

Green Ordinance Innovations

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Pennsylvania Shade Tree Law of 1700

“every owner ...shall plant **one or more tree, pines, un-bearing mulberries, water poplars, limes**

before the door of his, or her or their house, and preserve the same to the end

that the said town may be well **shaded from the violence of the sun** in the heat of the summer and there by be **rendered more healthy.”**



Engraved by J. B. Schreyer

Pennsylvania Shade Tree Law of 1700

What to plant

“every owner ...shall plant **one or more tree, pines, un-bearing mulberries, water poplars, limes**

Where to plant

before the door of his, or her or their house, and preserve the same to the end

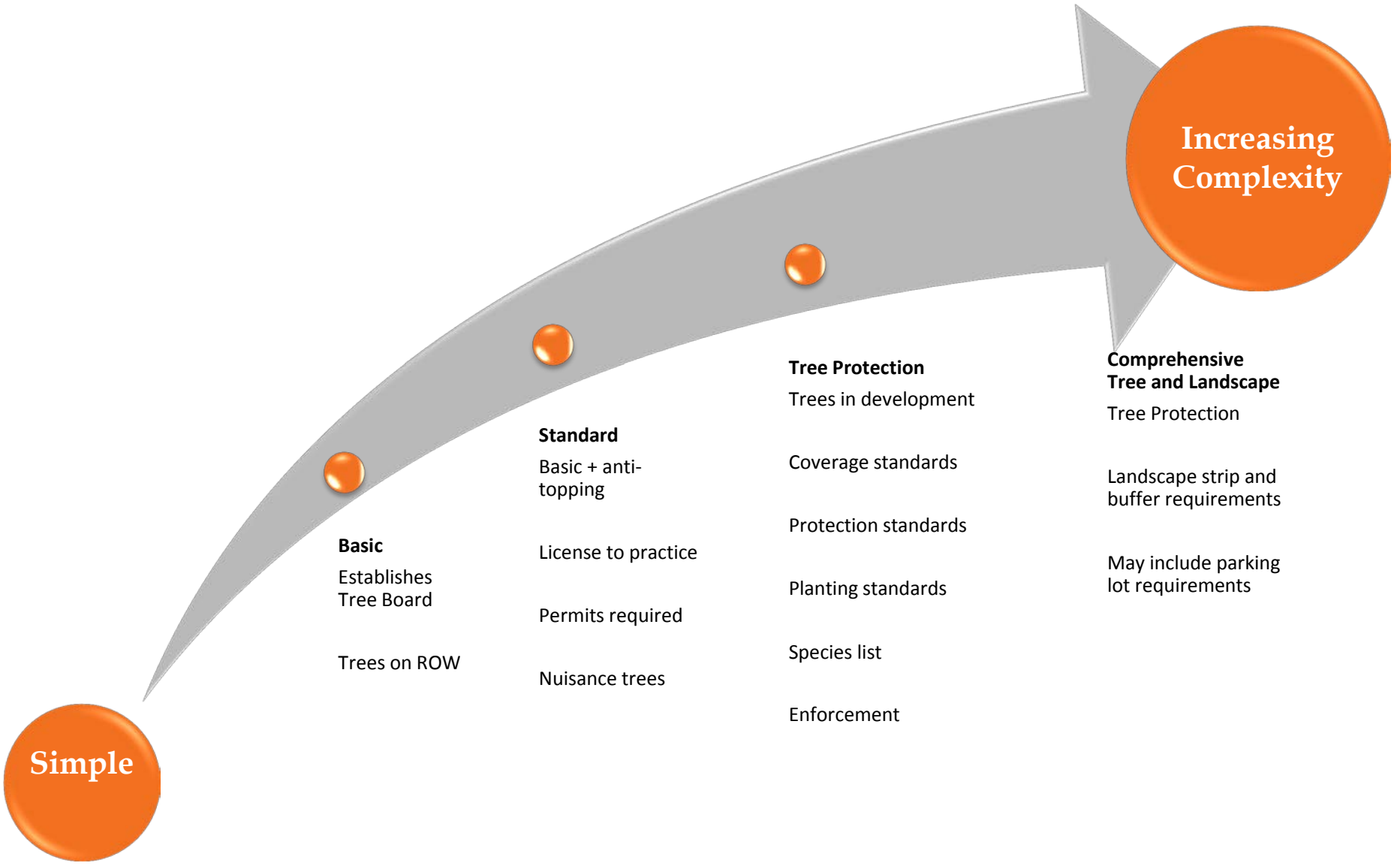
Why to plant

that the said town may be well **shaded from the violence of the sun** in the heat of the summer and there by be **rendered more healthy.”**



