

# Revitalizing Johnson City

## Addressing the Housing Crisis Through Campus-Inspired Urban Design and 3D-Modeling



PRESENTER:

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### HOUSING CRISIS TODAY:

- Housing prices are increasing at double the rate of income growth
- Current home price ~6x the median income
- The median mortgage payment is ~2x since 2020
- 60% of Americans are living paycheck-to-paycheck
- 50% of tenants can't afford rent
- Half of young adults live with their parents

### SYSTEMATIC LEGISLATION

- *Village of Euclid v. Ambler Realty Co. (1926)*: racist precedent establishing single-family zoning to deter minority families
  - Today,  $\frac{3}{4}$  of housing zoning in American cities is for single-family homes
- *Standard State Zoning Enabling Act (1920s)*: perpetuated restrictive zoning laws, catalyzing de facto segregation
- *National Housing Act (1934)*: codified redlining, denying Black/minority neighborhoods loans
- *GI Bill (1944)*: provided white veterans with home loans, and often neglected Black veteran benefits

Using urban design elements from **college campuses**, we can plan **sustainable, community-oriented** designs to **revitalize struggling urban environments**.

### REFERENCES



### URBAN PLANNING DERIVED FROM CAMPUS

*Include integral elements to revitalize struggling downtowns:*

1. *Human-oriented development*
  - Walkability, adjacency to amenities, local businesses
2. *Sustainability*
  - Resource efficiency, land maximization, parks
3. *Smart growth*
  - Green areas, recreation, community-involvement
4. *Transit-oriented development*
  - Increase public transit, decrease automobile dependency
5. *Mixed-use development*
  - Maximize land use: promote local retail + provide residential housing

