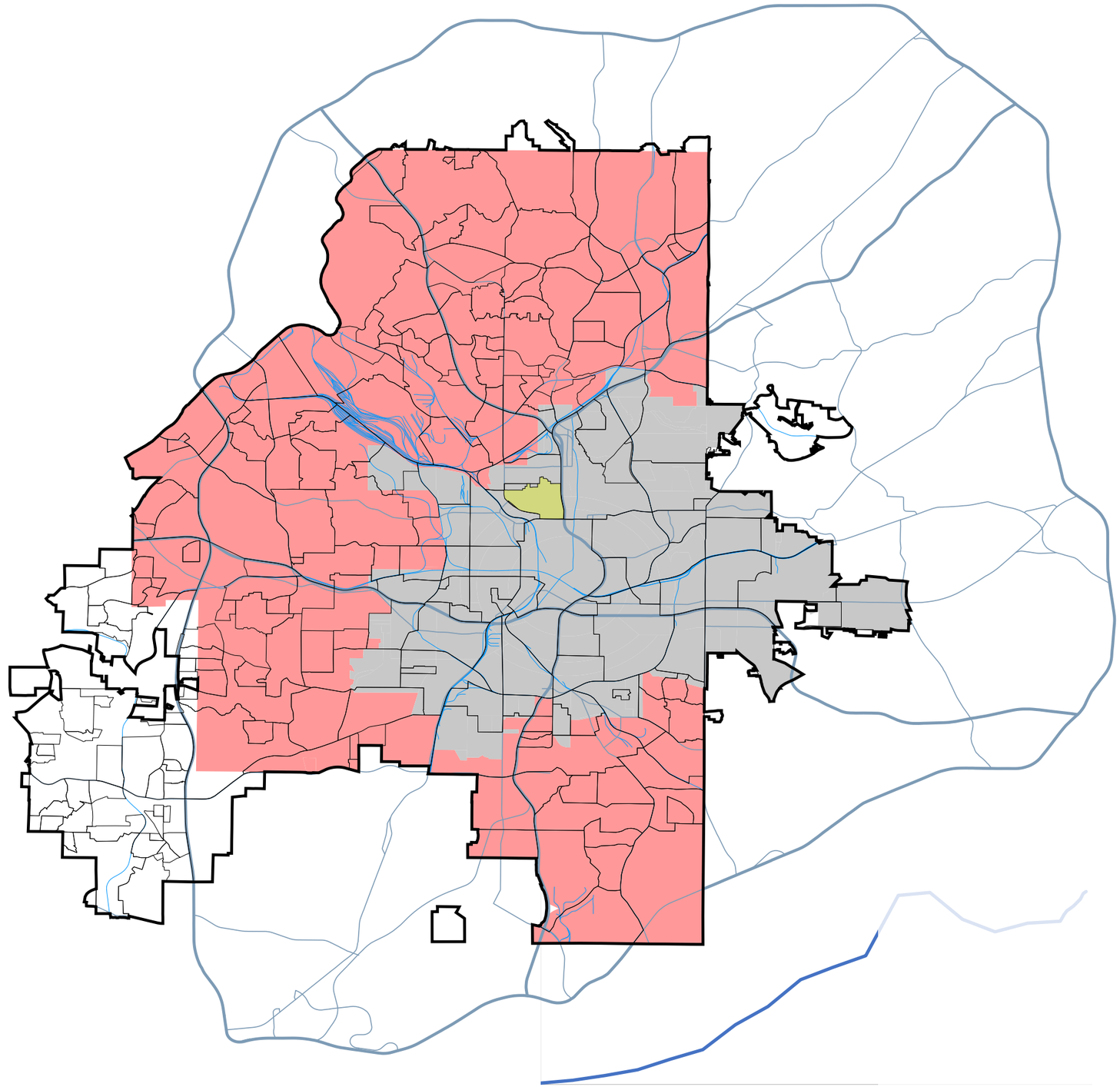
all of Atlanta's most **walkable neighborhoods** are located inside the 1929 boundary

Atlanta // Annexation history (1952)

U.S. census population 1950: 331,314

- 1950's: construction of expressways begins

- 1952: annexation triples area of city adds ~100,000 people 51,922 acres



U.S. CENSUS POPULATION 1950: 331,314

2.2 THE NEED FOR DENSITY TODAY

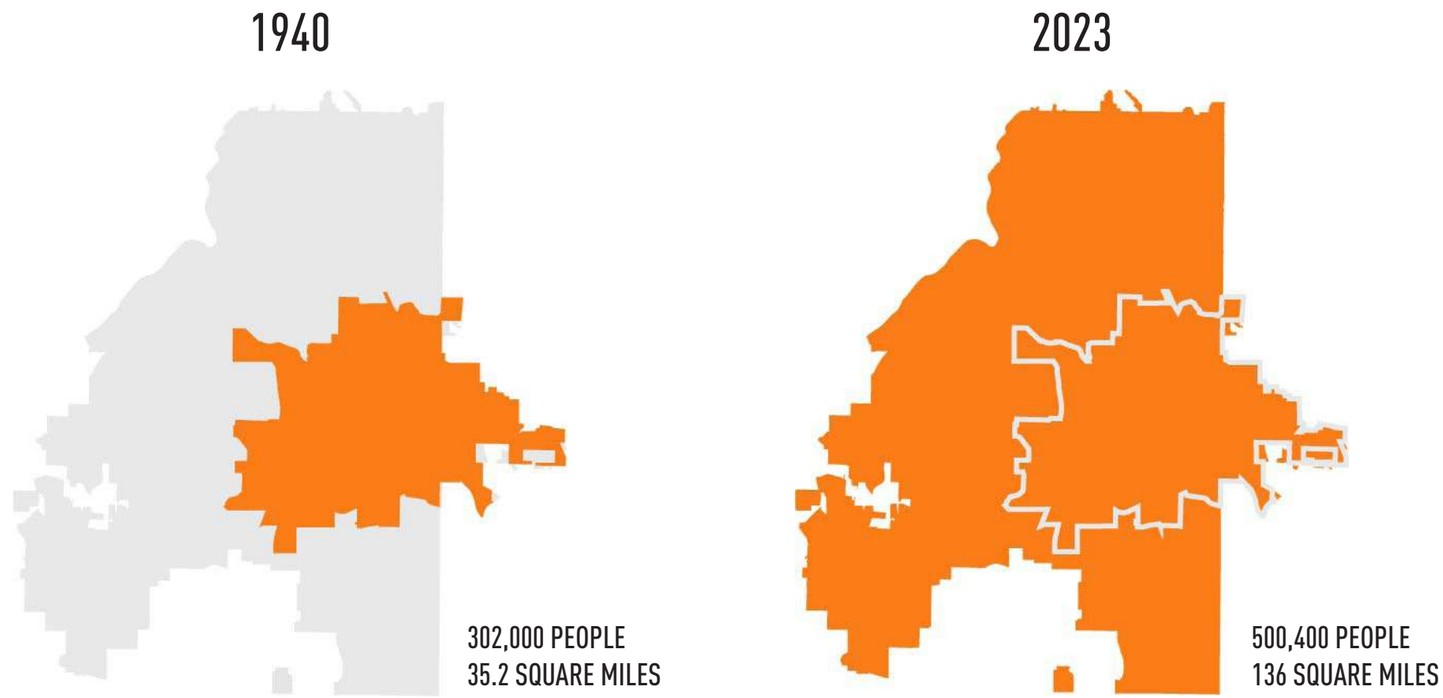
Urban Growth vs. Density Decline

This pattern of

outward growth without proportional density increase

highlights inefficient land use, increased infrastructure costs, and the urgent need for compact, higher-density development to sustainably accommodate future migration and population influx.

ATLANTA // GROWTH



8,500

PEOPLE / SQ MILE

3,700

PEOPLE / SQ MILE

https://www.atlcitydesign.com/blog/2021/2/10/thread-atl-blog-post

CHANGING DEMOGRAPHICS: HOUSEHOLD SIZE

KRONBERG URBANISTS ARCHITECTS

1950: 3.8 PEOPLE PER HOUSE

2017: 2.5 PEOPLE PER HOUSE

2030: 2.0 +/- PEOPLE PER HOUSE

33%

MORE HOUSES NEEDED FOR THE SAME # OF PEOPLE

50%

MORE HOUSES NEEDED FOR THE SAME # OF PEOPLE

2021 POPULATION OF CITY OF ATLANTA

500,000

2040 PROJECTED POPULATION

1,200,000

INCREASE OF

700,000

HOUSING PEOPLE IS AN ECONOMIC ISSUE, AN ENVIRONMENTAL ISSUE,

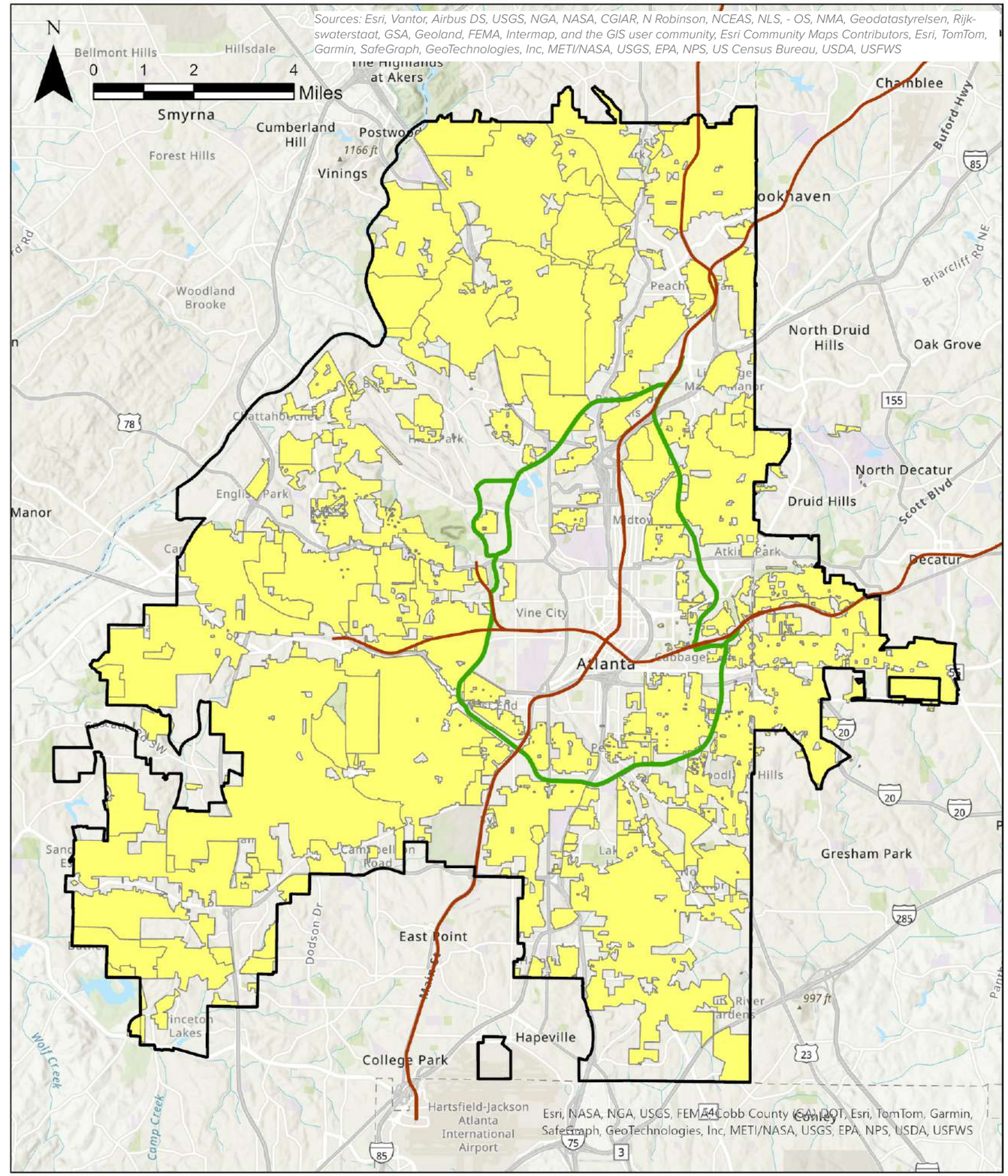
A HEALTH, SAFETY & WELFARE ISSUE

2.3 SINGLE FAMILY ZONING + ADU PERMISSIONS

CURRENT ZONING SCENARIO: LIMITED DENSITY POTENTIAL

Approximately 60% of Atlanta's land area is zoned for single-family housing (R1–R5)

Significantly limiting opportunities for higher-density residential development. This restrictive zoning pattern constrains the city's capacity to absorb future population growth near transit and job centers, underscoring the need for more flexible land use policies to support climate-driven migration.



City of Atlanta
Beltline Centerline
Marta Routes
Marta Routes
Single Family R1 to R5
Single Family R1 to R5

Only

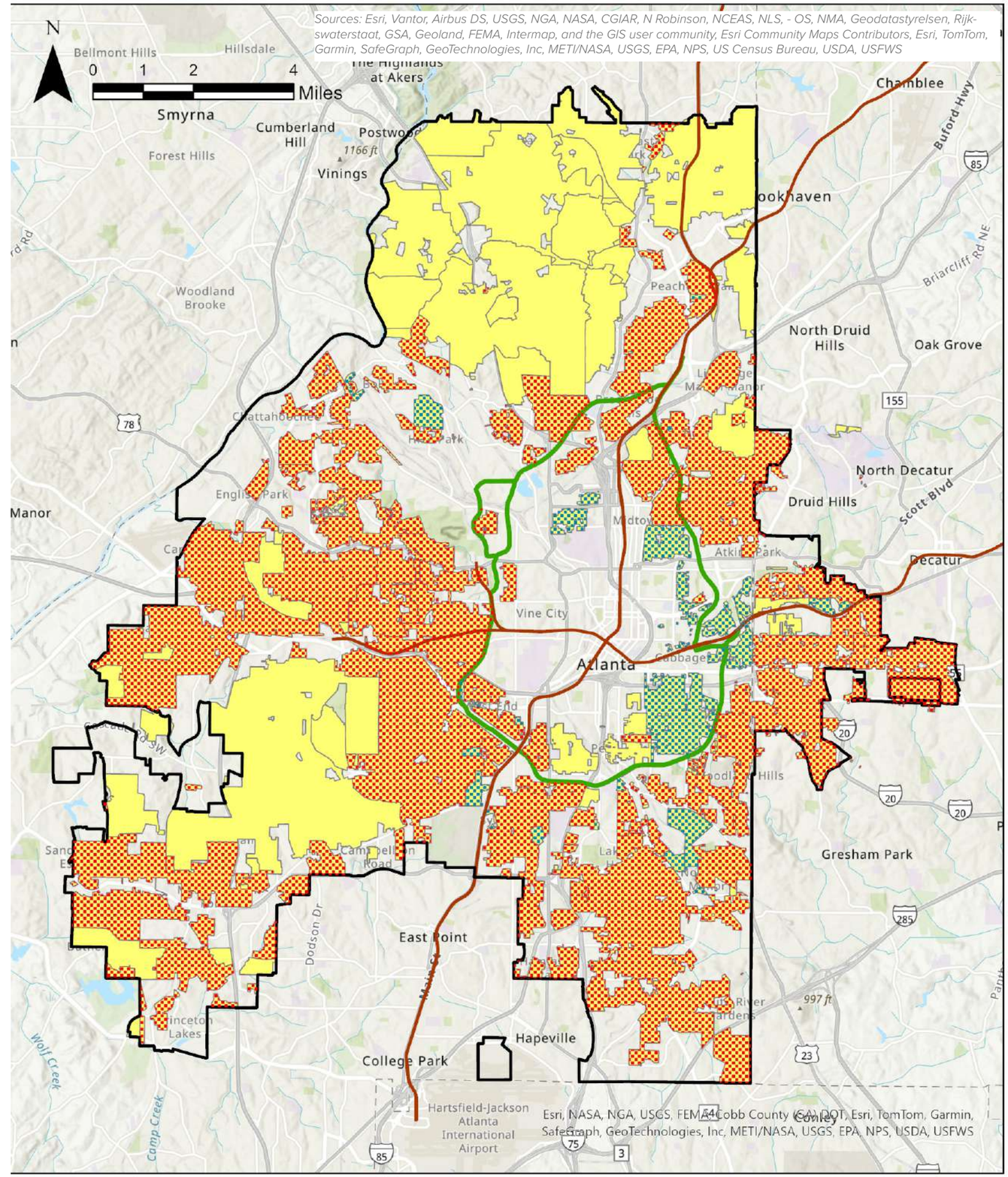
5%

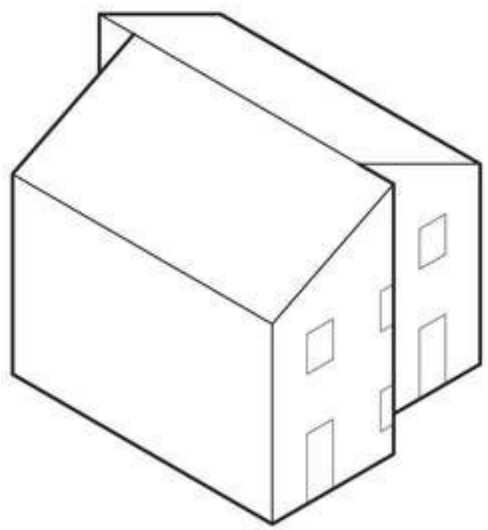
of single family zoning allows duplexes (R5)

Currently

60%

of single family zoning allows ADUs (R4 + R5)





3

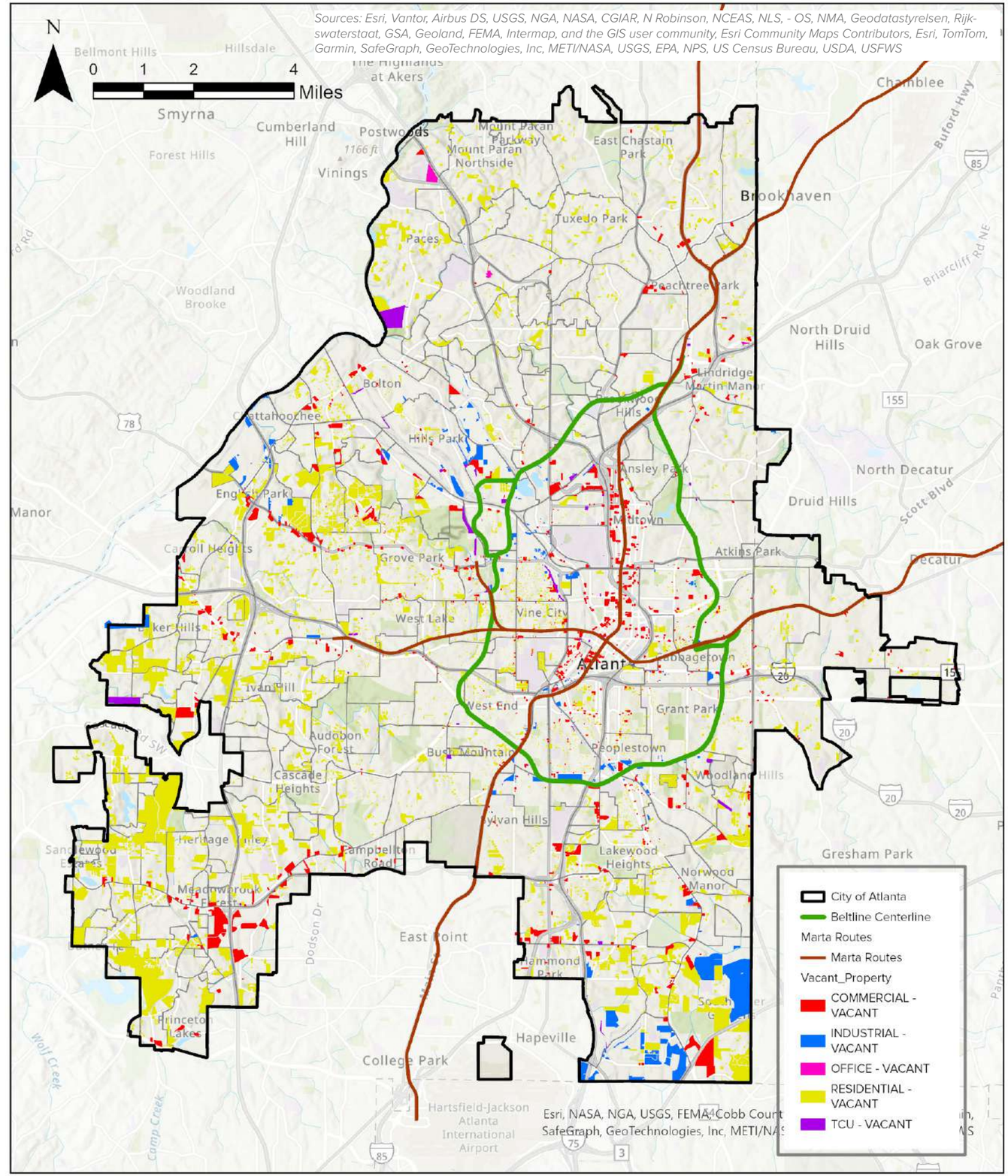
Housing & Infrastructure Readiness

3.1 Vacancy distribution
3.2 Cost burdens + transit access
3.3 Vacant parcels along transit/SPIs

3.1 VACANCY DISTRIBUTION

City wide housing occupancy analysis

This indicates a high vacancy rate compared to typical urban averages (~8–12%), revealing a substantial amount of underutilized housing stock. Such a large share of vacant units suggests that Atlanta's existing built environment has significant latent capacity to accommodate population growth without immediate large-scale new construction.