1895- Savannah drafts ordinance creating Park and Tree Commission

Tree Ordinance Types



Milestones in tree ordinance development

- 1976- Arbor Day Foundation established Tree City USA- 1976
- 1985- Fulton County ordinance requires minimum tree coverage for ecological benefits
- 1980-90- Rate of ordinance adoption increases
- Late 1990's – Canopy based ordinances emerge

What are some likely trends with tree ordinances?

- Unified ordinances for landscape and trees
- More science based
- More flexible- no one size fits all approach
- Transcend jurisdictional boundaries and departmental stove pipes
- Utilize visualization technologies



Urban Forestry instead of tree ordinance

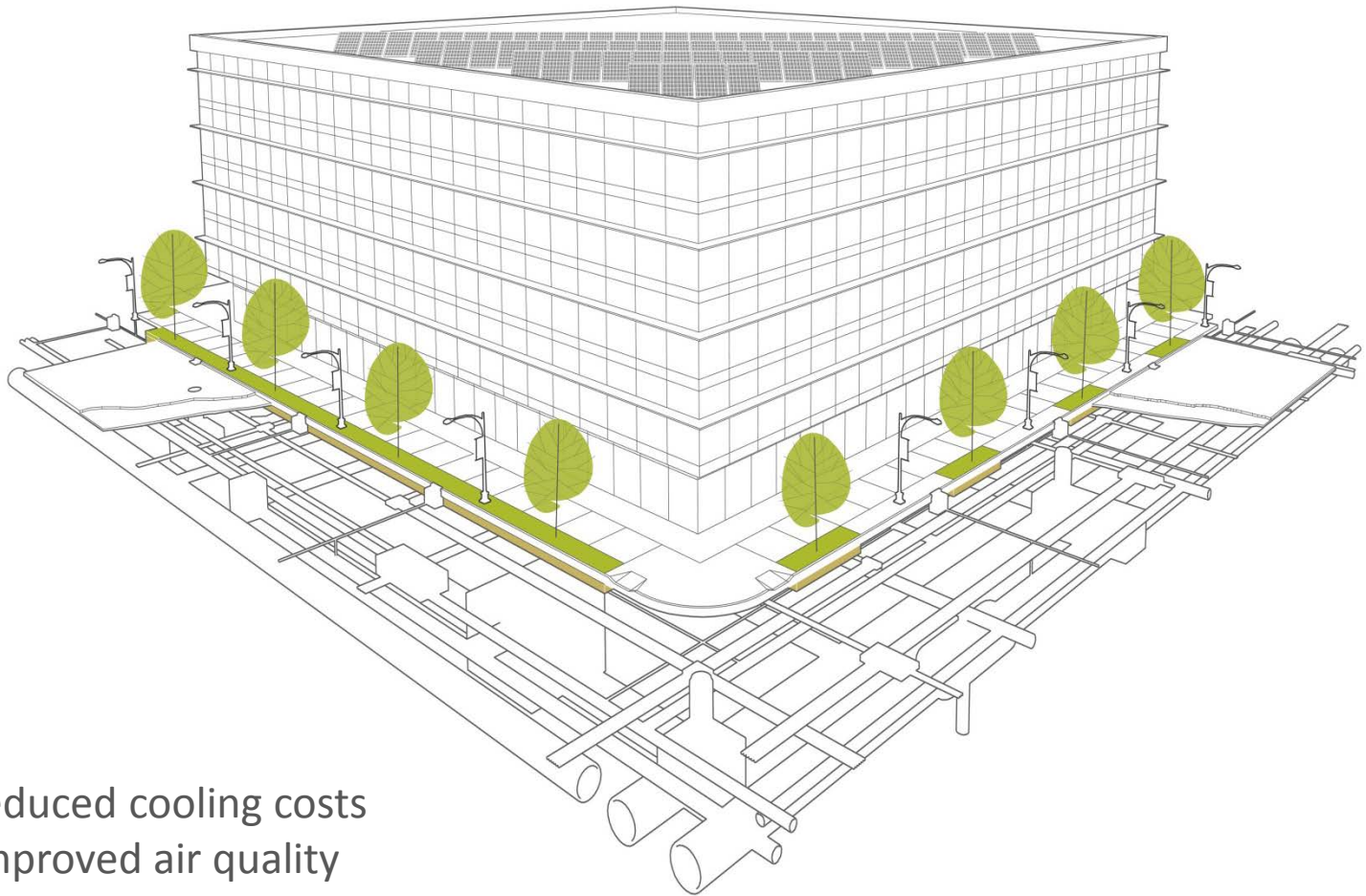
More about the urban forest as a whole rather than individual trees