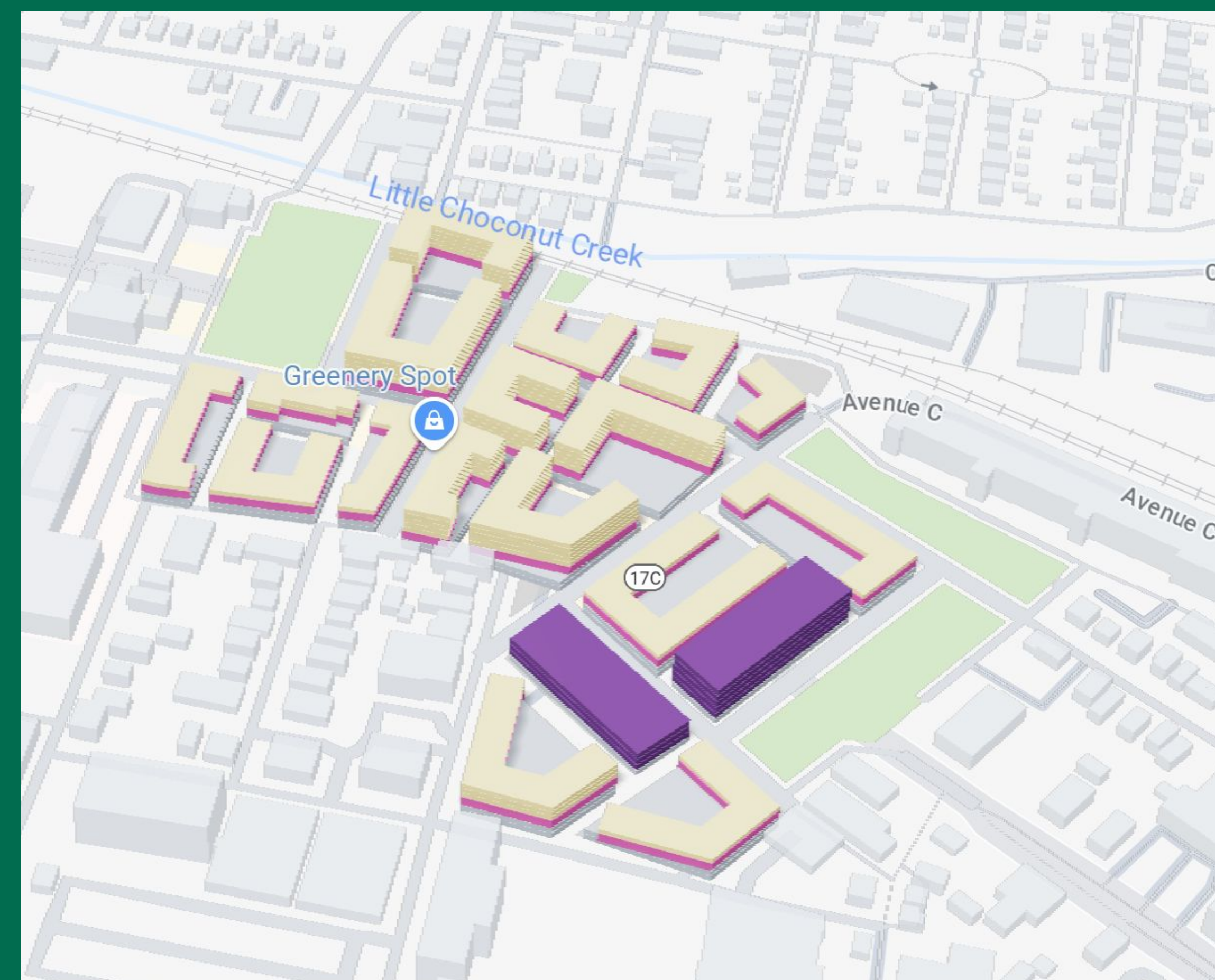
### DELVE

*Generative design features within Google Earth to work on early-stage design and solar planning*

#### - **Limitations:**

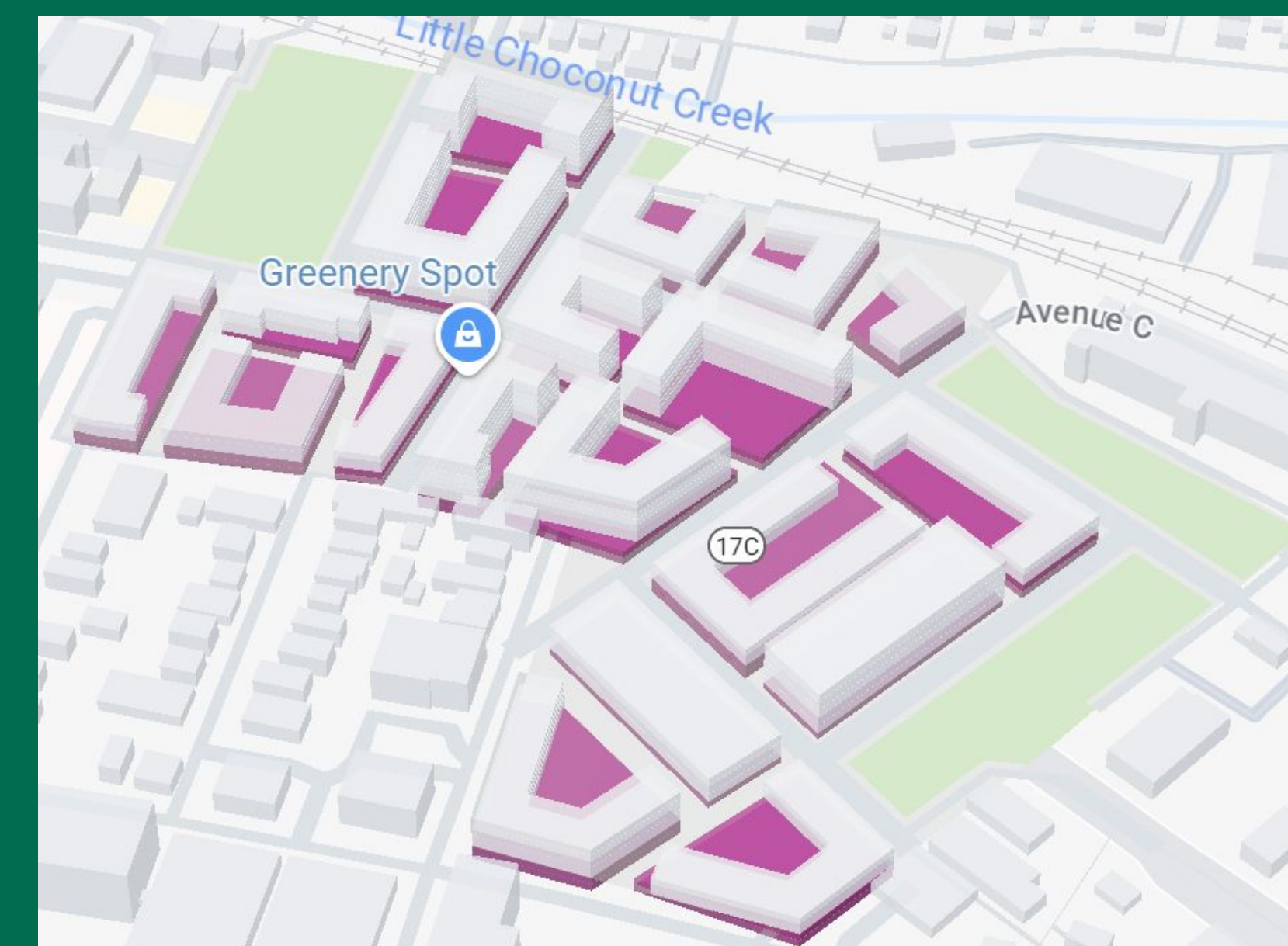
- Completely utopian model; must usurp existing zoning laws and regulations
- Methodology is used only to demonstrate that urban planning should not be rushed haphazardly and that there are programs available to illustrate the long-term effects of certain development plans.