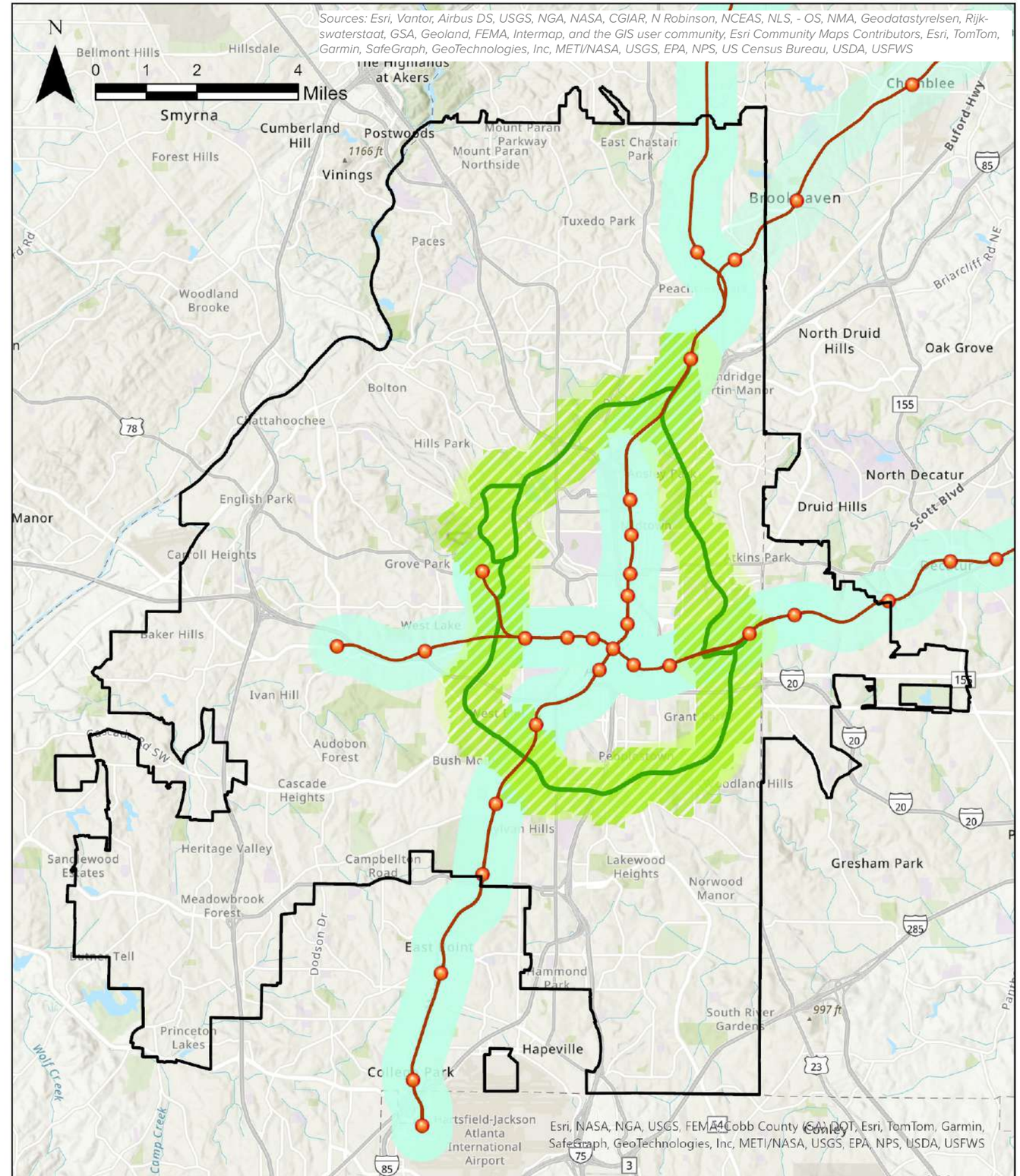
3.2 COST BURDEN + TRANSIT ACCESS

Transit-Oriented Growth and Walkable Urban Form

Focusing new development within walking distance of

MARTA stations and the BeltLine

enhances public transit use, reduces car dependence, and supports compact, mixed-use neighborhoods. Prioritizing these corridors for higher density creates vibrant, accessible communities while lowering transportation emissions and improving urban livability.



IMPLICATIONS FOR PLANNING & DENSITY

A 41.6% vacancy rate presents a short-term opportunity:

adaptive reuse, rehabilitation, or conversion of these units
can immediately ease housing pressures from climate-driven migration.

Concentrating redevelopment near

MARTA transit corridors and BeltLine buffers
where a significant portion of vacant units already exists — can support transit-oriented development (TOD) and walkable urban growth without overburdening infrastructure.

Strategic policy shifts

e.g., incentivizing infill, streamlining permitting, or updating zoning for multi-family reuse
can unlock this housing potential while preserving affordability and minimizing displacement.

Atlanta's housing challenge is not just about building more, it's about better utilizing existing stock and aligning future density with infrastructure and transit accessibility.

HOUSING COST BURDEN: RENTERS SPENDING OVER 50% OF INCOME

A significant share of renter households in Atlanta are severely cost-burdened, spending

more than 50% of their income on rent and utilities,

far exceeding the 30% affordability benchmark.

The highest concentrations of cost-burdened renters are

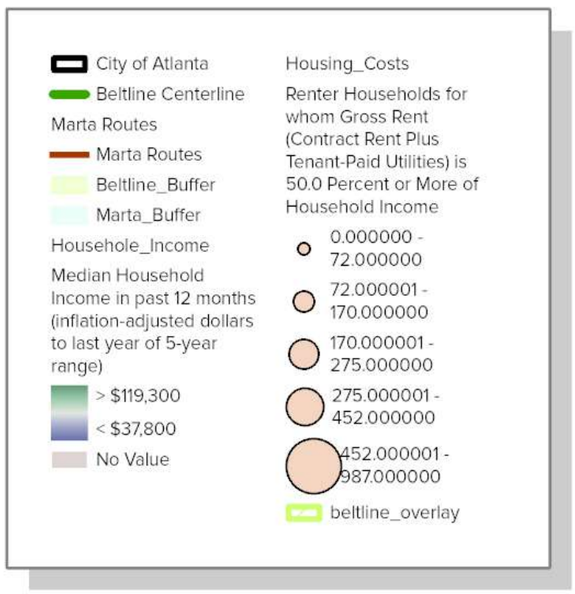
clustered along transit corridors and within BeltLine buffer zones,

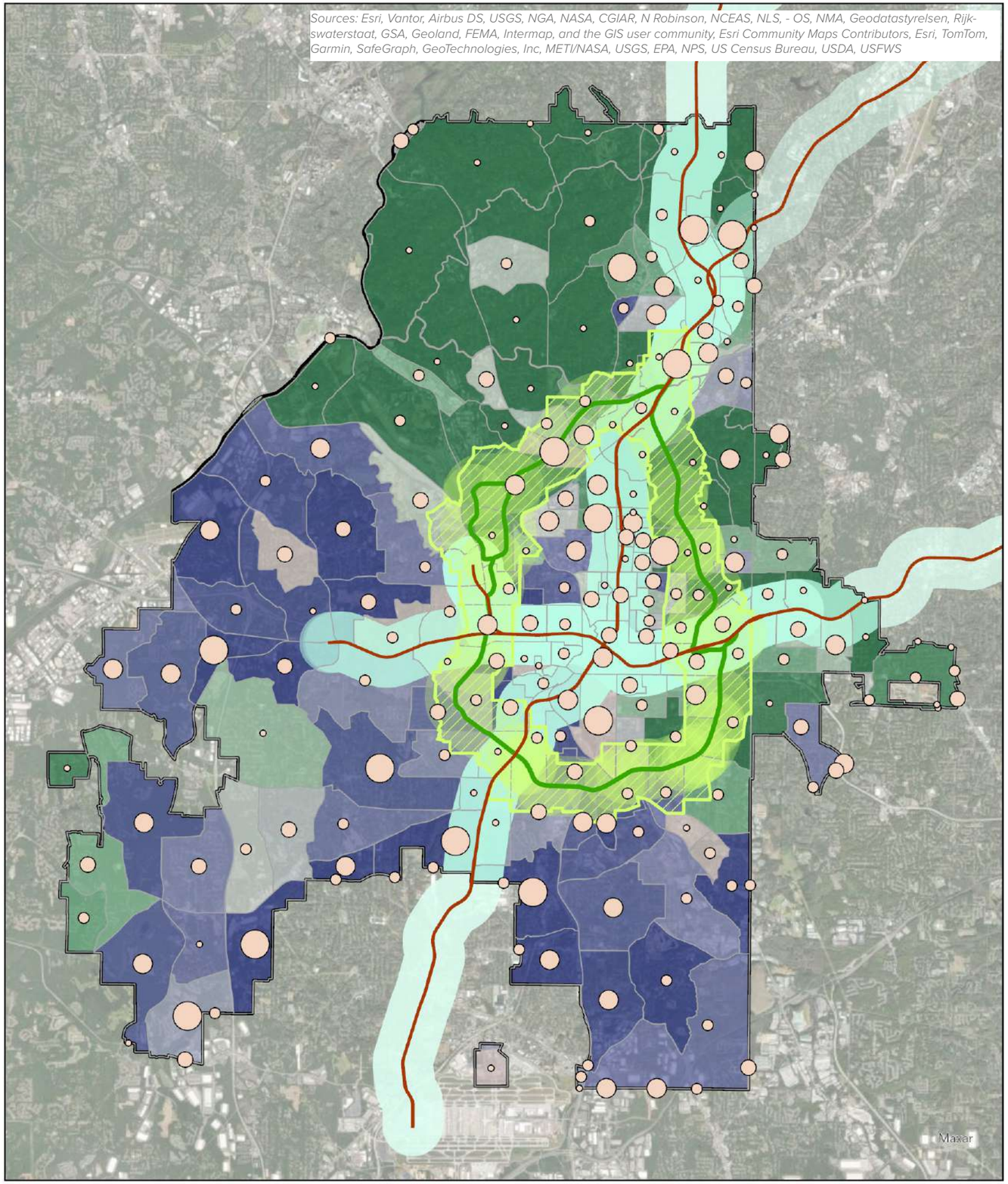
indicating that even in areas with strong connectivity, affordability remains a critical challenge.

Neighborhoods in the south and west show especially

high rent-to-income ratios,

often coupled with lower median household incomes, underscoring deep spatial inequities in housing affordability.





ATLANTA HOUSING AFFORDABILITY

At **63%**, Atlantan's have some of the highest housing & transportation costs for moderate income households in the nation.

The average atlantan spends **63%** of their income on **Housing and Transportation** costs - the sixth worst of the nation's 25 largest metros

data source: atlanta regional commission https://www.neighborhoodindicators.org/sites/default/files/publications/housingaffordability_fulldeck.pdf

48%

OF RENTER HOUSEHOLDS IN ATLANTA ARE COST-BURDENED (14% ARE EXTREMELY COST BURDENED)

+28%

CHANGE IN MEDIAN RENTS SINCE 2000

+9%

CHANGE IN MEDIAN INCOMES (INFLATION ADJUSTED)

-19%

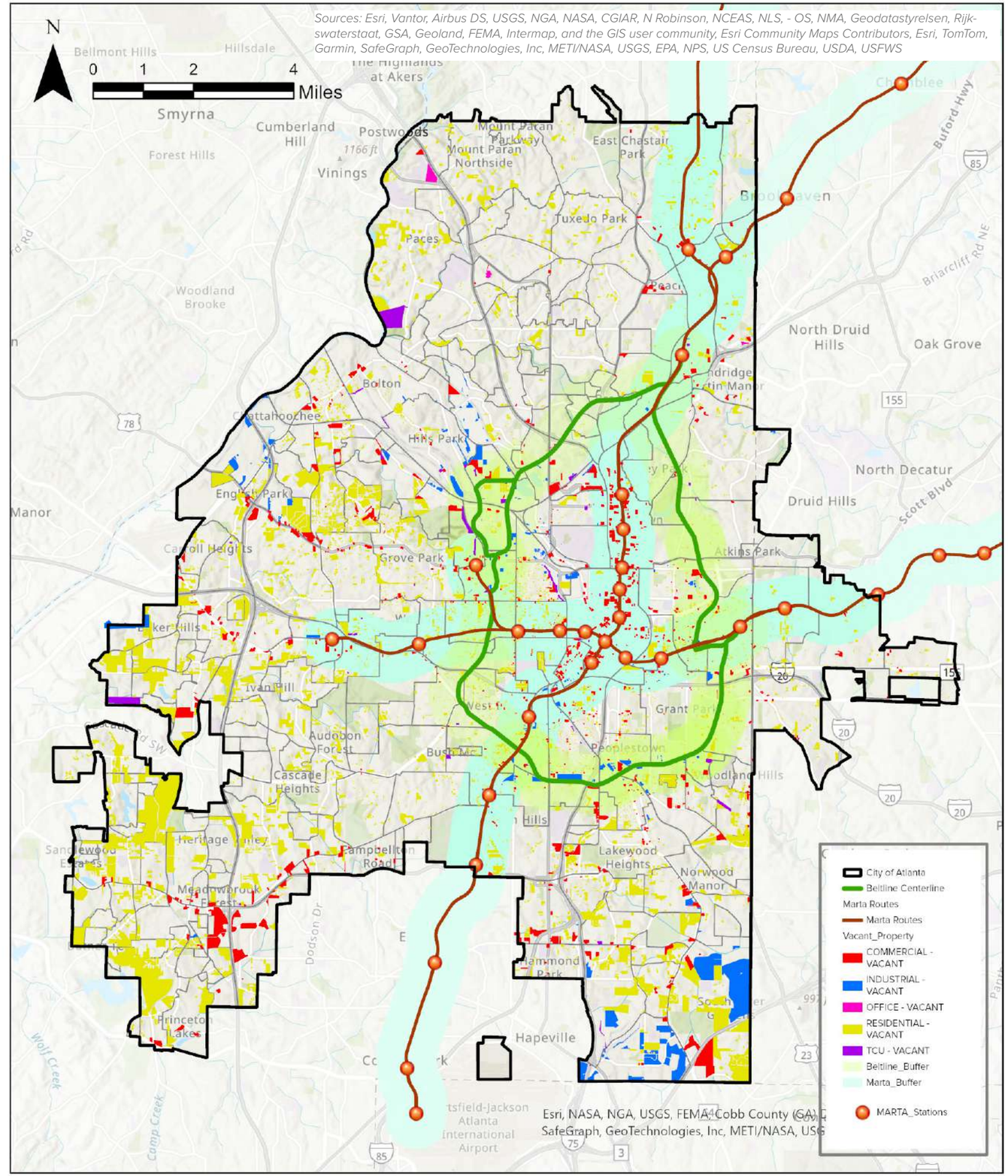
NET CHANGE IN AFFORDABILITY

DATA SOURCE: ATLANTA AFFORDABLE HOUSING FORUM

3.3 VACANT PARCELS ALONG TRANSIT/SPIS

Unlocking Potential: Vacant Parcels Along Transit Corridors

The map shows a concentration of vacant commercial parcels clustered around the MARTA transit lines and BeltLine corridors, prime areas with existing infrastructure and accessibility. Redeveloping these underutilized plots into mixed-use, transit-oriented developments (TODs) can significantly increase housing supply, integrate retail and services, and create vibrant, walkable neighborhoods. This strategy leverages existing assets while minimizing new infrastructure costs and enhancing economic resilience.



VACANT COMMERCIAL PARCELS IN SPECIAL PUBLIC INTEREST (SPI) DISTRICTS

Design & Urban Form Control:

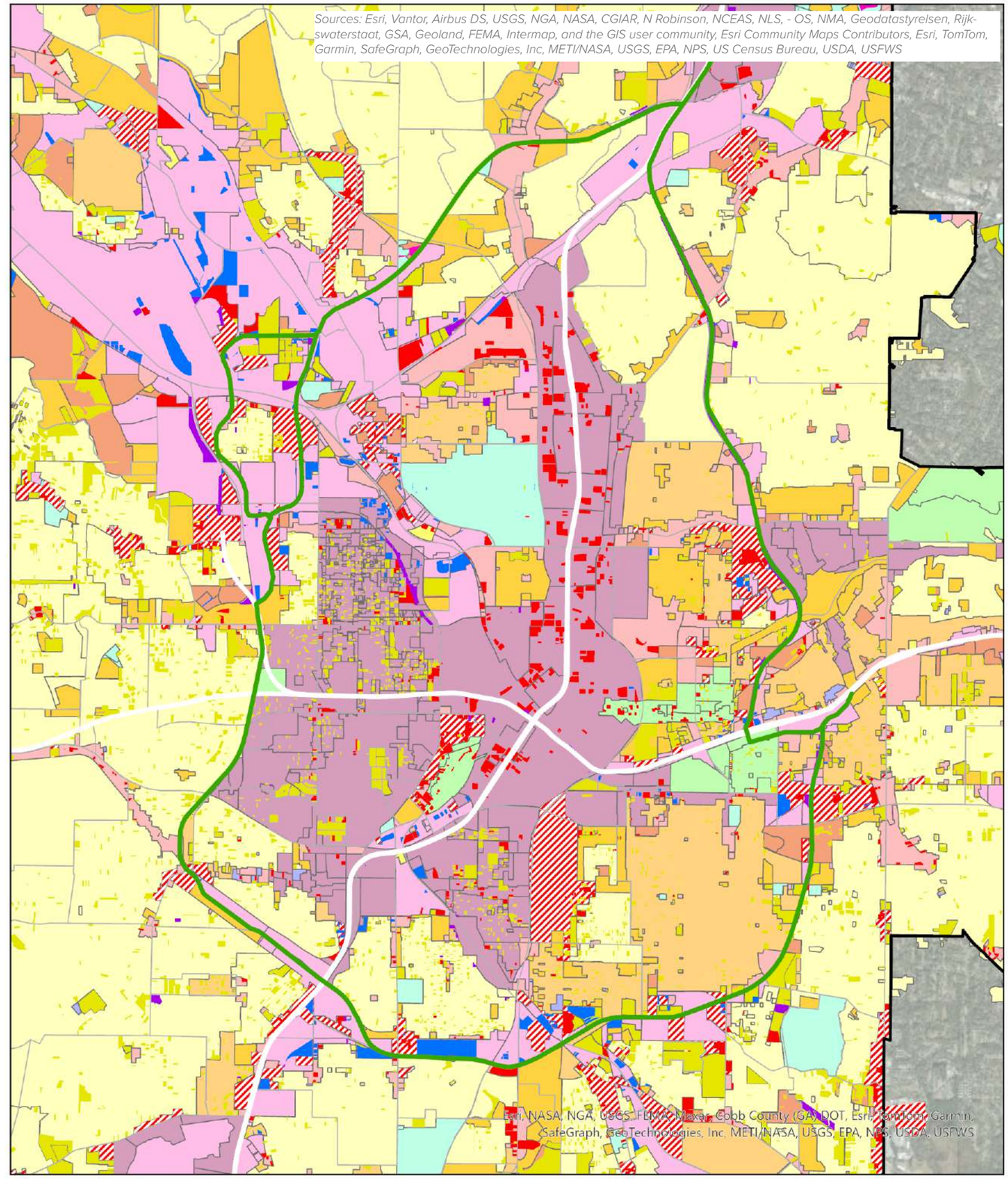
SPI regulations often include stricter design guidelines, streetscape requirements, and mixed-use incentives, ensuring that redevelopment contributes to a cohesive, pedestrian-friendly urban environment.

Higher Development Potential:

Parcels within SPI zones are frequently eligible for greater density, reduced parking minimums, and flexible land uses, which can accelerate mixed-use, transit-oriented projects.