Fort Worth Texas Landscaping Buffers and Urban Forestry

“The purpose of this ordinance is to limit the removal of tree canopy, set specific canopy standards per zoning district or lot use and to develop a multi-aged urban forest to provide for more orderly development of the city.”

Athens-Clarke County Community Tree Management

“...the purpose of this chapter is to sustain and enhance the functions and benefits of trees and the community forest for the citizens of Athens-Clarke County and to utilize trees for their value and positive effects on air quality, water quality, stormwater runoff, local climate, environmental health...”

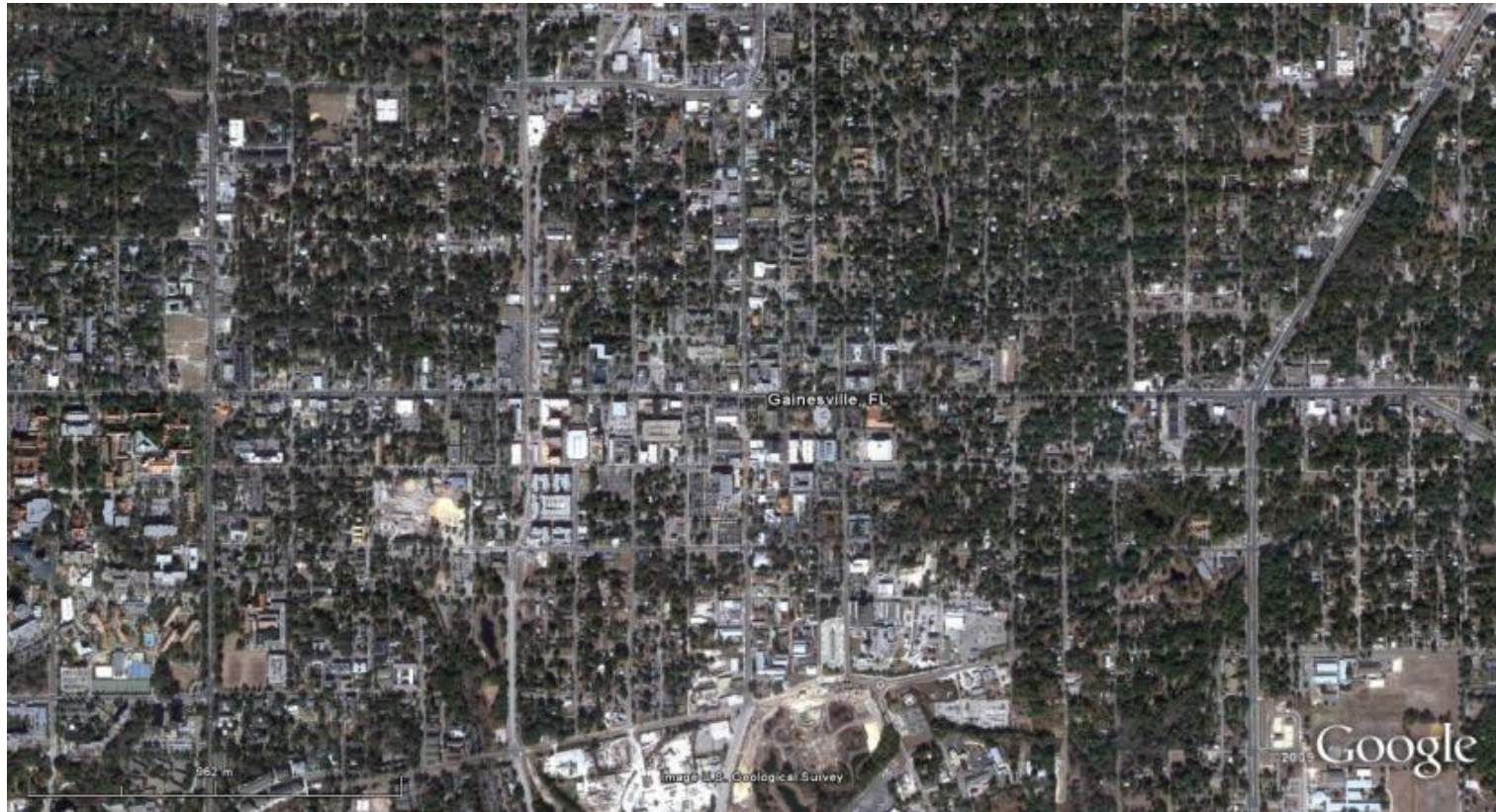


- reduced cooling costs
- improved air quality
- improved water quality
- carbon sequestration

Trees as **Green Infrastructure**

Canopy replacement process

- focuses on the ecological services of trees
- provides goal of minimum canopy cover
- simple way to quantify benefits



Athens- Clarke County GA

- overall goal of 45% canopy coverage
- tree canopy cover requirements vary by zoning district
- most districts require minimum conservation area (with flexibility)
- landmark trees credited two times actual canopy cover

Decatur GA (proposed)

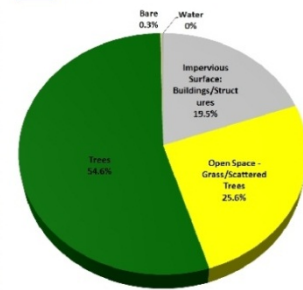
- goal of 45% canopy coverage single family residential
- goal of 35% canopy coverage all other zones
- study commissioned to evaluate baseline canopy cover