### BUILDING TYPES



Residential Retail Community

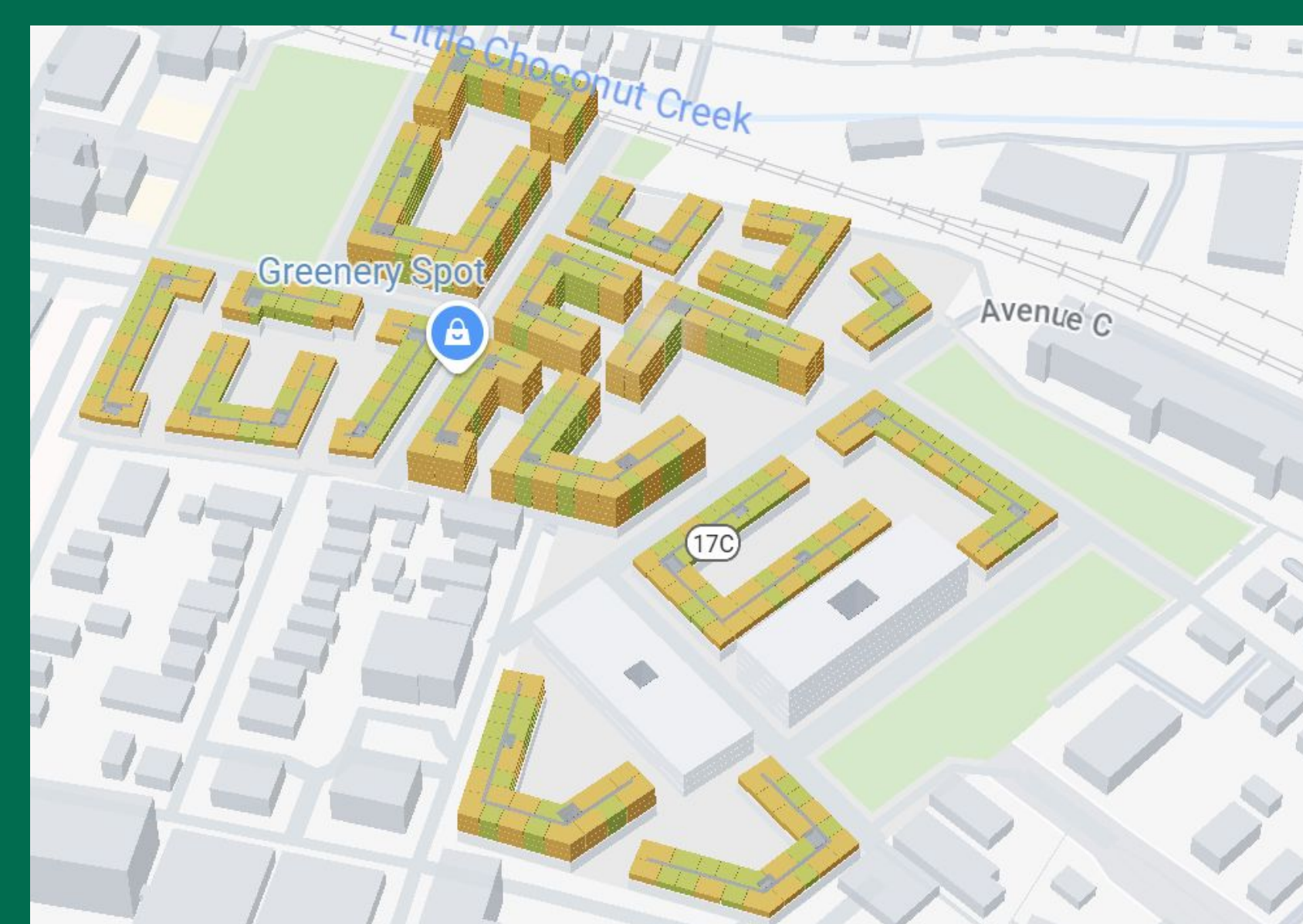
### PARKING



Prioritize **underground parking** to maximize aboveground land-use

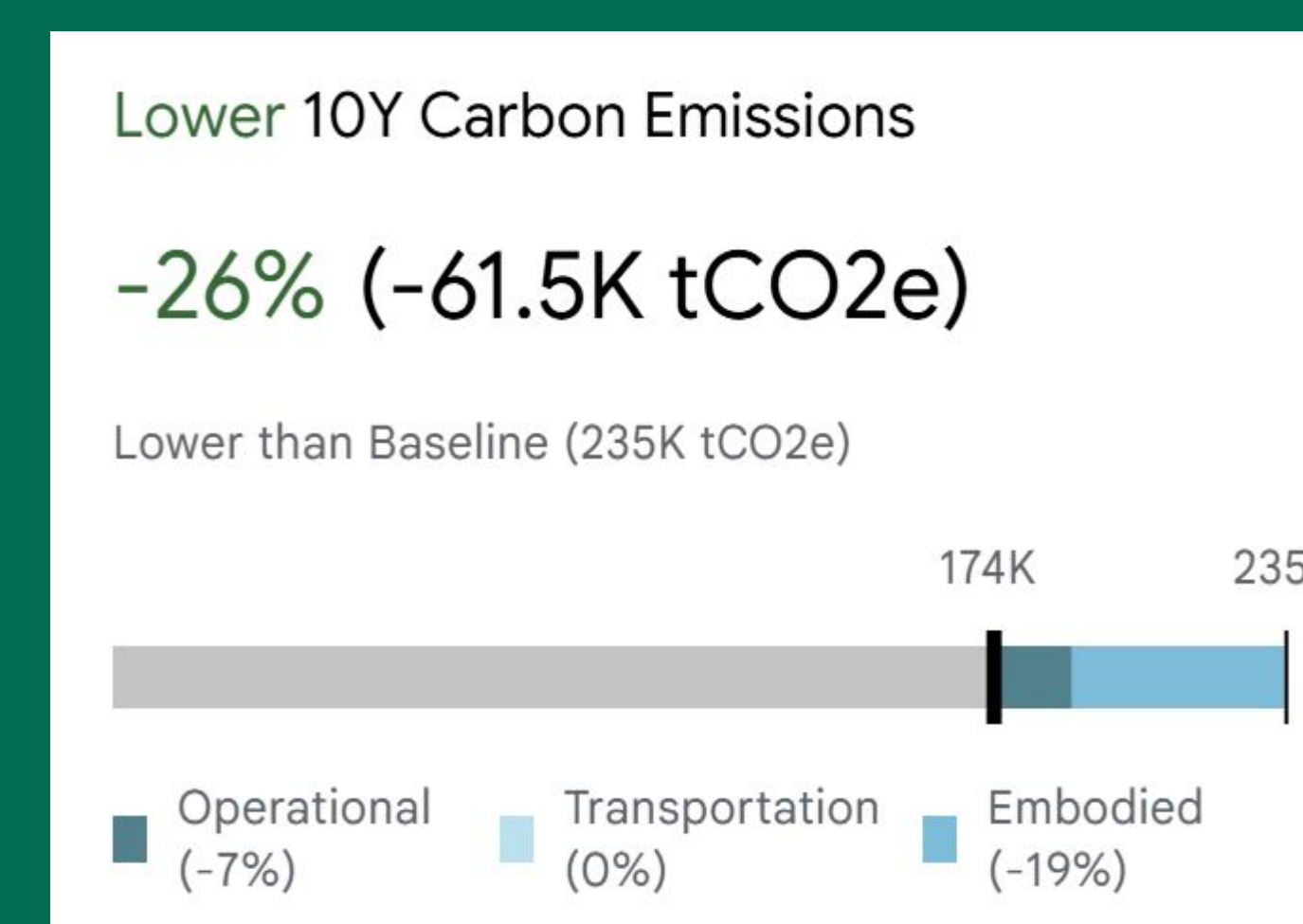
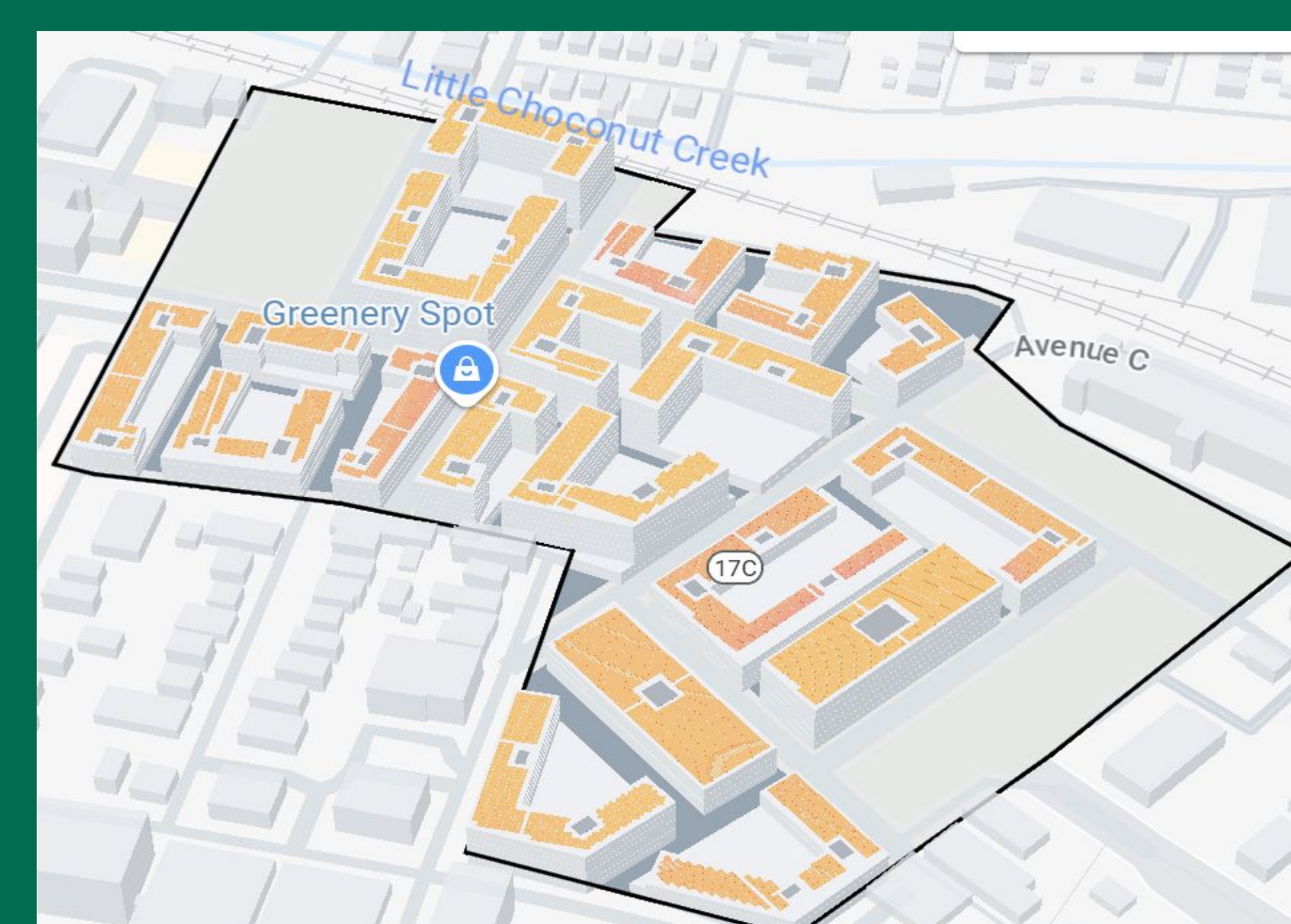
- 19 parking facilities
- 1.01m sq ft parking gross area
- 3.12k parking spaces

### APARTMENT TYPE



- Residential GFA: 874k sq ft
- Residential units: 1.03k
- Population (units): 1.54k ppl

### SOLAR ENERGY + CARBON REDUCTION



- Solar Energy Generated: 5.67k MWh/yr
- Panel count: 9.68k panels
- Solar Operational Emissions Change: 362tCO<sub>2</sub>e/yr
- Annual Energy Offset: 19.87%