Community Benefits:

SPI overlays often require developers to include affordable housing, public realm improvements, or sustainability features, aligning redevelopment with broader city goals.



HISTORIC DISTRICT CONTEXT

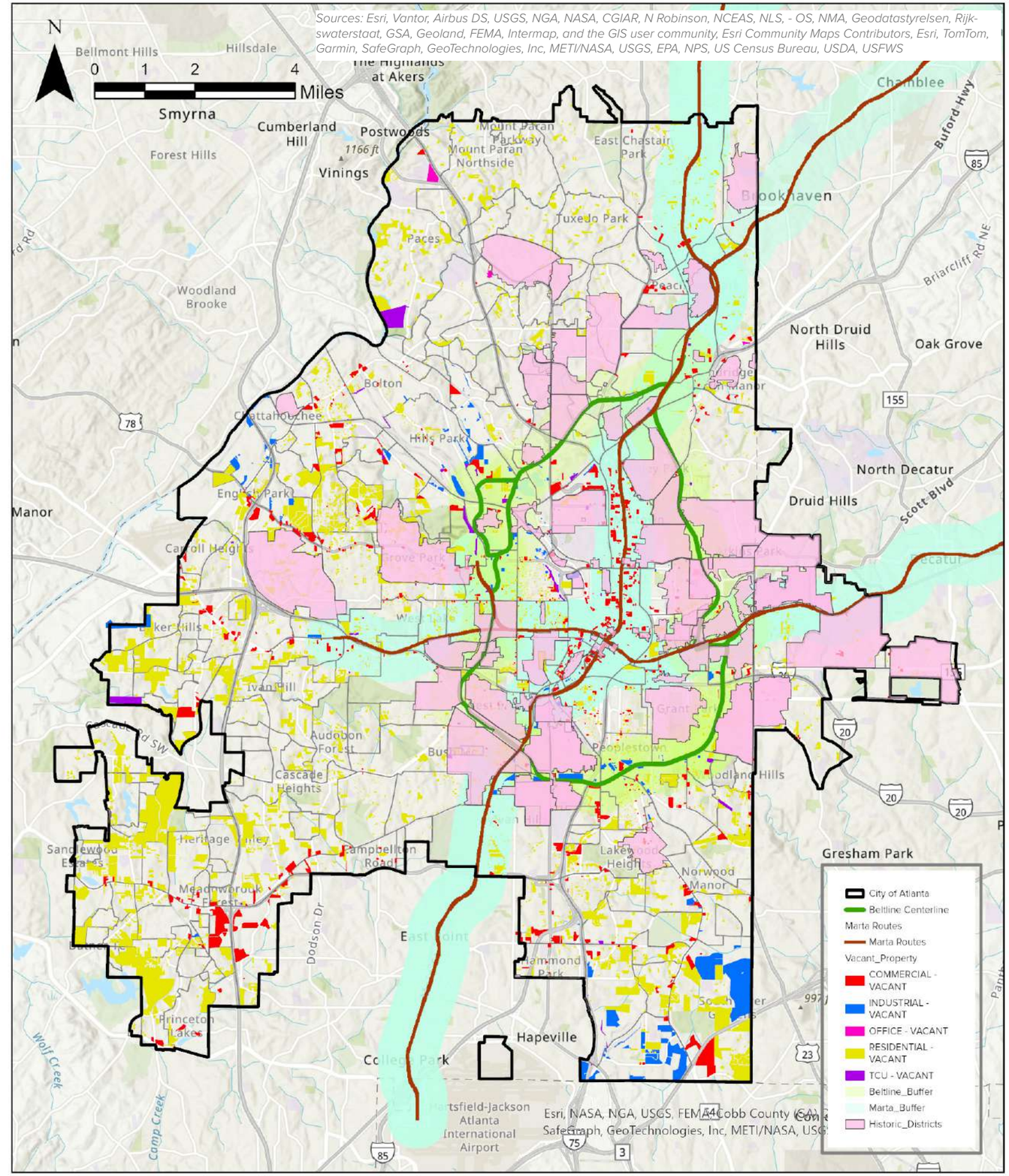
Opportunities:

Vacant parcels within historic districts present a unique chance to reintroduce

housing, adaptive reuse, and small-scale infill

while preserving neighborhood character.

Historic districts are not barriers to growth, they are opportunity zones for context-sensitive urbanism. With thoughtful planning, vacant lots here can contribute to housing supply and climate migration readiness while enhancing Atlanta's cultural and architectural legacy.



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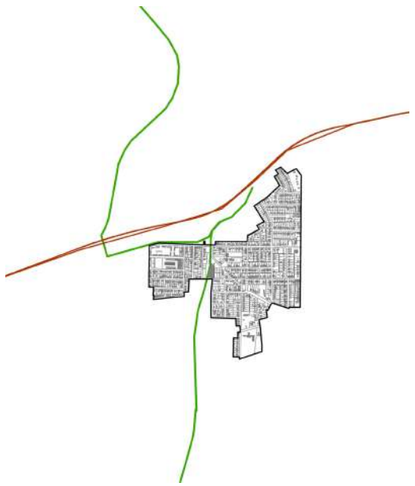
Site Selection + Method

SITE SELECTION FOR DENSITY STUDY

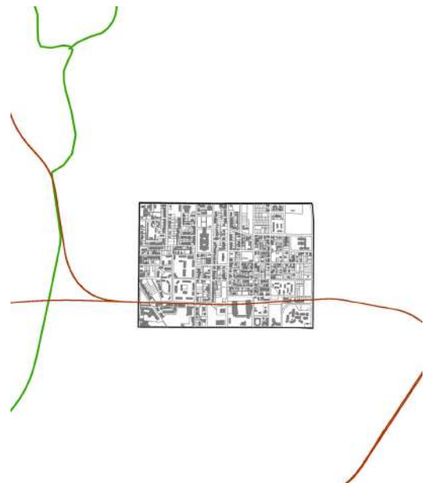


1. Reynoldstown Neighborhood

Reasons to choose:
- Beltline Overlay
- Historic Neighborhood

Potential density proposal
- ADUs

Challenges
- Preserve historic character
- Limited vacant lots



2. Vine City

Reasons to choose:
- 0.5 Miles of Marta
- Empty lots

Potential density proposal
- New development on vacant lots
- Multi family housing
- ADUs

Challenges
- Existing zoning codes allow only single family development

3. Midtown Neighborhood

Reasons to choose:
- Urban Core
- Commercial distric
- Partially historic

Potential density proposal
- Mixed use development
- Apartments
- Mutifamily houses

Challenges
- Existing zoning codes alot vacant lots to only commercial development

3 SHORTLISTED SITES

What We Will Study in These Sites

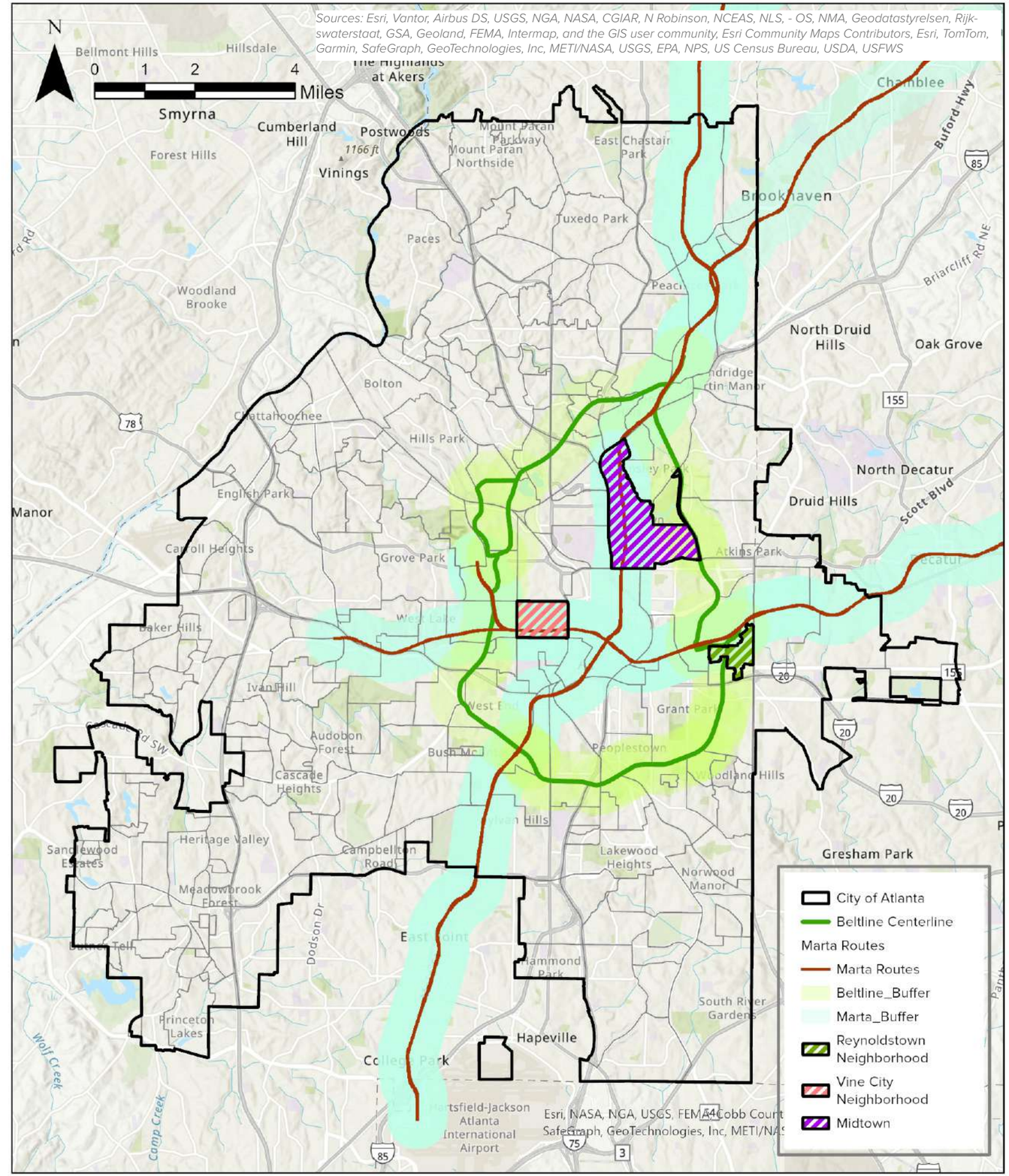
Land Use Potential & Zoning Flexibility

Vacancy Patterns & Redevelopment Opportunities

Transit Connectivity & Walkability

Microclimate & Environmental Performance

Social & Economic Impact



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REYNOLDSTOWN

5.1 Zoning interpretation
5.2 Density + Infill Strategy
5.3 Missing Middle Typologies
5.4 Shadow + Heat Analysis

SITE 1 - REYNOLDSTOWN NEIGHBORHOOD

5.1 BELTLINE OVERLAY + HISTORIC NEIGHBORHOOD

1. Max units per lot: effectively capped at 2

Permitted principal use = single-family or two-family dwelling (duplex/two-family) (Sec. 16-07.003).

Accessory dwelling units (ADUs) are allowed, but the total number of dwelling units on a parcel, including the ADU, cannot exceed two (Sec. 16-07.004(12)).

Potential density:
Single-family + ADU, or
Duplex / two-family

But we cannot legally do duplex + ADU under current R-5. So “density via ADUs” is capped at 2 units per lot unless zoning changes.

2. ADUs are explicitly allowed, with relaxed parking, yards

ADUs are a named accessory use (Sec. 16-07.004(12)). Yards for ADUs can be 4 ft side and rear instead of the standard 7 ft for principal buildings (Sec. 16-07.008(2–3)).

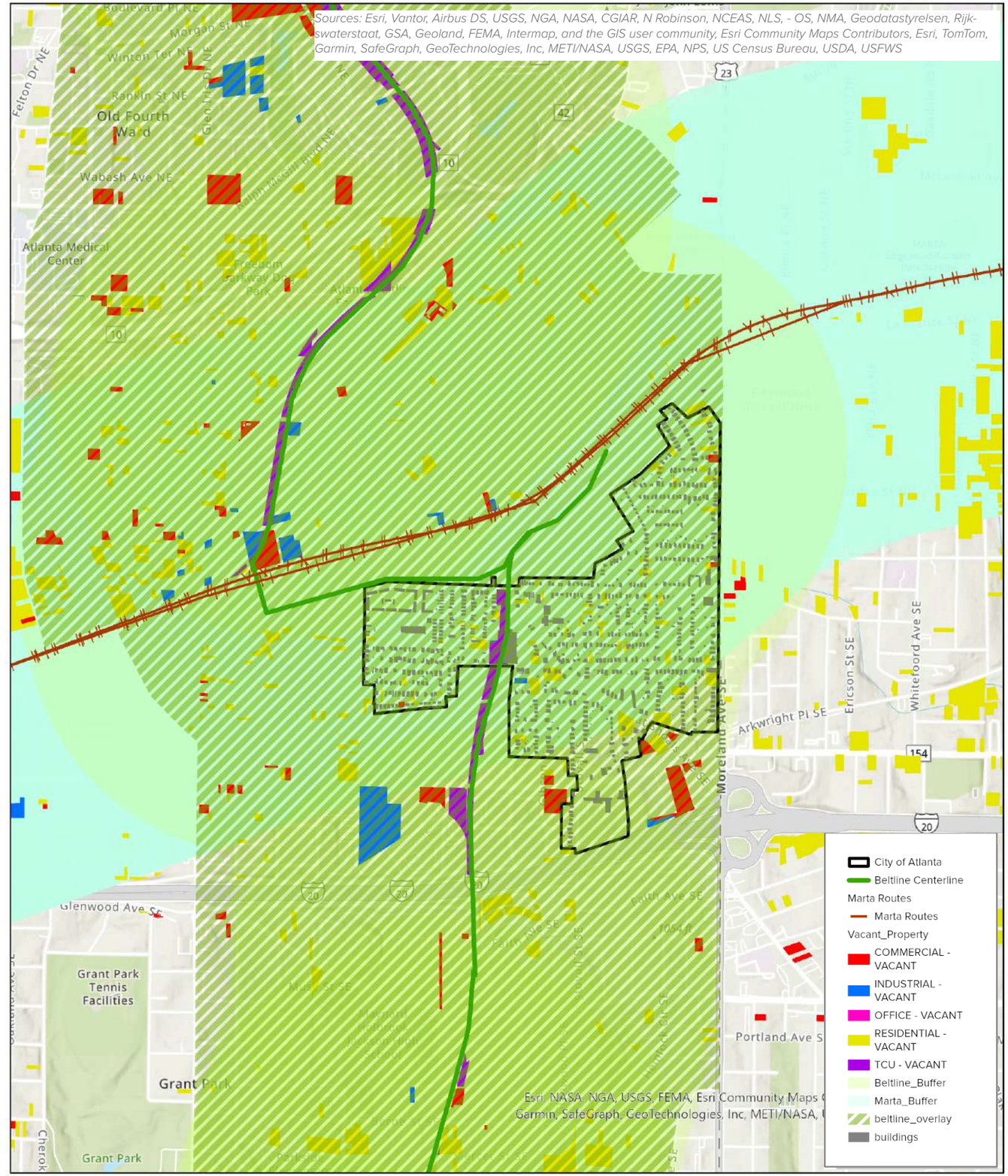
No off-street parking is required for ADUs (Sec. 16-07.010(7)).

Why it matters:
- This makes ADUs physically feasible on small lots, even with narrow setbacks.
- The no-parking requirement is a huge enabler for adding ADUs in existing fabric without paving half the lot.

Overlay’s intent explicitly supports increased density + mixed use + affordable housing

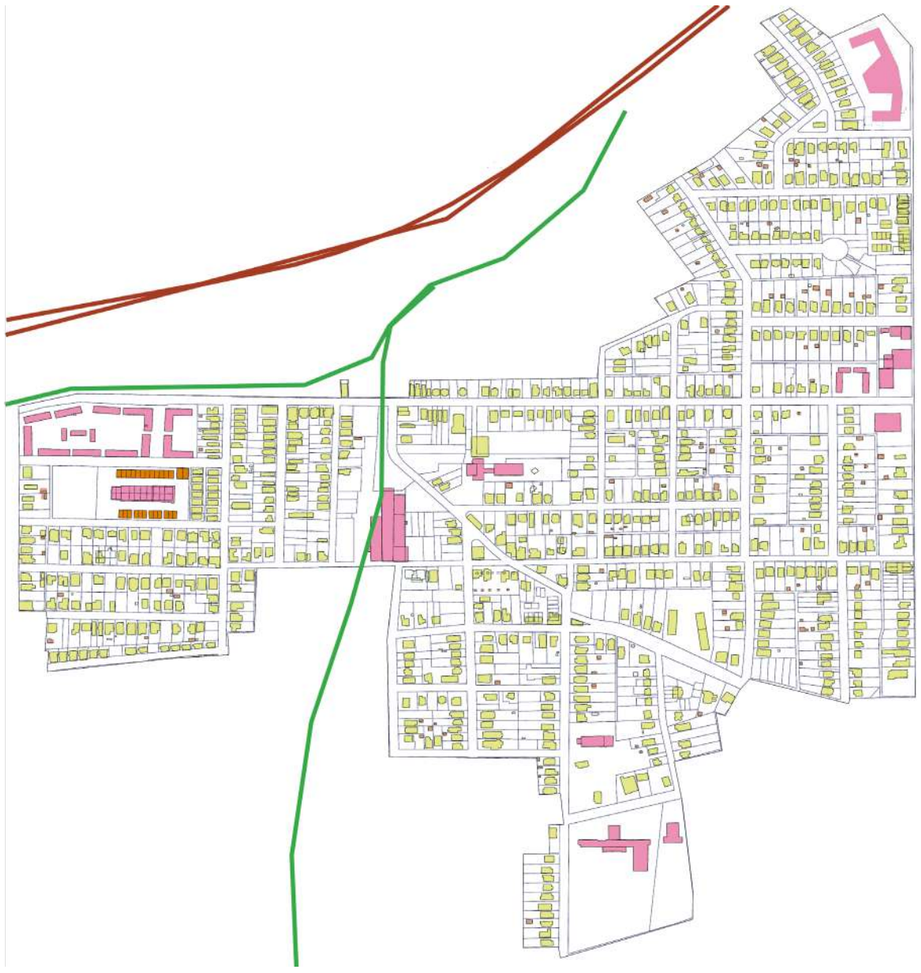
BeltLine purpose includes: increasing affordable housing inventory, making greater mixed-use development feasible, and strategically increasing density, especially near transit and greenway (Sec. 16-36.002).

Why it matters:
Policy justification: When we propose ADUs, duplexes, and future small multifamily, it is fulfilling the overlay’s stated goals, not fighting them. It’s a good backbone for arguing for future upzoning or density bonuses.