CITY OF DECATUR GEORGIA 2005

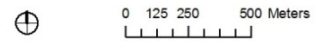
CANOPY ASSESSMENT

LAND COVER CATEGORIES 5 METERS PIXEL

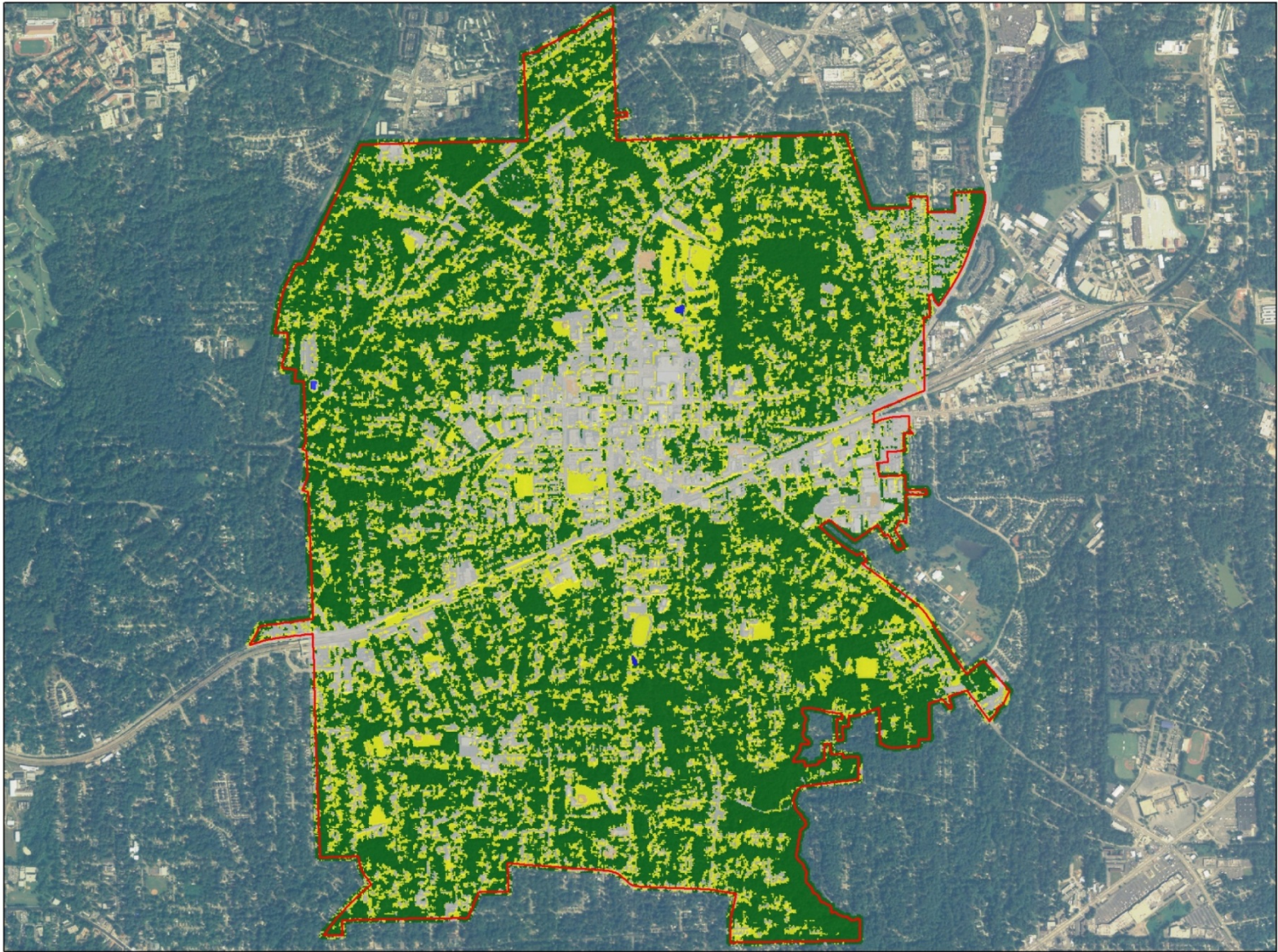
- Decatur City Boundary
- Bareland
- Impervious Surfaces
- Open Spaces/grass
- Trees
- Water