5.2 DENSITY + INFILL STRATEGY

Existing Neighborhood Density

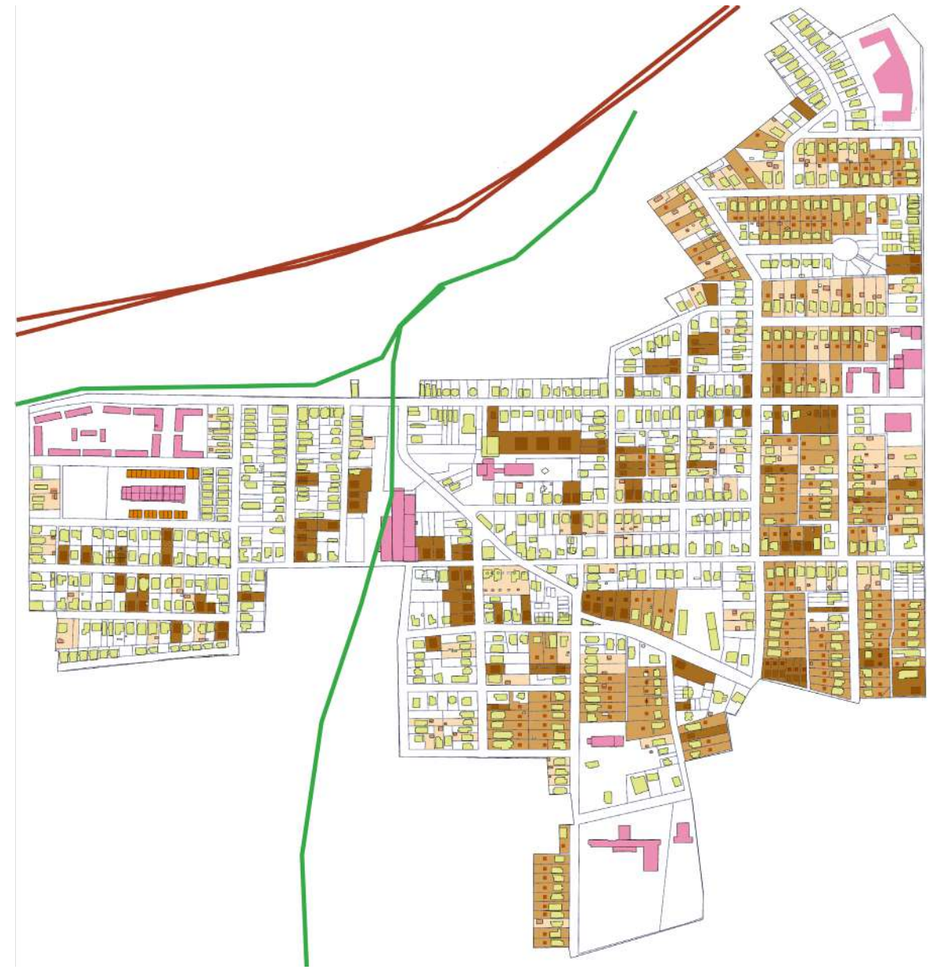


Beltline

Marta Line

Existing Single Family Houses

Proposed Neighborhood Density



Beltline

Marta Line

Existing Single Family Houses

Existing ADUs

Proposed ADUs

Proposed Multi-family quadplex + ADUs

Total New Housing Capacity Added

- 157 new ADUs across existing single-family lots

- 73 new small-multifamily lots (duplexes + quadplexes + ADUs)

- ≈230 total new units added through gentle density

INTENT OF THE PROPOSED MASSING

1. What This Proposal Achieves

a. +35–40% increase in neighborhood housing capacity (approx.)
b. Expands rental + ownership options without demolishing existing homes
c. Supports climate-migration readiness with light, distributed density
d. Adds units near transit (BeltLine + MARTA), maximizing accessibility
e. Increases affordability options by introducing smaller unit types

2. Alignment with R-5 Zoning Policy

a. ADUs allowed by-right ➔ leveraged to add 157 units
b. Two-family & duplex uses permitted ➔ supports small multifamily lots
c. No parking required for ADUs ➔ makes infill feasible on narrow lots
d. Reduced ADU setbacks (4 ft) ➔ enables rear-yard additions
e. Max height 35 ft / FAR 0.5–0.6 ➔ all proposed forms remain compliant

3. Alignment with BeltLine Overlay Intent

a. Encourages increased density near the corridor ➔ met with 230 new units
b. Promotes diverse housing types ➔ achieved via ADUs + duplexes + quadplexes
c. Supports transit-oriented living ➔ most new units within walk distance of MARTA/BeltLine
d. Preserves neighborhood scale ➔ all infill stays within height + frontage guidelines
e. Activates streets & alleys ➔ through front-facing entries and ADU alley access
f. Increases affordable housing inventory ➔ smaller units = lower cost entry points

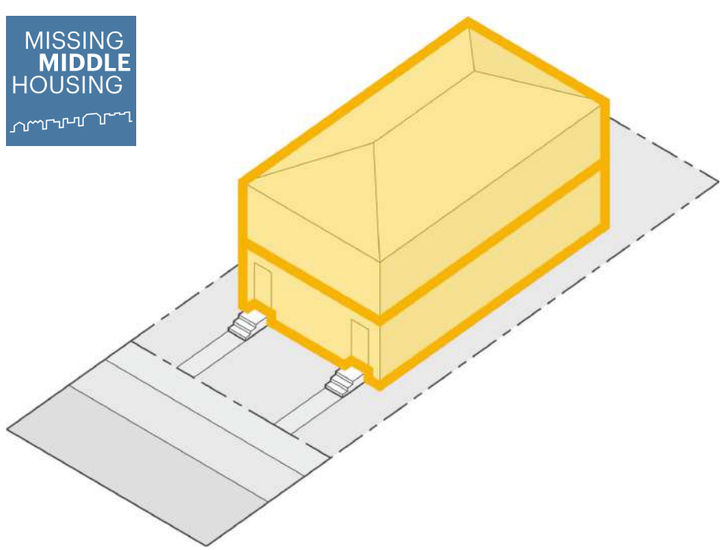
4. What This Proposal Demonstrates

a. The existing code already supports meaningful density gains using ADUs + duplexes
b. Small-scale, missing-middle infill can create hundreds of units without large rezoning
c. Future rezoning could unlock even more multifamily while staying aligned with BeltLine goals

5.3 MISSING MIDDLE TYPOLOGIES

1. Duplexes: Stacked

A small 2 story, detached structure that consists of two dwelling units arranged one above the other, each with an entry from the street. This type has the appearance of a small-to-medium single-unit house, may include a rear yard and fits on narrower lots than the side-by-side duplex.



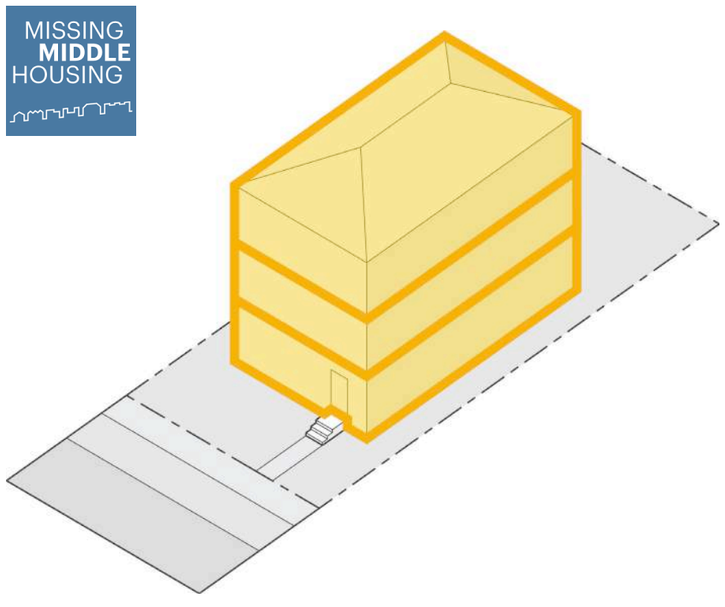
Typical Specifications

Lot	Front-loaded	Alley-Loaded
Width*	45–75 feet	40–70 feet
Depth*	100–150 feet	100–150 feet
Area*	4,500–11,300 sq. ft.	4,000–10,500 sq. ft.
	0.13–0.26 acres	0.09–0.24 acres
Units		
Number of Units	2	2
Typical Unit Size	600–2,400 sq. ft.	600–2,400 sq. ft.
Density		
Net Density	8–19 du/acre	8–25 du/acre
Gross Density	7–16 du/acre	7–16 du/acre
Parking		
Parking Ratio*	1–2 per unit	1–2 per unit
On-street Spaces	1–3	1–3
Off-street Spaces	1 per unit max.	1 per unit max.
Setbacks		
Front*	10–25 feet	
Side*	5–12 feet	
Rear (main building)*	30–60 feet	
Between Main and Accessory Buildings	10–20 feet	
Building		
Building Size		
Width	28–55 feet	
Depth	28–60 feet	
Height (to eave)*	20–24 feet	
Floors	2-2.5 stories	

** Varies based on context*

2. Triplexes: Stacked

A small-to-medium (3 to 3.5-story) sized detached structure that consists of 3 dwelling units typically stacked on top of each other on consecutive floors, with one entry for the ground floor unit and a shared entry for the units above. This type does not include a rear yard.

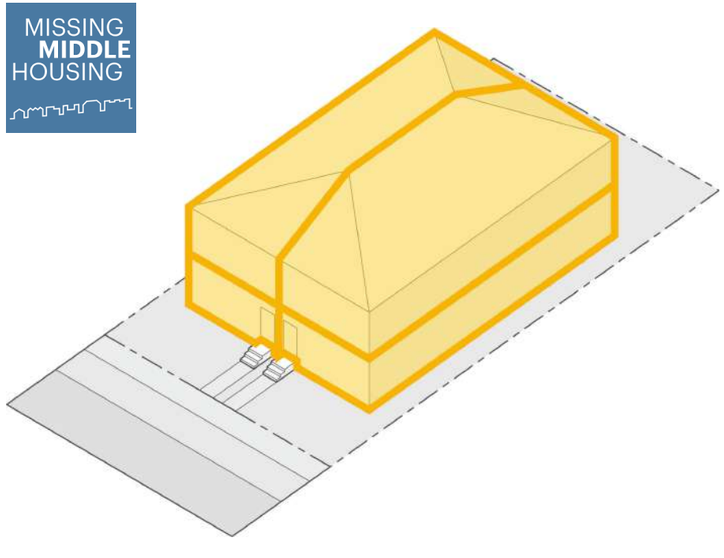


Typical Specifications

Lot	
Width	40 feet
Depth	105 feet
Area	4,200 sq. ft.
	0.096 acres
Units	
Number of Units	3 units
Typical Unit Size	1,008 sq. ft
Density	
Net Density	31 du/acre
Gross Density	23 du/acre
Parking	
Parking Ratio	1.67 per unit
On-street Spaces	2
Off-street Spaces	3
Setbacks	
Front	15 feet
Side	5 feet
Building	
Width	24 feet
Depth	42 feet
Height (to eave)	30 feet
Floors	3 stories

3. Fourplexes: Stacked

A detached (2 to 2.5-story) structure with four dwelling units, two on the ground floor and two above, with shared or individual entries from the street. This type has the appearance of a medium-sized single-unit house and may include a rear yard. This type is attractive to developers by generating four units on a typical 50' lot with alley access.



Typical Specifications

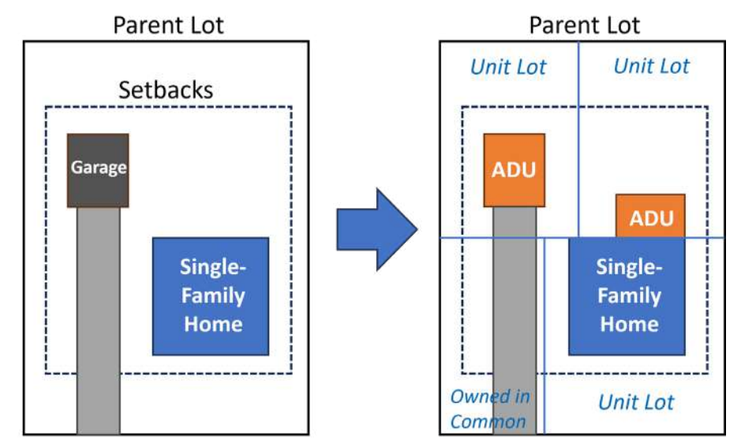
Lot	Front-loaded	Alley-Loaded
Width*	50–75 feet	45–65 feet
Depth*	100–150 feet	100–150 feet
Area*	5,000–11,250 sq. ft.	4,500–9,750 sq. ft.
	0.11–0.26 acres	0.10–0.22 acres
Units		
Number of Units	4	4
Typical Unit Size	500–1,200 sq. ft.	500–1,200 sq. ft.
Density		
Net Density	18–29 du/acre	21–35 du/acre
Gross Density	14–22 du/acre	15–25 du/acre
Parking		
Parking Ratio*	1-2 per unit	1-2 per unit
On-street Spaces	2–3	2–3
Off-street Spaces	1.5 per unit max.	1.5 per unit max.
Setbacks		
Front*	10–25 feet	
Side*	5–12 feet	
Rear (main building)*	30–60 feet	
Between Main and Accessory Buildings	10–20 feet	
Building		
Building Size		
Width	34–56 feet	
Depth	32–60 feet	
Height (to eave)*	20–28 feet	
Floors	2-2.5 stories	

** Varies based on context*

4. ADUs

An Accessory Dwelling Unit (ADU) must be no more than 750 square feet, adhere to zoning codes for your specific lot (R-5, R-4, or R-4A), and have a combined total square footage with the main house not exceeding 55% of the lot area.

Unit Lot Subdivision



Littleton, CO City Code and Charter

a. Attached ADUs.

1. Reserved.
2. Reserved.
3. Water, sanitary sewer, and electrical utilities may be separately provided to an attached ADU.

b. Detached ADUs.

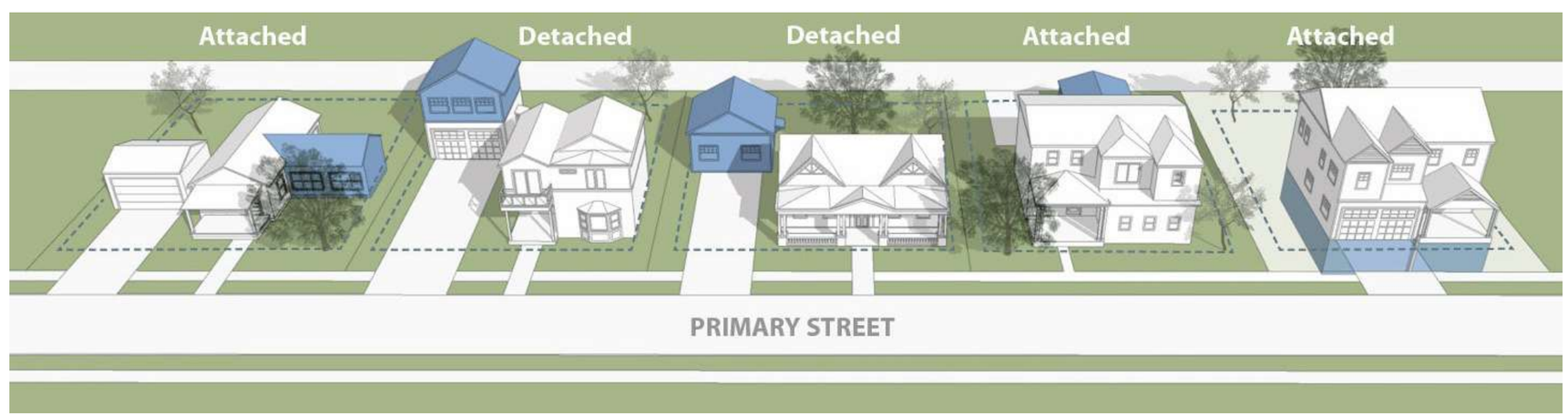
1. The ADU and principal dwelling shall have separate addresses.

2. The ADU shall meet the building requirements established within Title 4 of the City Code, including adopted building codes, and may combine a dwelling with a garage, workshop, studio, or similar use.

3. Reserved.

4. Detached ADUs must be located in line with or behind the front façade of the primary dwelling unit.

Standards Applicable to Certain ADUs



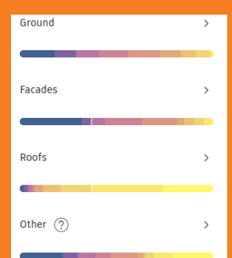
5.4 SUN HOURS ANALYSIS December, 21 8:00 to 16:00

Note: The tree placements are hypothetical but represent the approximate density of the existing foliage.

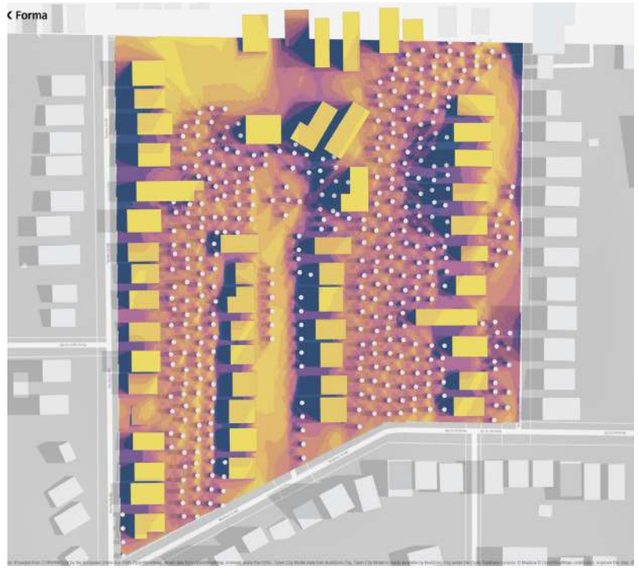
Positive:
- Improved Winter Solar Exposure on Buildings
- Increased Solar Energy Potential
- Even Winter Ground Heating
- Better Seasonal Balance

Negative:
- Reduced Summer Shade
- Increased Heat Absorption at Ground Level
- Lower Outdoor Comfort in Summer
- Loss of Cooling from Evapotranspiration

Over all Insight:
- Proposal 1 performs better for energy efficiency and compact design but reduces façade daylight.
- Proposal 2 maximizes solar potential and façade lighting but increases ground shading and total heat absorption. Evapotranspiration



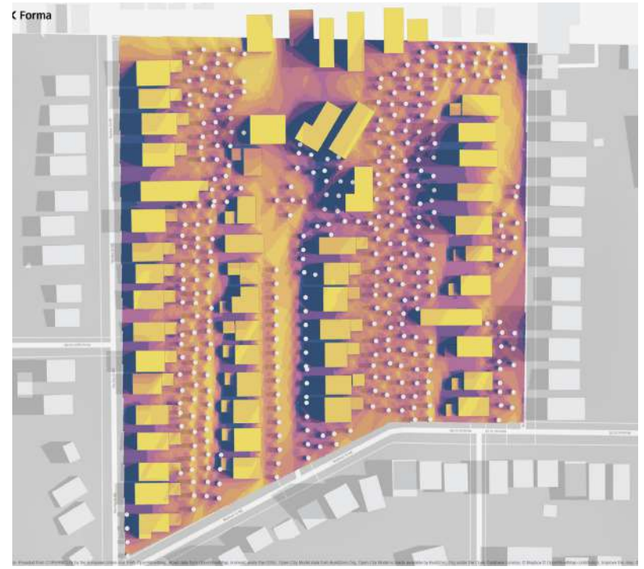
Existing



63% ground receives direct sun for at least 3 hours.

The existing low-density pattern allows sunlight to reach most rear yards and ground surfaces which means large unused land area receives heat, reducing micro-climatic comfort and contributing to inconsistent shading during the winter daytime. Building efficiency remains low because roof exposure is high but underutilized.

Proposal 1: Attached ADUs



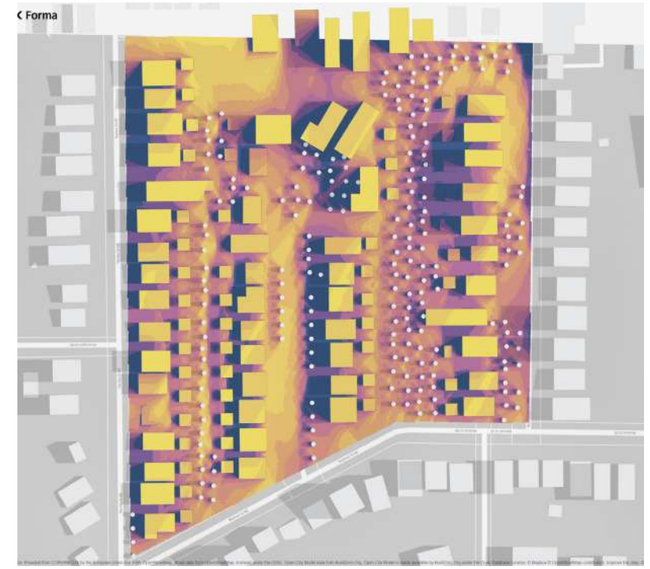
59% ground receives direct sun for at least 3 hours.

39% facades receive direct sun for at least 3 hours.

84% roofs receive direct sun for at least 3 hours.

Attached ADUs create more contiguous massing along rear lot edges. This introduces moderate additional shading on side façades and shared lot boundaries, slightly reducing direct ground-level sun. However, roof exposure remains strong, supporting opportunities for rooftop solar installations.

Proposal 2: Dettached ADUs



58% ground receives direct sun for at least 3 hours.

54% facades receive direct sun for at least 3 hours.

92% roofs receive direct sun for at least 3 hours.

Detached ADUs introduce smaller, scattered structures across rear yards. This maintains greater spacing between buildings, increasing sunlight penetration along facades while still slightly reducing ground-level sun due to increased built coverage. The increased number of individual roofs dramatically enhances total solar collection.

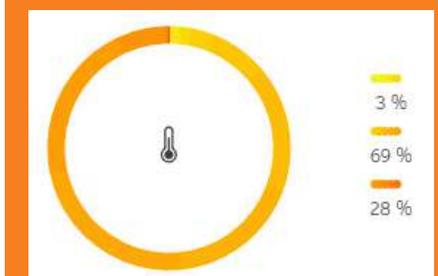
5.4 MICRO CLIMATE ANALYSIS July 21, 2 PM (Peak Summer Heat)

The proposed massing results in only a marginal increase in peak summer heat stress (3% rise), suggesting that density alone is not the dominant driver of heat. The key differentiator is tree canopy loss.

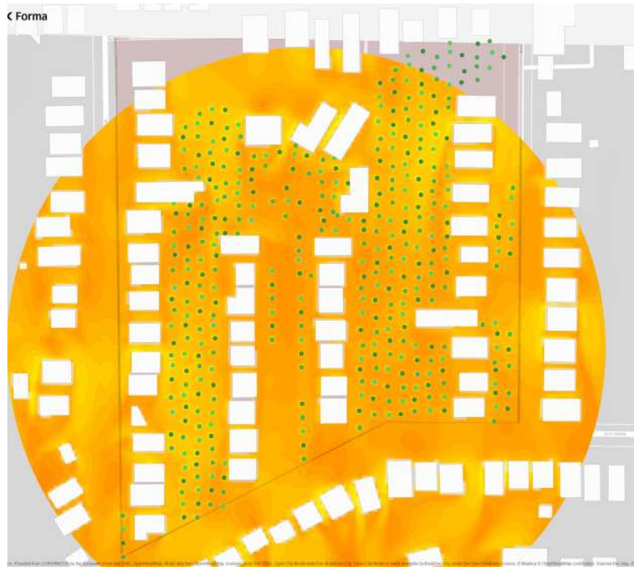
Overall Insight:

Proposal 1 performs better thermally because attached massing means fewer total surfaces heating up and less disruption to airflow.

Proposal 2 leads to slightly hotter conditions due to more buildings + more exposed roofs + reduced green cover.



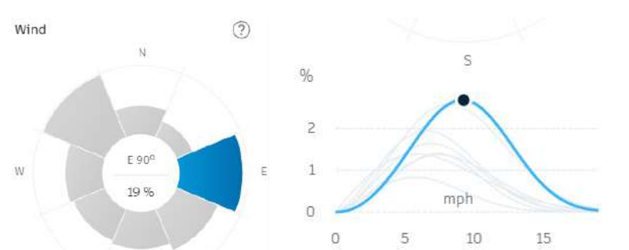
Existing



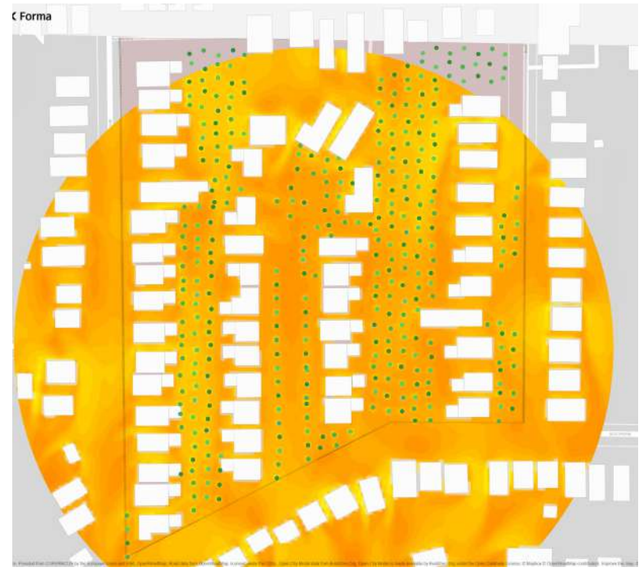
86 % Strong heat stress

14 % Moderate heat stress

The existing tree canopy provides meaningful filtered shade, but large open front yards and low-density land use still produce broad, sun-exposed surfaces. Wind movement is limited inside the block, as shown in the wind rose, which reduces natural cooling.



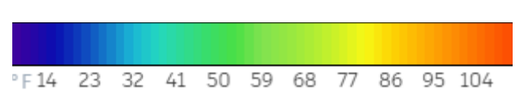
Proposal 1: Attached ADUs



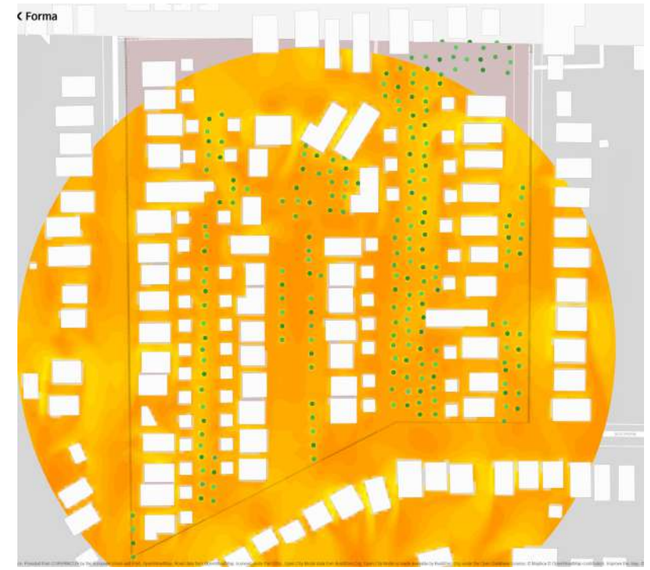
86 % Strong heat stress

14 % Moderate heat stress

Attached ADUs introduce continuous built forms along the rear of lots, but they do not significantly worsen peak heat stress at the block scale. The added massing creates some localized shade along building footprints, yet the reduction in tree canopy and increased hardscape prevent meaningful cooling improvements. Summer overheating remains problematic.



Proposal 2: Dettached ADUs



89 % Strong heat stress

11 % Moderate heat stress

Detached ADUs spread additional small structures across yards, increasing the number of exposed roof surfaces and reducing tree canopy coverage. This results in greater radiant heat accumulation, particularly in central areas. Detached infill also creates more fragmented shade, which is insufficient to balance the added thermal load.

5.4 WIND ANALYSIS East wind

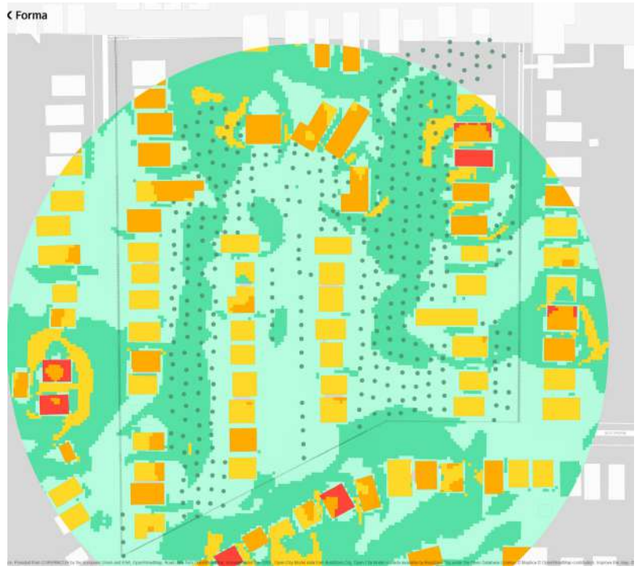
The wind analysis shows that the proposed missing-middle development introduces minimal negative impact on wind comfort. Over 94% of the site remains in highly comfortable ranges, while increased airflow into the block improves summer cooling. Strategic tree replanting and façade articulation can manage the minor wind acceleration zones.

Overall Insight:

Attached ADUs maintain pedestrian comfort with minimal wind disruption, though airflow into deeper interior areas is slightly reduced.

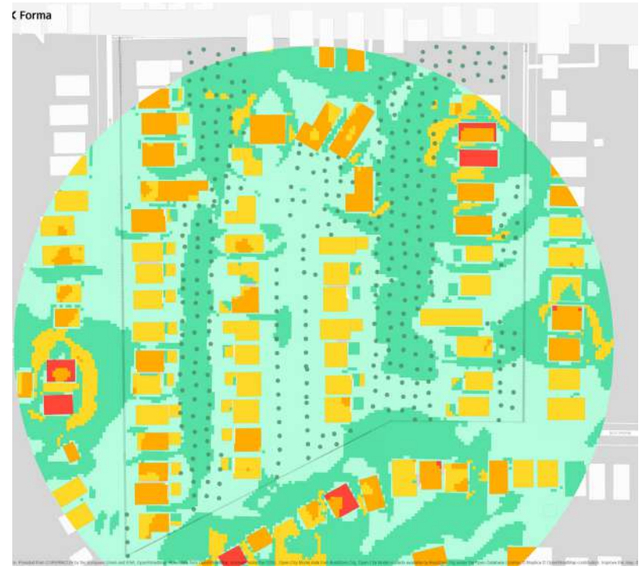
Detached ADUs produce the greatest reduction in airflow, contributing to higher heat-stress zones and reduced natural cooling.

Existing



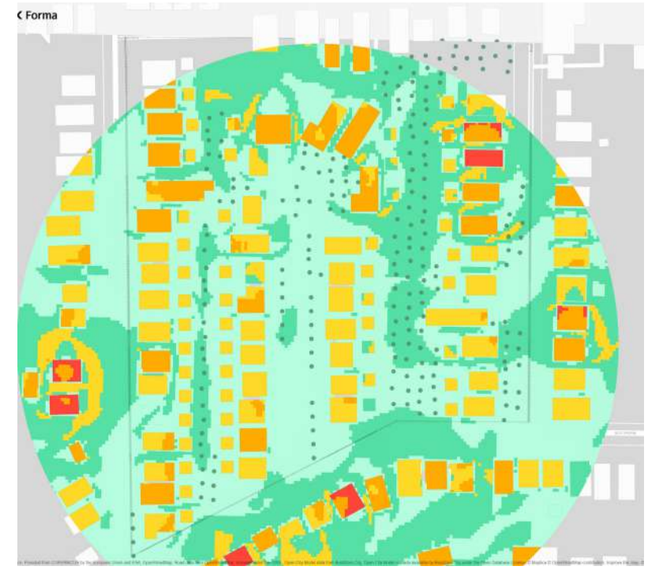
The block interior experiences gentle, uniform airflow, largely due to: Low building heights, Porous block structure, Significant tree canopy filtering wind. The existing condition provides good pedestrian comfort, with natural buffering from trees. However, limited wind penetration into the block interior reduces natural cooling in summer months.

Proposal 1: Attached ADUs

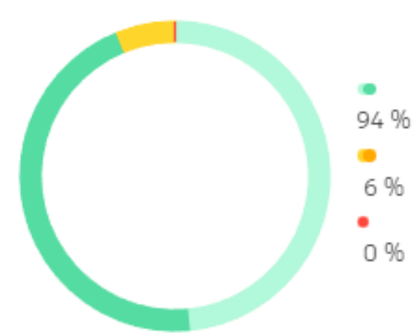


Attached ADUs subtly alter internal airflow by creating longer wall-like edges. Wind still circulates through the porous block, but penetration into internal courtyards becomes slightly more restricted. This marginally reduces natural cooling yet maintains good pedestrian comfort.

Proposal 2: Dettached ADUs



Detached ADUs behave like multiple small wind barriers, fragmenting the airflow that enters the block interior. While this does not eliminate airflow entirely, it reduces uniform airflow and creates more pockets of stagnation. This contributes to higher localized heat stress as observed in the temperature maps.



5.4 SOLAR PANEL ANALYSIS

Positive Outcomes

1. Higher-density massing increases the number of solar-viable roofs.

2. Enables district-scale solar as a meaningful renewable energy strategy.

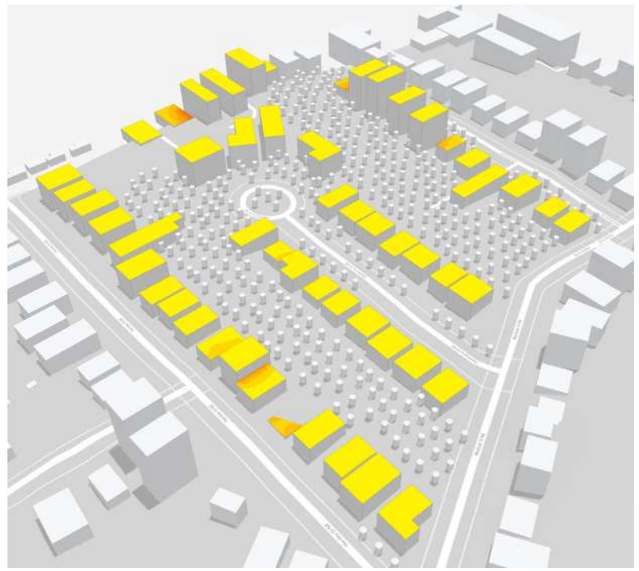
3. Improved panel placement area leads to greater energy resilience.

Negative or Neutral Outcomes

1. Average solar energy per sq.ft remains unchanged—the benefit comes from more roof area, not better solar quality.

2. Reduced canopy may increase heat, requiring complementary green infrastructure.

Existing



Annual Solar Energy Potential
Total Surface Area: 98041 sq.ft
Total Solar Energy: 14,400,000 kWh
Average Solar Energy: 150 kWh/sq.ft

Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 44,118 sq.ft
Annual electrical output: 783,000 kWh

Proposal 1: Attached ADUs

Annual Solar Energy Potential
Total Surface Area: 117747 sq.ft
Total Solar Energy: 17,200,000 kWh
Average Solar Energy: 150 kWh/sq.ft

Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 52,986 sq.ft
Annual electrical output: 932,000 kWh

Proposal 2: Dettached ADUs

Annual Solar Energy Potential
Total Surface Area: 120,686 sq.ft
Total Solar Energy: 17,700,000 kWh
Average Solar Energy: 150 kWh/sq.ft

Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 54,309 sq.ft
Annual electrical output: 960,000 kWh

STORMWATER + RUNOFF ANALYSIS BASED ON ADDED ADUS AND MISSING-MIDDLE INFILL

Positive Environmental Effects (Counterbalancing Factors)

1. Compact growth = Lower per-unit environmental footprint
The density model adds 230 units within the same land footprint, rather than expanding outward into greenfields.
This reduces:
- Road length per household,
- Utility extension demands,
- Regional watershed disturbance.

2. Moderate building heights reduce heat gain & energy costs
The solar + microclimate findings show limited negative impacts and improved rooftop solar potential
➔ 22% more renewable energy generation potential in the proposal.
This offsets some of the long-term energy/heat costs of additional units.

3. No additional parking surfaces
Because ADUs require no off-street parking, large new paved areas are not added. This is a major stormwater benefit.

Negative Impacts That Must Be Addressed

1. Increased Impervious Surface Area ➔ Higher Runoff
Even small buildings (ADUs) add cumulative roof area.
The microclimate maps visibly show less permeable ground and reduced canopy interception.
More runoff = higher load on the city's storm system.

2. Disconnected roofs = Lost opportunity for water harvesting
Traditional roofs simply channel water into gutters and storm drains.
With so many small units being added, this missed opportunity compounds.

3. Loss of Mature Tree Canopy
The heat stress and wind analysis clearly show that canopy removal is the primary cause of:
- Increased heat exposure,
- Reduced evapotranspiration,
- Lower natural stormwater absorption.

Trees are a major stormwater management tool—their loss increases runoff velocity and peak loads.

Recommended Mitigation Strategies

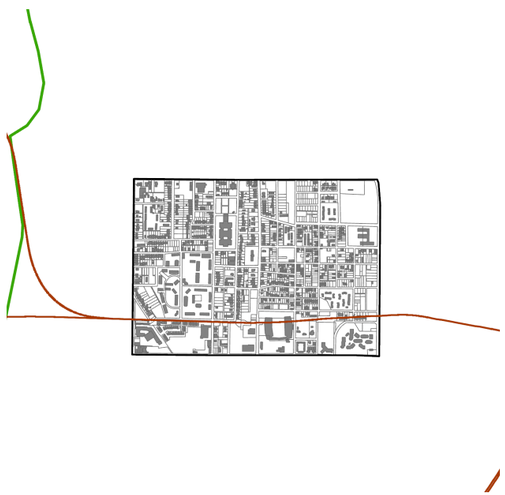
1. **Mandate Rainwater Harvesting for All ADUs & Infill Units**

A simple requirement such as: 800–1,200 gallon cistern per ADU, or
Rain barrels scaled to roof area
➔ Reduces peak runoff significantly and supports greywater reuse.

2. Require High-Albedo / Cool Roofs
The solar panel analysis already demonstrates that roofs receive high solar exposure (94% have 3+ hours sun). Cool roofs can:
- Reduce surface temperature by 30–60°F
- Reduce thermal loading that worsens stormwater evaporation rate.

3. Reintroduce Strategic Tree Planting
To replace canopy lost to ADU construction: Plant drought-tolerant shade trees in rear yards. Use species with large leaf area for maximum stormwater interception. This directly mitigates runoff and heat impacts simultaneously.

4. Permeable Pavements for Walkways/Driveways
Since ADUs don't require parking, any added walkways or backyard access paths should be permeable to maintain infiltration.



6

VINE CITY

6.1 SPI-19 + TOD compatibility
6.2 Proposed Density Outcomes
6.3 Shadow + Heat Analysis
6.4 Comparison Table

6.1 SITE 2 - VINE CITY

WITHIN 0.5 MILES OF MARTA, SPI-19

1. Purpose & Intent of SPI-19

The district aims to promote “redevelopment of the Vine City/M.L.K. Jr. Corridor as a transit-oriented, mixed-use corridor with a strong pedestrian environment and a variety of housing types.”

This means that the ADU/mixed-use infill strategy aligns with the overlay’s broader vision of increased density + affordability.

2. Allowable Uses & Infill Compatibility

SPI-19 allows a wide mix of uses: residential, commercial, institutional — especially in sub-areas near transit.

ADUs, townhomes, small-apartment types typically allowed under “multiple-family” residential categories in the SPI.

Infill built on vacant parcels or replacing underperforming properties is encouraged.

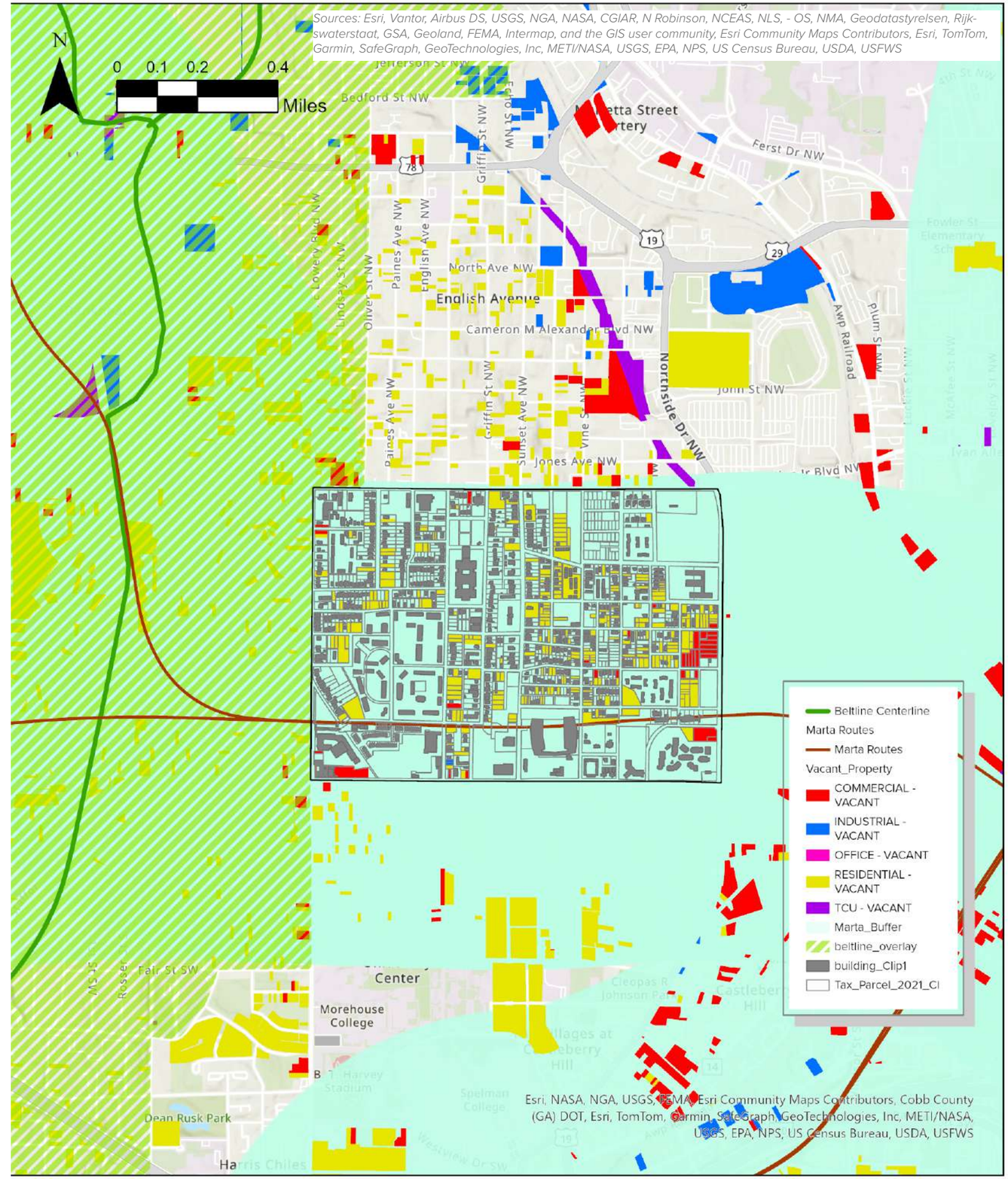
3. Transit-Oriented Development (TOD) & Site-Block Form

SA4/5/6/11 are adjacent or near existing/planned transit lines (e.g., MARTA) and the overlay promotes walkability, mixed-use, minimal parking, and reduced car-dependency.