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GLOBAL system CENTER

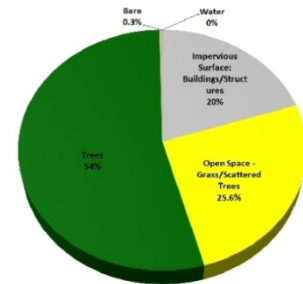


CITY OF DECATUR GEORGIA 2010

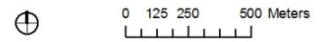
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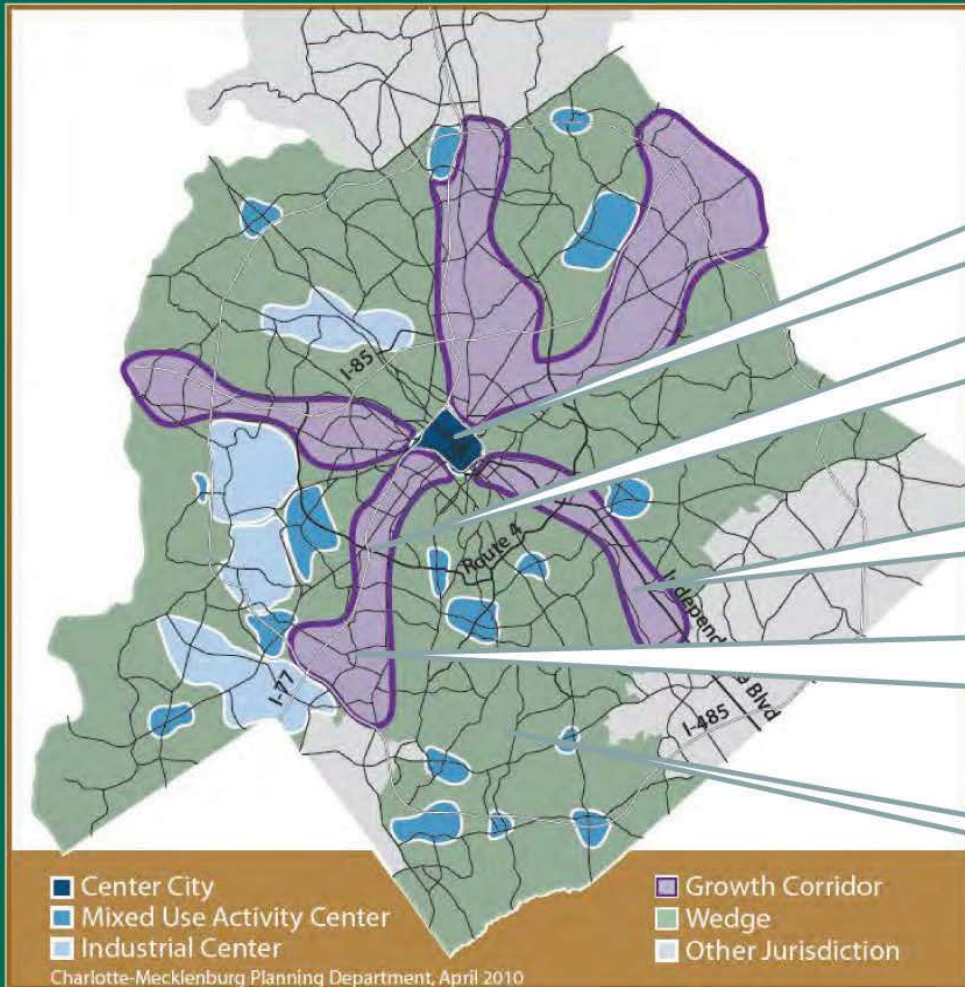
GLOBAL system CENTER

Charlotte NC tree ordinance

- different standards for urban, suburban commercial, and single family districts
- 15% tree conservation area for commercial
10% tree conservation area for single family
- no existing trees then replant 36 trees per acre in commercial areas
- flexibility in urban areas for tree save
 - green roofs
 - replanting 36 trees per acre
 - off site mitigation
 - payment in lieu