The proposed block-scale infill aligns with TOD:
Reduced off-street parking requirement
Pedestrian-oriented streetscapes + greenspace incorporation

Why is it important?

Increasing residential density and reducing parking in Vine City directly supports the goals of the SPI-19 district and Atlanta’s broader transit-oriented development policies by placing more homes within walking distance of MARTA, lowering car dependence, and making mixed-use, walkable neighborhoods viable. Gentle infill—ADUs, townhomes, small apartment buildings—helps rebuild housing supply in a historically disinvested area while keeping costs down and creating opportunities for affordable and workforce housing. Reduced parking requirements free land for housing, trees, and community uses, lower development costs, and decrease heat-island effects by limiting new asphalt. Together, these strategies create a more resilient, more equitable, and more sustainable Vine City aligned with city policy, climate goals, and neighborhood revitalization needs.



6.2 PROPOSED DENSITY OUTCOMES

Note: The tree placements are hypothetical but represent the approximate density of the existing foliage.

Existing Neighborhood Density

- Existing Houses
- Proposed Duplexes
- Proposed Townhouses
- Proposed Apartments
- ADUs

Proposal 1

Duplexes	44 x 2	88 units
Townhomes	16 x 2	36 units
Multifamily	12 x 6	72 units
ADUs	0	0 units
Total		**196 units**

Proposal 2

Duplexes	42 x 2	84 units
Townhomes	23 x 2	46 units
Multifamily	12 x 10	120 units
ADUs	13	13 units
Total		**263 units**

INTEND OF THE PROPOSED MASSING

1. Expand Housing Capacity While Preserving Neighborhood Fabric

a. Introduces ≈252 new units through ADUs, small multifamily, townhomes, and apartments.
b. Retains the existing single-family pattern and block structure, aligning with R-5 / R-4A intent to support “medium-density residential areas” and “variety in the rental stock.”

2. Introduce “Missing Middle” Typologies Where Zoning Allows Up to Two Units

a. New duplexes, small multi-family homes (21 units), and townhomes (17 units) align with R-5 and R-4A permit lists, which allow:
- Single-family houses
- Two-family dwellings
- Duplex conversions

b. These typologies provide gentle transitions and maintain the height limit of ≤35 ft.

3. Concentrate Mid-Rise Multifamily and Apartments Along Wider Corridors

a. 120 new apartment units placed on larger or vacant parcels match the intent of MR-M and MR-2 districts, which encourage:
- Multifamily housing
- Walkable, mixed-use corridors
- Transit-supportive densities

b. Supports purpose statements: “increase housing supply,” “promote mixed-use,” and “encourage transit-ready development.”

4. Support Affordable and Climate-Ready Growth

a. Adds a mix of small units + infill positioned near:
- MARTA West Lake and Vine City stations
- Westside BeltLine Connector
- Historic Westside Village

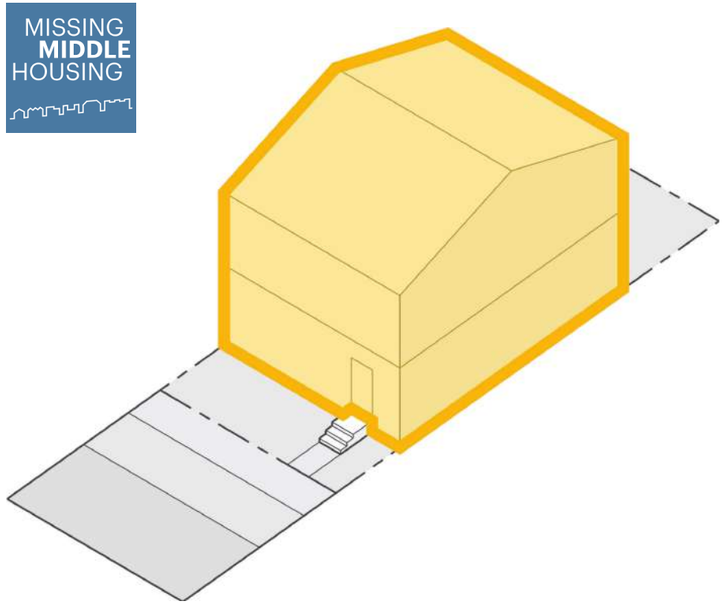
b. Aligns with policy goals to:
- Reduce auto dependency
- Provide lower-cost rental options
- Increase resilience for climate-migration-driven growth
- Reuse vacant lots and underutilized parcels

PROPOSED INFILL DEVELOPMENT ON VACANT LOTS

1. Townhomes

A small-to medium-sized attached structure that consists of 2 to 16 multi-story dwelling units placed side-by-side. Entries are on the narrow side of the unit and typically face a street or courtyard. The street façades have entrances and avoid garages.

MISSING MIDDLE HOUSING



Typical Specifications

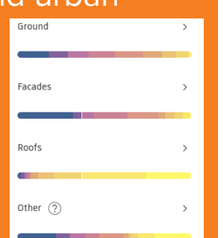
Lot	Front-loaded	Alley-Loaded
Width*	N/A	18–25 feet
Depth*		85–120 feet
Area*		1,530–3,000 sq. ft.
		0.04–0.09 acres
Units		
Number of Units	N/A	1
Typical Unit Size		1,000–3,000 sq. ft.
Density		
Net Density	N/A	11–25 du/acre
Gross Density		10–22 du/acre
Parking		
Parking Ratio*	N/A	1–3 per unit
On-street Spaces		1-2
Off-street Spaces		2 per unit max.
Setbacks		
Front*		10–25 feet
Side*		0–12 feet
Rear (main building)*		30–60 feet
Between Main and Accessory Buildings		10–20 feet
Building		
Building Size		
Width		18–25 feet
Depth		35–55 feet
Height (to eave)*		25–40 feet
Floors		2-3.5 stories

5.4 SUN HOURS ANALYSIS December, 21 8:00 to 16:00

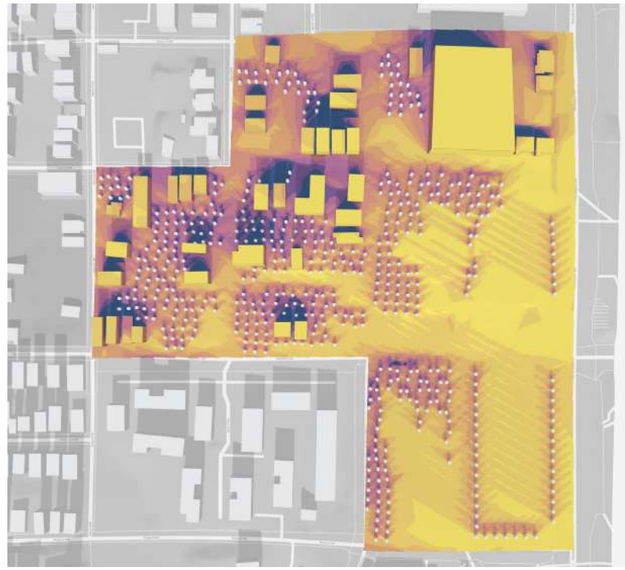
Positive:
- Better Roof Solar Potential
- Reduced Overheating on Ground Surfaces
- More Comfortable Microclimate in Summer

Negative:
- Significant Reduction in Ground-Level Sunlight
- Reduced Winter Solar Gain for Homes
- Narrower Courtyards & Infill Shadows
- Uneven Sun Distribution

Over all Insight:
- Existing condition maximizes sun exposure but underutilizes land and renewable energy potential.
- Proposal 1 strikes a balance: moderate infill, reduced ground exposure but strong roof and façade sunlight.
- Proposal 2 introduces the most shading but still maintains excellent solar PV feasibility and urban efficiency.



Existing



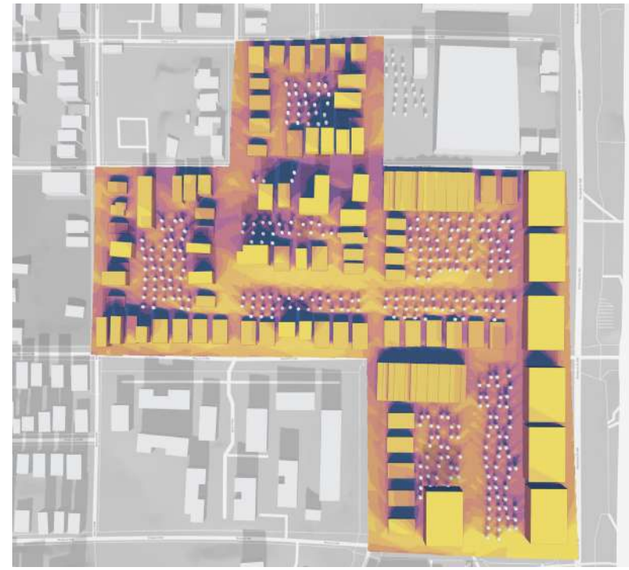
83% ground receives direct sun for at least 3 hours.

75% facades receive direct sun for at least 3 hours.

100% roofs receive direct sun for at least 3 hours.

Large open yards and low building heights allow deep winter sunlight penetration. Good ground-level heating helps mitigate cold pockets in shaded urban areas. Excessively exposed ground surfaces contribute to winter drying, reducing soil moisture. Minimal shading structure → higher summer heat stress (seen in other simulations).

Proposal 1: 196 units proposed



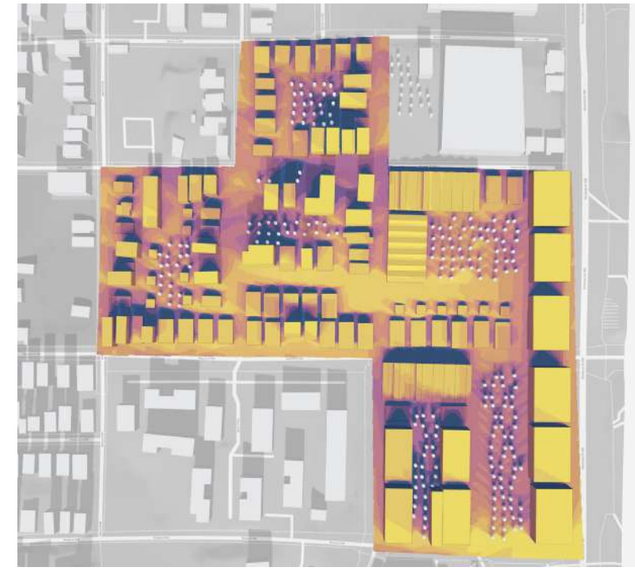
58% ground receives direct sun for at least 3 hours.

62% facades receive direct sun for at least 3 hours.

98% roofs receive direct sun for at least 3 hours.

Additional buildings create more consistent shading, improving outdoor comfort in summer. Still maintains good façade exposure, preventing winter under-lighting of homes. Reduction in ground-level solar access may produce slightly cooler yards in winter. Moderate increase in overshadowing of adjacent lots.

Proposal 2: 263 units proposed



53% ground receives direct sun for at least 3 hours.

58% facades receive direct sun for at least 3 hours.

95% roofs receive direct sun for at least 3 hours.

Higher density provides significant solar PV surface gain, improving neighborhood energy resilience. Additional shading in winter can reduce over-heating in shoulder seasons and mitigate hardscape glare. Noticeable reduction in yard-level winter sun → can affect plant growth, thermal comfort, and snow/ice persistence.

5.4 MICRO CLIMATE ANALYSIS July 21, 2 PM (Peak Summer Heat)

Positive:

- More built shade reduces direct sun on ground surfaces.
- Consistent block edges cast longer midday shadows.
- Slight increase in moderate-stress zones indicates improved thermal comfort in some areas.

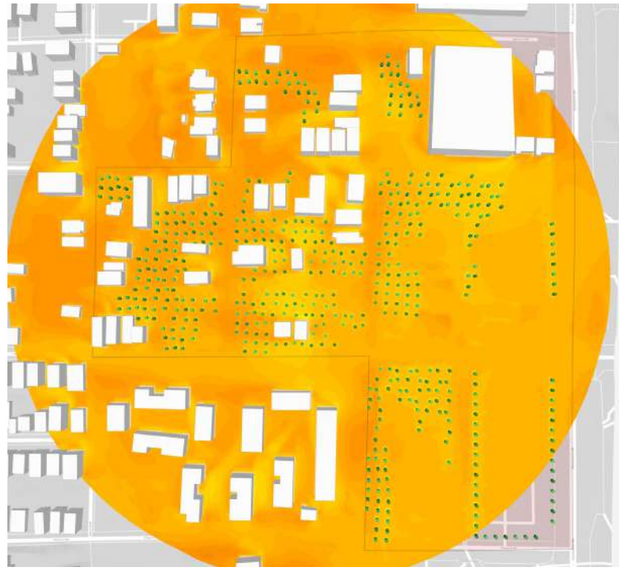
Negative:

- Tree canopy loss offsets many of the cooling benefits provided by infill shadows.
- Narrower spaces may restrict airflow, limiting natural cooling.
- Heat pockets remain where trees are replaced by hardscape.

Over all Insight:

- Despite increased density, heat-stress levels remain almost identical across all scenarios, with only a 1% shift between strong and moderate heat stress. This means density does not significantly worsen peak summer heat at the neighborhood scale, but localized effects still matter.

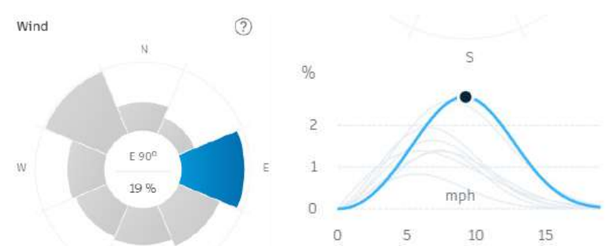
Existing

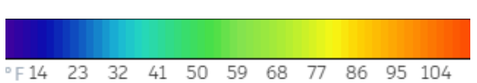


91 % Strong heat stress

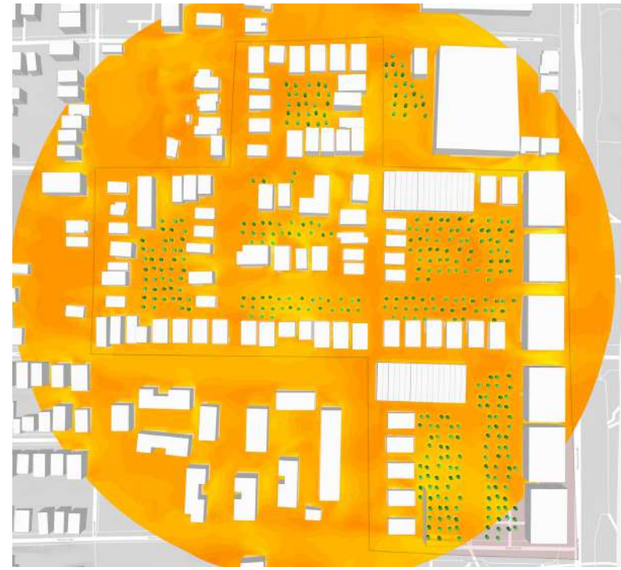
9 % Moderate heat stress

Large open lots, low building heights, and limited shade contribute to broad, sun-exposed surfaces. Tree canopy provides some shade, but coverage is uneven. Heat accumulates in wide asphalt and empty parcels, causing high thermal exposure.





Proposal 1: 196 units proposed

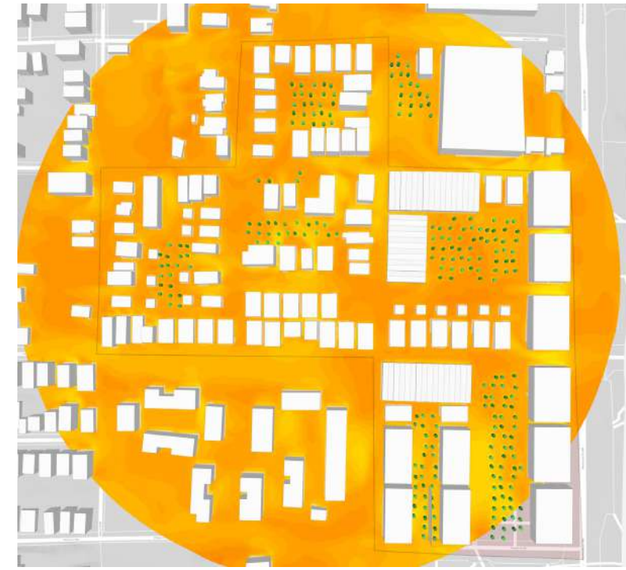


91 % Strong heat stress

9 % Moderate heat stress

Added buildings introduce more structured shading, but Some tree canopy loss reduces shading benefits. Net result: no major change in heat stress distribution. Shade from infill balances out the shade lost from vegetation → heat impact remains stable.

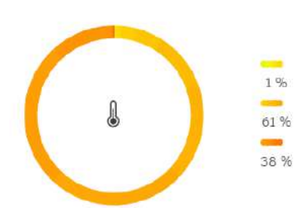
Proposal 2: 263 units proposed



90 % Strong heat stress

10 % Moderate heat stress

Increased density → more building-generated shade at ground level. Slight improvement: 1% shift from strong to moderate heat stress. However, tree removal still causes localized heat pockets at periphery. Overall: higher density slightly improves midday heat comfort but only marginally.



5.4 WIND ANALYSIS East wind

Positive:

- Higher density introduces better-defined airflow patterns, improving ventilation in certain parts of the block.
- Most of the site (≈94%) remains within comfortable wind conditions, indicating density does not disrupt overall comfort.
- Wind channeling along new street walls can enhance cooling during hot months

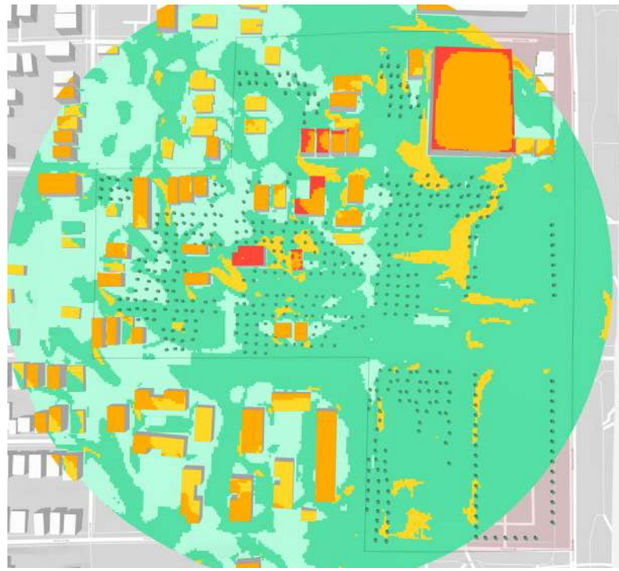
Negative:

- Some areas experience reduced natural ventilation due to closely spaced buildings.
- Without vegetation, airflow can become less moderated, affecting microclimate comfort.

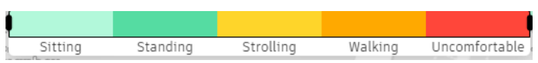
Over all Insight:

Increasing density slightly restructures wind patterns but does not significantly impact comfort levels. Most of the site remains highly comfortable, though vegetation loss introduces localized zones of higher or lower airflow.

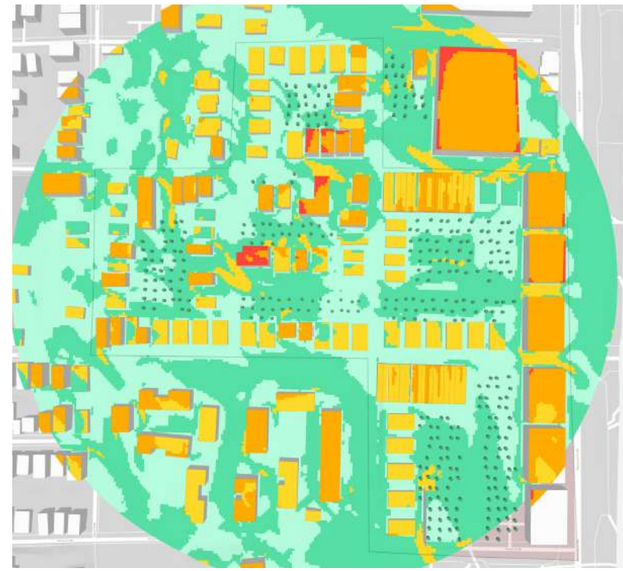
Existing



The block interior receives gentle, diffused airflow, mostly comfortable for sitting, standing, and strolling The tree canopy plays a major role in filtering and slowing down wind, especially in the central open areas. This produces generally calm and comfortable conditions, but limited natural ventilation causes some stagnation during hot periods.

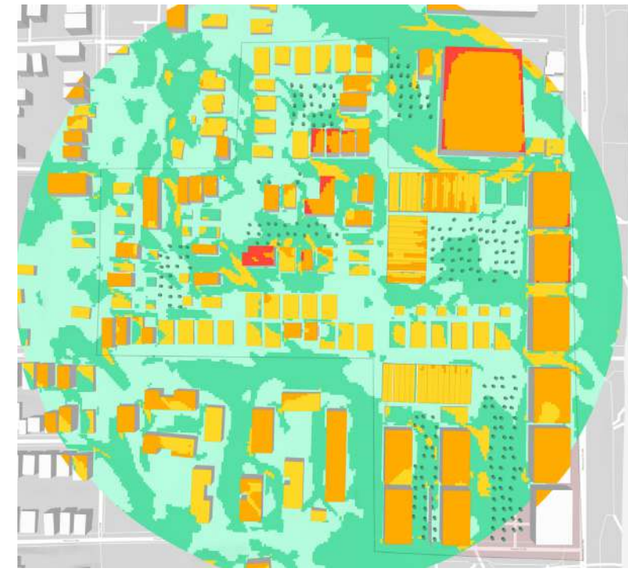


Proposal 1: 196 units proposed

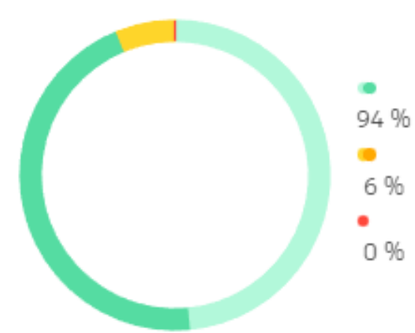


Added buildings create a more defined block structure, leading to slightly better wind distribution compared to the existing condition. Some areas show improved walkability-level wind speeds due to the mild channeling effect created by infill buildings.

Proposal 2: 263 units proposed



Higher density slightly increases wind channeling along new building edges, improving ventilation in several interior segments. However, the removal of more trees reduces natural buffering, creating small zones of higher wind exposure (yellow-orange areas) along the edges.



5.4 SOLAR PANEL ANALYSIS

Positive Outcomes:
1. Higher-density massing increases the number of solar-viable roofs.

2. Enables district-scale solar as a meaningful renewable energy strategy.

3. Improved panel placement area leads to greater energy resilience.

Negative or Neutral Outcomes:
1. Average solar energy per sq.ft remains unchanged—the benefit comes from more roof area, not better solar quality.

2. Reduced canopy may increase heat, requiring complementary green infrastructure.

Existing

Annual Solar Energy Potential
Total Surface Area: 54,756 sq.ft
Total Solar Energy: 8,110,000 kWh
Average Solar Energy: 150 kWh/sq.ft

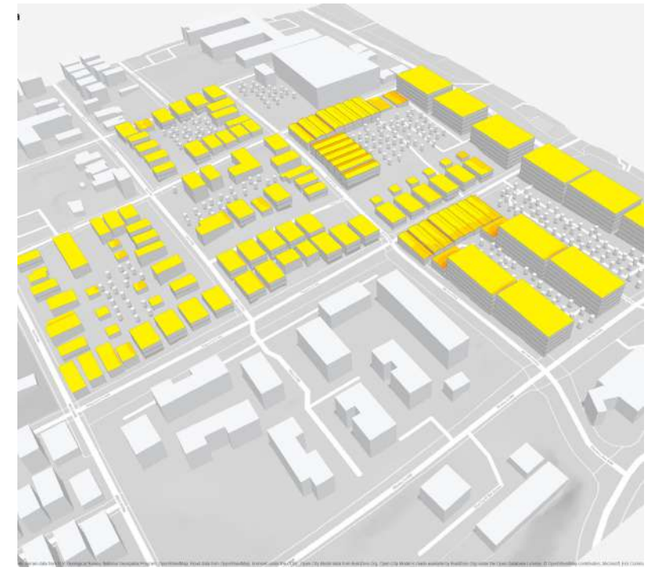
Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 24,640 sq.ft
Annual electrical output: 440,000 kWh

Proposal 1: Attached ADUs

Annual Solar Energy Potential
Total Surface Area: 225,100 sq.ft
Total Solar Energy: 33,100,000 kWh
Average Solar Energy: 150 kWh/sq.ft

Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 101,295 sq.ft
Annual electrical output: 1,800,000 kWh

Proposal 2: Dettached ADUs



Annual Solar Energy Potential
Total Surface Area: 273,479 sq.ft
Total Solar Energy: 40,100,000 kWh
Average Solar Energy: 150 kWh/sq.ft

Configure Solar Panels
Surface Coverage: 45%
Panel efficiency: 15%
Panel placement area: 123,066 sq.ft
Annual electrical output: 2,170,000 kWh

STORMWATER + RUNOFF ANALYSIS BASED ON ADDED ADUS AND MISSING-MIDDLE INFILL

Positive Environmental Effects (Counterbalancing Factors)

1. Less new asphalt per unit
TOD / reduced-parking standards mean fewer big surface lots than a conventional suburban pattern, so per-unit runoff from paving is lower.

2. Opportunity for district-scale systems
Continuous rows of missing-middle buildings create ideal conditions for shared cisterns, green streets, and connected bioswales instead of scattered, undersized yard solutions.

3. Reusing already disturbed land
Most infill occurs on vacant or underutilized parcels, avoiding conversion of new greenfield areas at the urban edge.

Negative Impacts That Must Be Addressed

1. Higher total runoff volumes
More roof area and some loss of pervious yards and tree canopy will increase total stormwater discharge from the neighborhood, even if per-unit impact is better than low-density growth.

2. Faster runoff and potential localized flooding
More continuous building and street edges can speed up overland flow, stressing older combined sewers or downstream culverts during cloudbursts.

3. Reduced soil infiltration + evapotranspiration
Tree removal and smaller rear yards mean less water stored in soils and vegetation, increasing both runoff and heat.

Missing-middle infill in Vine City will increase roof area and stormwater flows, but because it reduces new parking lots and concentrates growth near transit, its per-unit runoff and climate impact are lower than low-density expansion. If paired with rainwater harvesting, reflective/green roofs, permeable paving, and new street trees, the neighborhood can add 196–263 units while keeping stormwater and flood risk in check.

Recommended Mitigation Strategies

To align with SPI-19's goals for resilient, transit-oriented redevelopment, all new missing-middle units should be paired with on-site stormwater controls, for example:

1. **Mandatory rainwater harvesting on all new roofs**
Cisterns or rain barrels sized to first-flush events; reuse for irrigation and cooling.

2. High-albedo / green roofs
Reflective or vegetated roofs reduce roof temperatures, slow runoff, and improve PV efficiency.

3. Green streets + bioswales
Curb extensions, tree trenches, and planted swales along new and existing streets to capture and infiltrate runoff before it reaches the sewer.

4. Permeable paving for alleys, driveways, and limited parking
Maintains TOD parking reductions while turning the remaining paved areas into infiltration surfaces.

5. Tree-replacement ratios
For every tree removed for ADUs / missing-middle infill, plant at least one–two street or yard trees to restore interception and evapotranspiration.

6.4 WHY THIS NEIGHBORHOOD STRATEGY WORKS FOR REYNOLDSTOWN AND VINE CITY

Adds ±230 units through missing-middle forms

Aligned with R-5 + BeltLine Overlay code framework

Maintains scale + character of the neighborhood

Limited environmental impact: solar access remains intact

Transit-supportive growth model for future infill

REYNOLDSTOWN VS. VINE CITY – SIDE-BY-SIDE NEIGHBORHOOD STRATEGY TABLE

Together, Reynoldstown and Vine City demonstrate that Atlanta's existing zoning—BeltLine Overlay and SPI-19—can support climate-responsive, transit-oriented, missing-middle housing strategies that add over 480 total units without changing street character.

Reynoldstown benefits most from gentle, backyard-scale infill (ADUs, duplexes, quadplexes) that aligns with its built-out fabric and zoning constraints, while Vine City benefits from larger-scale missing-middle and TOD-supportive strategies that leverage vacant land, maximize solar potential, and enable resilient block reconstruction. Both neighborhoods require strong tree-canopy restoration and stormwater mitigation to balance heat and runoff impacts.

What This Comparison Shows

- The same missing-middle toolkit works differently depending on neighborhood type.
- Reynoldstown is a retrofit model; Vine City is a rebuilding model.
- Both increase density while working with zoning—not fighting it.
- Both show climate and solar impacts remain manageable.

Note: The Midtown neighborhood is excluded from this comparison because its development scale differs significantly and does not incorporate missing-middle, smaller-scale interventions.

Category	Reynoldstown Proposal	Vine City Proposal
Existing Conditions	Built-out historic neighborhood with stable housing stock; limited vacant land	Historically disinvested area with significant number of vacant + underutilized parcels
Policy Overlay	BeltLine Overlay District – supports increased density + mixed housing	SPI-19 Transit-Oriented District – promotes TOD, mixed-use, diverse housing options
Primary Goal	Gentle, incremental infill within existing fabric through ADUs + small multifamily	TOD-oriented missing-middle infill to reconnect housing density to MARTA
Housing Strategy	ADUs + duplexes/quadplexes distributed behind existing homes	ADUs + single-family infill + townhomes + small MF + mid-rise apartments
Total New Units Added	≈230 units (ADUs + small multifamily)	≈196–263 units (more diverse housing types)
Vacant Land Condition	Very limited vacant lots → relies on backyard infill	Abundant vacant parcels → allows block-scale redevelopment
Alignment With Code	Uses R-5: 2 units/lot, ADUs allowed, reduced parking via BeltLine overlay	Strong alignment with SPI-19: encourages infill, reduced parking, mixed-use + TOD
Urban Form Impact	Maintains original lot pattern + historic street grid	Rebuilds missing housing fabric while preserving block structure
Transit Benefit	ADUs add residents within walking distance to BeltLine + MARTA	High ridership uplift potential; most blocks within 0.5 miles of MARTA
Climate + Heat Outcomes	Slight increase in shading; minimal impact on heat stress; strong solar roof potential	Better shading from added structures; reduced asphalt area lowers heat-sink conditions
Affordability Impact	Adds gentle-density rental options with low displacement risk	Adds significant multi-family supply + missing-middle housing → broader affordability

7 MIDTOWN

7.1 SPI-16 framework
7.2 R5/Beltline Overlay constraints
7.3 Focus Area

SITE 3 - MIDTOWN NEIGHBORHOOD

7.1 TRANSIT-CONNECTED, PARTIALLY HISTORIC URBAN CORE

SPI-16 SA1 (Midtown Commercial / Mixed-Use Context)

SPI-16 is a flexible, mixed-use zoning regime designed to shape Midtown's growth with a balanced mix of uses, walkability, transit access, and mixed residential and commercial development.

In SA1 (commercial / mixed-use subarea), higher densities and mixed-use forms are explicitly supported — which makes it a natural zone for missing-middle and multi-family infill.

SPI-16's objective: support "growth and high-caliber development", improve walkability, and maintain a variety of uses including residential + commercial + institutional, consistent with an urban core identity.

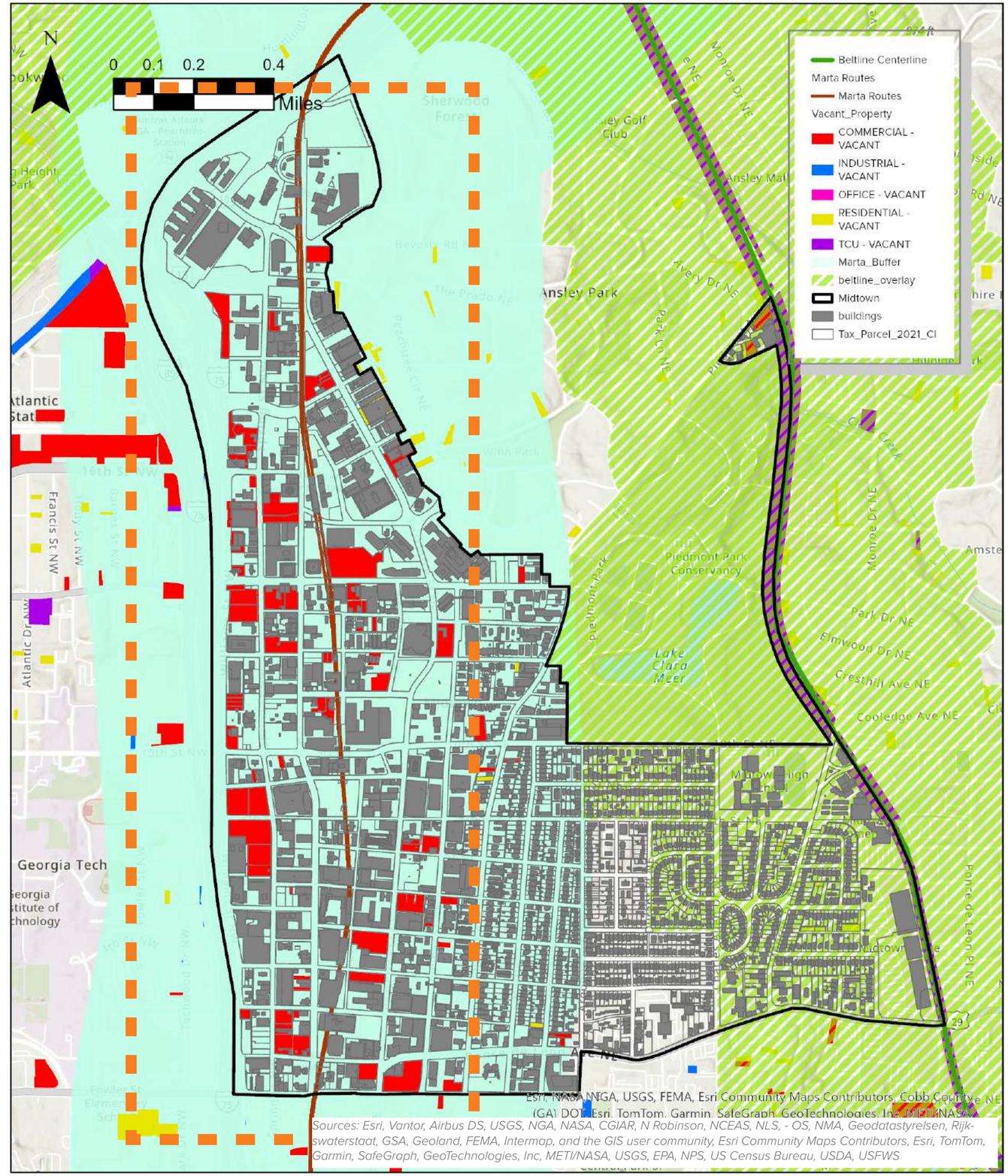
This means the proposed mixed-use + multifamily infill aligns with the intent of SPI-16: densification, mixed-use, and transit-oriented growth — making it easier to justify new units under the regulatory framework.

Implication

The missing-middle + mixed-use infill fits well here; zoning encourages increased density and a diversity of housing forms.

Because many parcels in Midtown fall under SPI-16 SA1, the mixed-use + missing-middle infill has strong policy backing. The zoning's intention supports higher density, mixed-use, and a variety of housing types.

Because SPI-16 emphasizes walkability, mixed-use, and pedestrian-friendly design, the infill should include ground-level retail/amenities or mixed-use buildings rather than only residential blocks — this strengthens alignment with the district's vision.



SITE 3 - MIDTOWN NEIGHBORHOOD

7.2 TRANSIT-CONNECTED, PARTIALLY HISTORIC URBAN CORE

R-5 / BeltLine Overlay (for R-5/BL parcels)

Under R-5, lot coverage is capped at 55% of net lot area.

For two-family dwellings (non-duplex + ADU), the secondary dwelling unit is limited to 750 ft^2 max

The BeltLine Overlay does not change the underlying R-5 use permissions — it overlays design and public-realm requirements (sidewalks, street-trees, pedestrian-oriented frontage, landscaping, buffering, etc.)

The Overlay is intended to steer growth toward walkable, transit-oriented, mixed-use corridors, preserve public realm quality (trees, sidewalks, shading, green space), and discourage car-dependent sprawl.

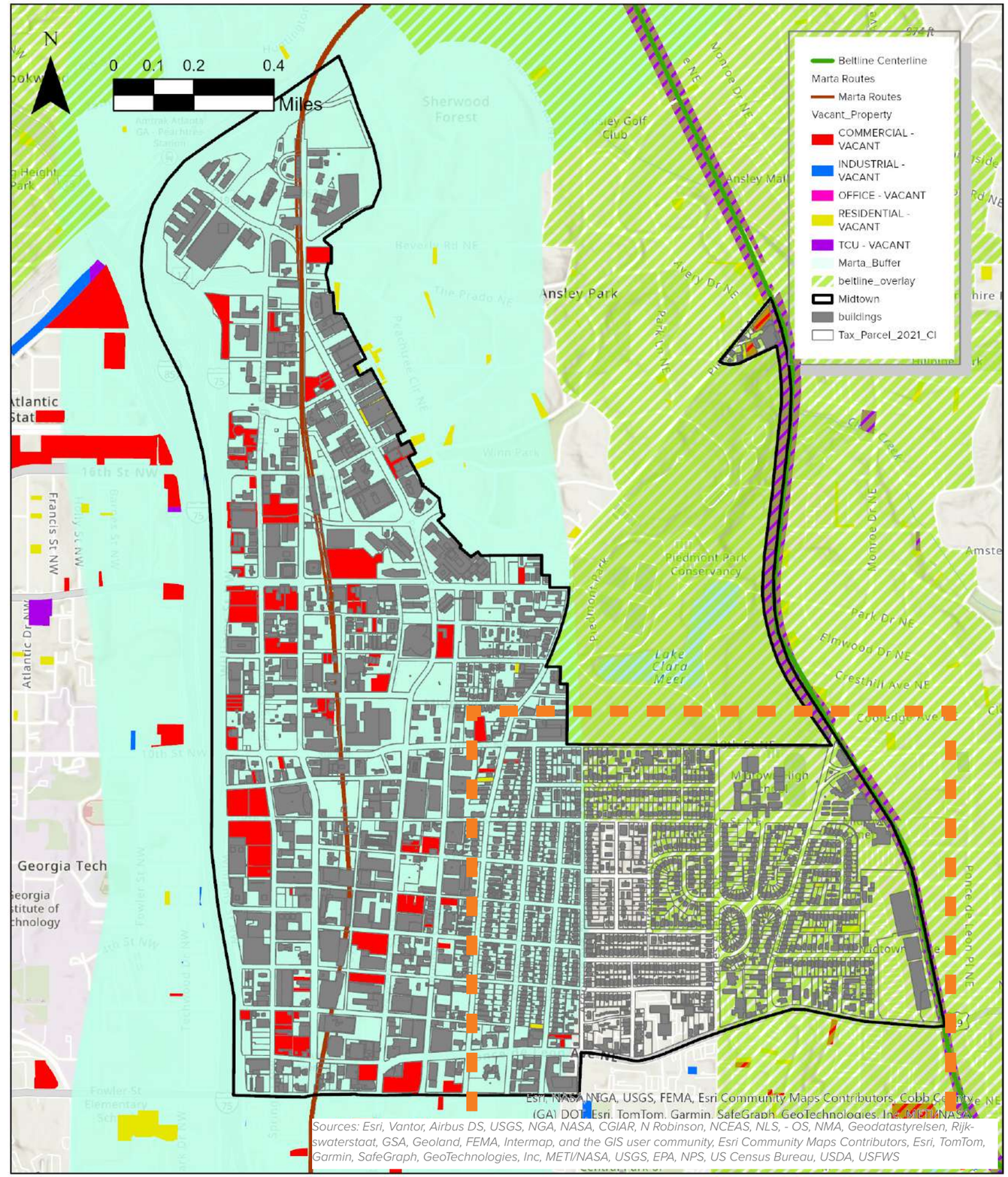
Implication

For parcels under R-5/BL — any added density must still comply with the coverage, unit-size, and design constraints. Significant added density (like multifamily buildings) might require rezoning, but modest duplex/ADU infill remains feasible.

Development is limited to modest density increases (max 2 dwelling units per lot, or small duplex/ADU combos) — large multifamily will likely require rezoning.

But the overlay's public realm requirements (sidewalks, trees, green spaces, pedestrian orientation) actually support the design goals of sustainable, walkable, transit-oriented neighborhoods.

The mix of SPI-16 parcels + R-5/BL parcels means the proposal likely needs a parcel-by-parcel approach: multifamily where SPI-16 allows it; duplex/ADU infill where R-5 applies.



CRITICAL CONSTRAINTS & RISKS TO WATCH

On R-5/BL lots: infill must honor 55% lot coverage and unit-size ceilings — overbuilding will trigger requirement for rezoning or special permits.

Larger multifamily projects (esp. many units) may be incompatible with underlying R-5 and would need rezoning to a higher residential or mixed-use district (e.g. MR, MRC, or SPI-16).

For R-5/BL parcels, the design standards under the Overlay (sidewalk, landscaping, buffering) may complicate multifamily infill — setbacks and open space requirements could limit unit yield.

Transition between different zoning regimes (SPI-16 vs R-5/BL) within your study area may create inconsistent density, which could challenge coherence of a unified “missing middle” strategy across Midtown.

STRATEGIC RECOMMENDATIONS

Use SPI-16 SA1 parcels first for taller/multifamily infill — use R-5/BL parcels for duplex + ADU infill — this respects existing zoning while maximizing density where allowed.

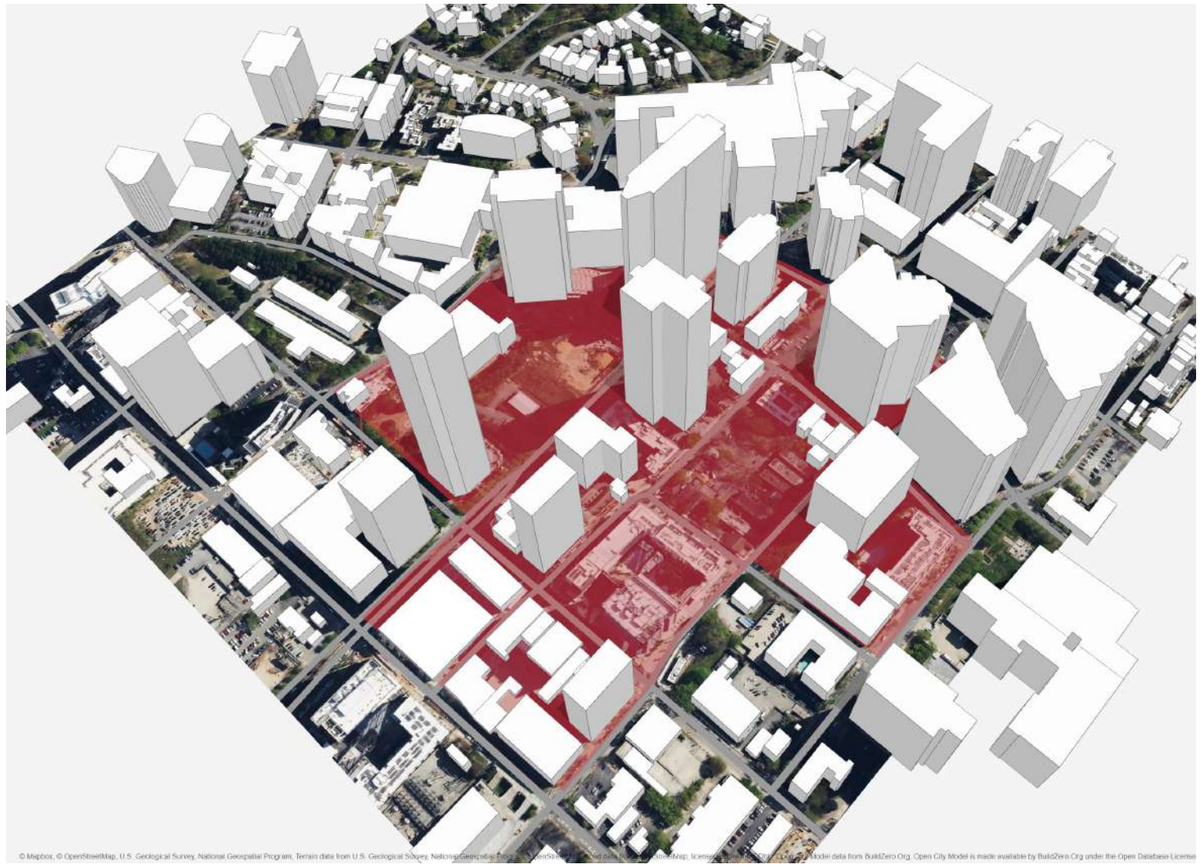
In SPI-16 zones, include mixed-use ground floors, pedestrian-oriented design, and minimal parking to align with overlay and SPI-16 goals.

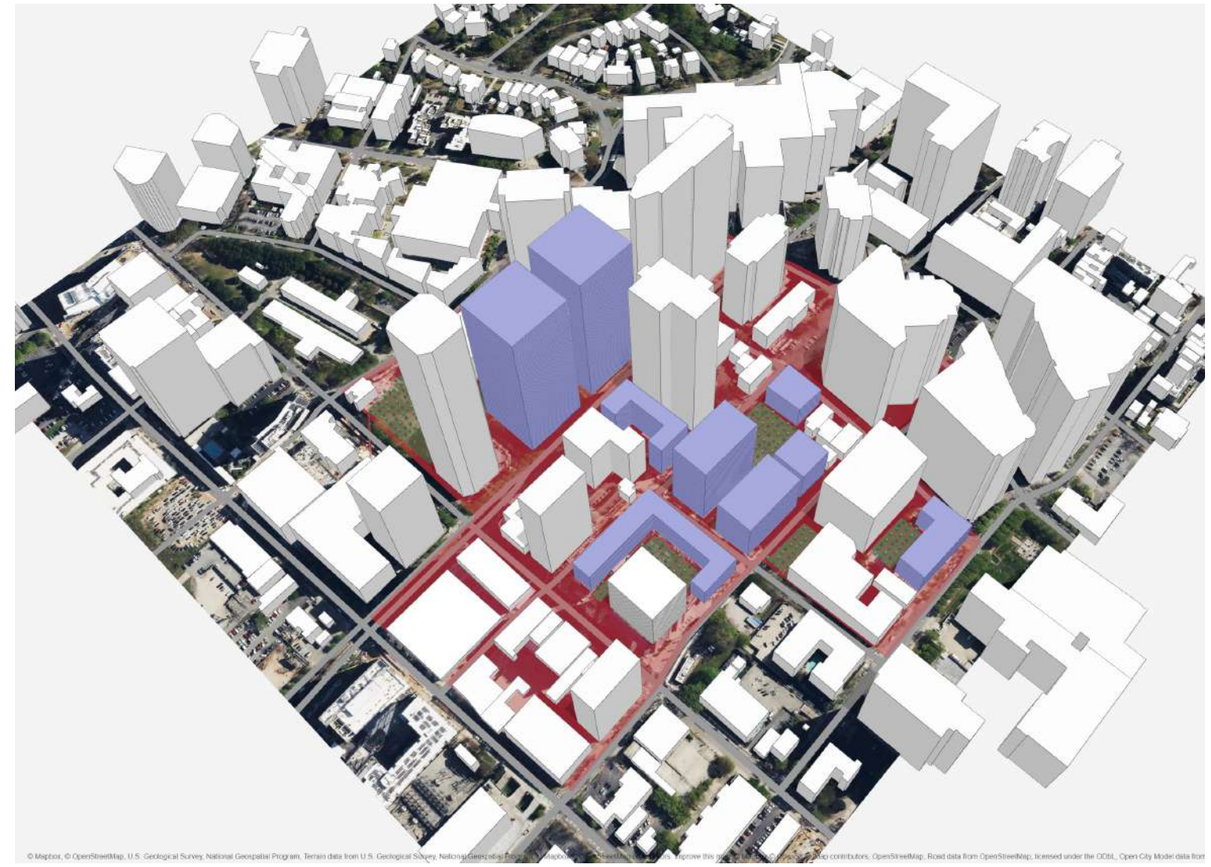
Frame the proposal as responding to citywide needs: more housing supply, transit-oriented growth, climate-migration readiness, and walkable neighborhood revitalization — all consistent with SPI-16 intent.

Where exceeding R-5 limits, show rezoning justification: increasing housing supply, adding affordability, and fulfilling city’s BeltLine + Midtown growth goals.

Emphasize benefits of missing-middle (walkability, mixed housing types, incremental growth) rather than “large scale redevelopment,” especially on R-5/BL lots.

7.3 FOCUS AREA FOR MIDTOWN





The Midtown district already demonstrates successful high-density, transit-oriented development and is one of Atlanta's most walkable, mixed-use neighborhoods. Its access to MARTA, diverse building typologies, and large number of underutilized and vacant parcels create significant opportunity for future infill. The blue massing highlights strategic sites where additional density, housing, and mixed-use development can continue to strengthen Midtown's role as a regional model for sustainable, transit-connected growth.

5.4 SUN HOURS ANALYSIS December, 21 8:00 to 16:00

Positive:

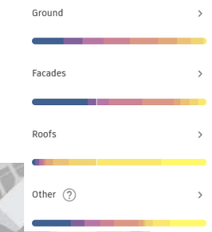
- Strong rooftop solar potential across most buildings
- Maintains good daylight access for upper façades
- Opportunities for passive solar gain on taller rooftops

Negative:

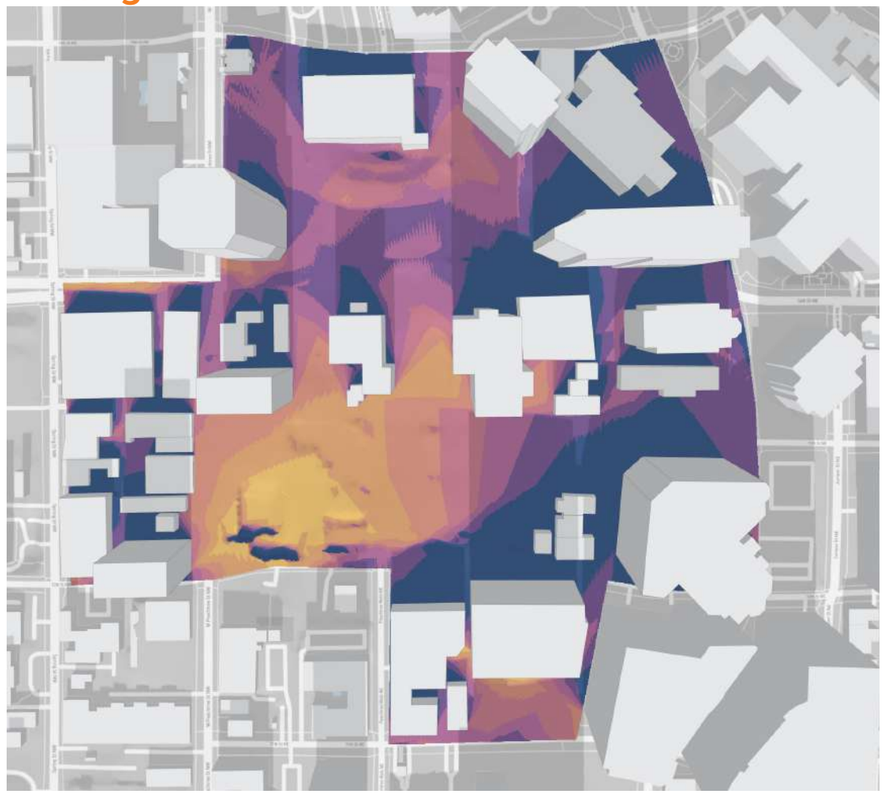
- Significant Reduction in Ground-Level Sunlight
- Lower winter comfort at pedestrian level
- Increased shading between buildings
- Reduced winter daylight for courtyards and open spaces

Over all Insight:

- The existing Midtown condition allows moderate ground and façade sunlight but leaves several parcels underutilized.
- The proposed massing introduces substantial density, resulting in deeper shadows at street level while maintaining high rooftop solar potential.
- Rooftops continue to perform well for solar access, but pedestrian areas experience reduced winter daylight, affecting microclimate.



Existing



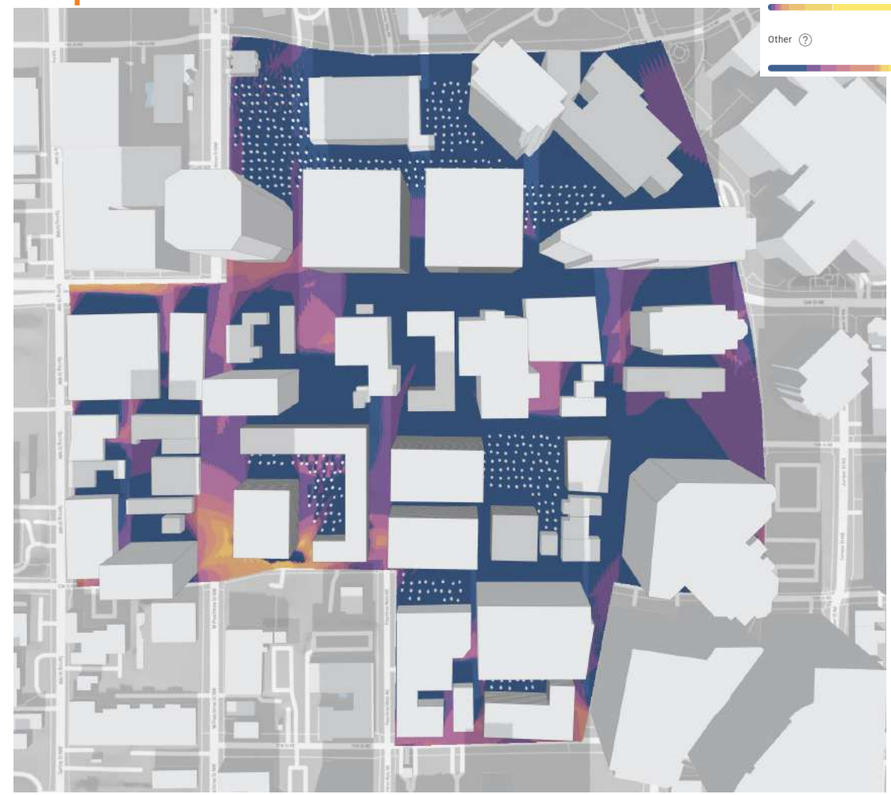
30% ground receives direct sun for at least 3 hrs.

38% facades receive direct sun for at least 3 hrs.

100% roofs receive direct sun for at least 3 hrs.

Large open areas and lower building heights allow winter sunlight to reach many ground surfaces. Sun exposure supports comfortable winter microclimates and reduces cold pockets. High rooftop exposure maximizes solar energy potential. However, underutilized parcels reduce overall urban efficiency and density potential.

Proposed



5% ground receives direct sun for at least 3 hrs.

30% facades receive direct sun for at least 3 hrs.

88% roofs receive direct sun for at least 3 hrs.

Façade sunlight decreases as towers cluster closer together. Rooftops, positioned above most shading, maintain strong solar performance. Increased shading in winter may lower pedestrian comfort, narrow daylight corridors, and influence vegetation growth, though the massing supports strong rooftop solar feasibility and efficient land use.

5.4 MICRO CLIMATE ANALYSIS July 21, 2 PM (Peak Summer Heat)

Positive:

- Increased shading helps reduce extreme heat at the pedestrian level
- More comfortable outdoor conditions in select streets and courtyards
- Opportunities for cooler microclimates in shaded public realms

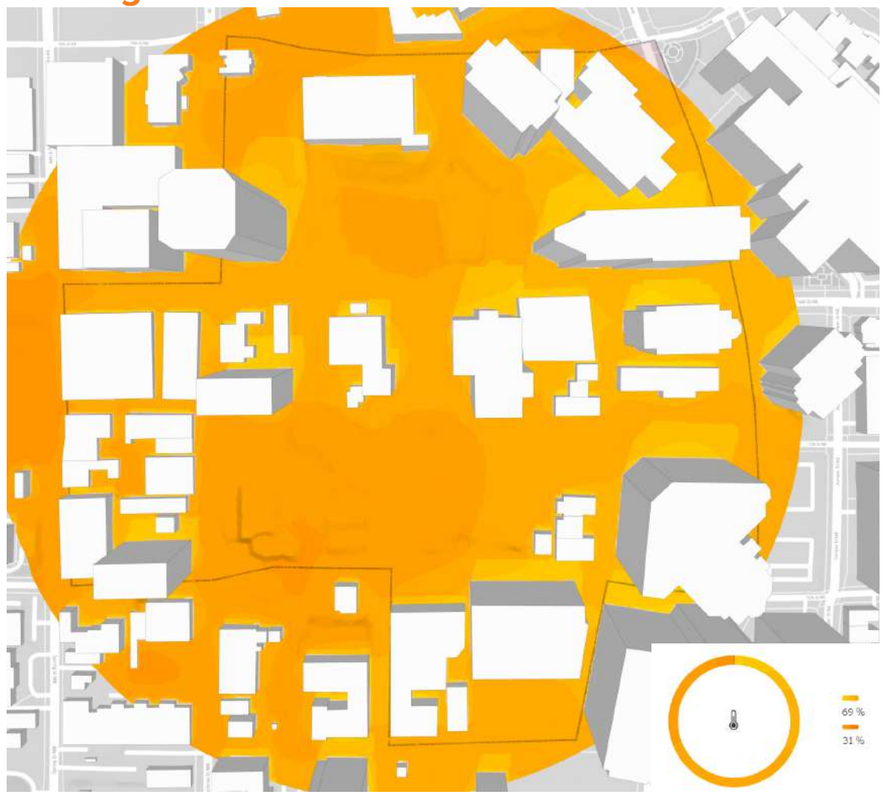
Negative:

- **Large portions of the district still experience strong heat stress**
- **Dense building massing limits airflow in some areas**
- **Heat retention in paved surfaces contributes to elevated temperatures**
- **Potential discomfort during peak summer hour**

Over all Insight:

While still predominantly hot at peak hours, the proposal demonstrates improved microclimate performance through increased shadow coverage and redistributed heat loads.

Existing



90 % Strong heat stress

10 % Moderate heat stress

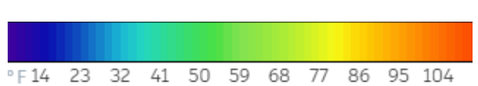
Limited shading and broad exposure to direct sunlight create high surface temperatures across most of the district. Hardscape areas accumulate heat throughout the day, contributing to uncomfortable pedestrian environments and localized heat-island effects.

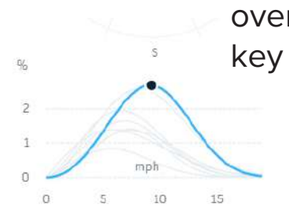
Proposed

79 % Strong heat stress

21 % Moderate heat stress

Additional building massing increases shade coverage across several streets and open spaces, relieving portions of the site from the most intense heat. While strong heat stress remains widespread during peak summer conditions, the shift toward more moderate thermal zones improves overall walkability and reduces direct solar exposure on key pedestrian routes.





8

FUTURE OF THE PROJECT

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A. “Where This Project Goes Next”

Develop policy recommendations for zoning reform
Test additional missing-middle types (co-living, courtyard apts)
Expand solar/heat/wind modeling + energy performance
Apply toolkit to more neighborhoods
Integrate affordability incentives + inclusionary zoning

B. “Scalability + Replication Framework”

This method works citywide, not just in the pilot sites
Missing-middle is a modular system
Can apply the same matrix to:
transit corridors
historic districts
vacant parcel clusters

C. “What This Project Shows About Climate-Migration Readiness”

Atlanta doesn’t need new mega-developments
It needs policy-aligned infill where zoning already allows it
The city’s current code structure can already handle growth
Density + affordability can be added with low impact

D. Action Roadmap Slide

Phase 1: zoning + overlay adjustments
Phase 2: demonstration blocks
Phase 3: microclimate + infrastructure upgrade
Phase 4: citywide application