Options and Exemptions for Tree Save Requirements



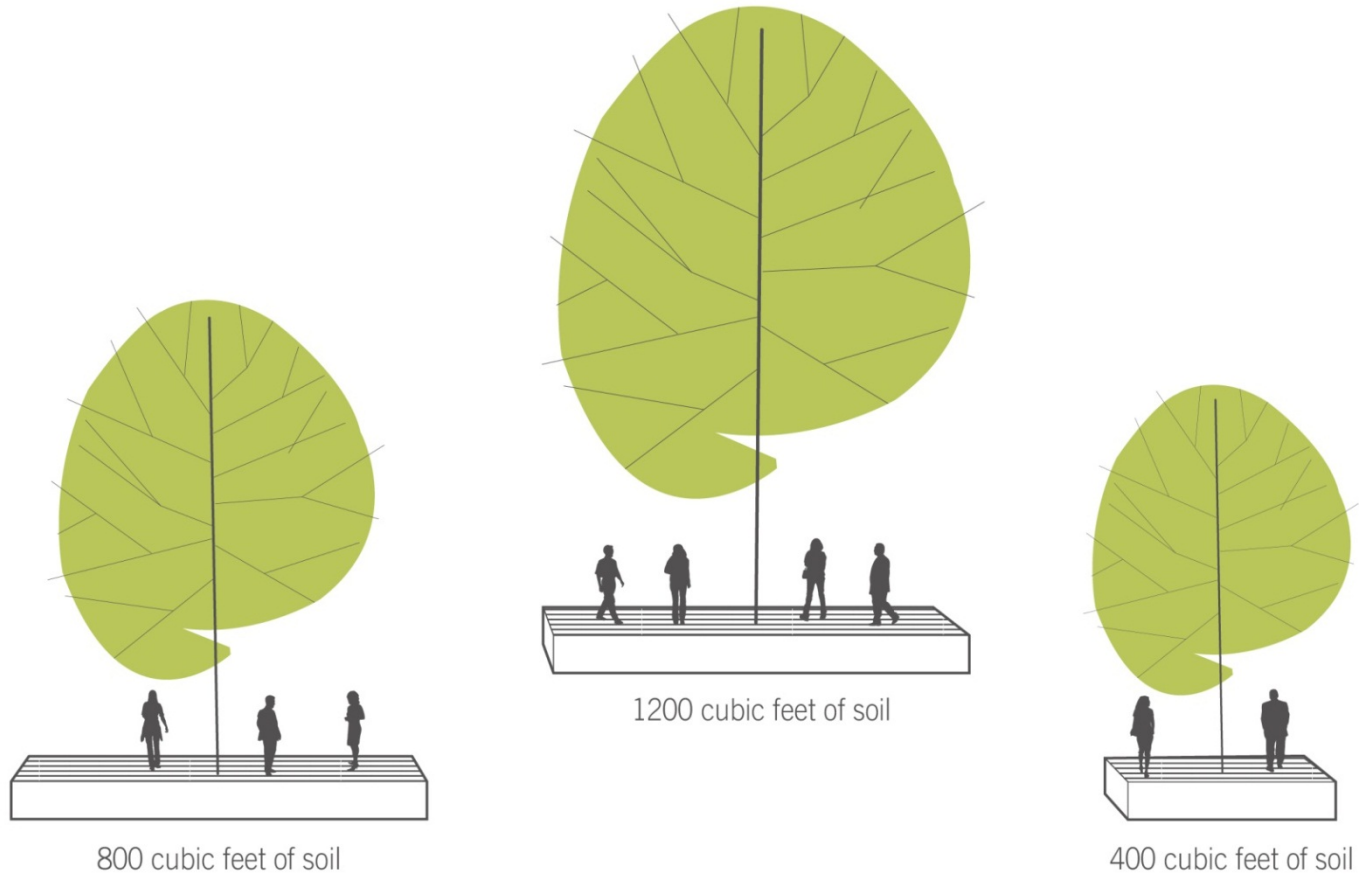
No tree save – within I-277 for UMUD and UMUD-O

No tree save - TOD, MUDD, and UMUD in Transit station areas

Corridors outside of transit station areas have mitigation options

Transit station areas, Mixed Use Centers, NS, and Industrial have mitigation options

15% Tree Save - Wedges



Urban Tree Issue. **Tree Size + Soil Volume.**

There is a relationship between the amount of soil provided and the size and health of trees.



Trees planted in Washington DC at the same time at the same size.

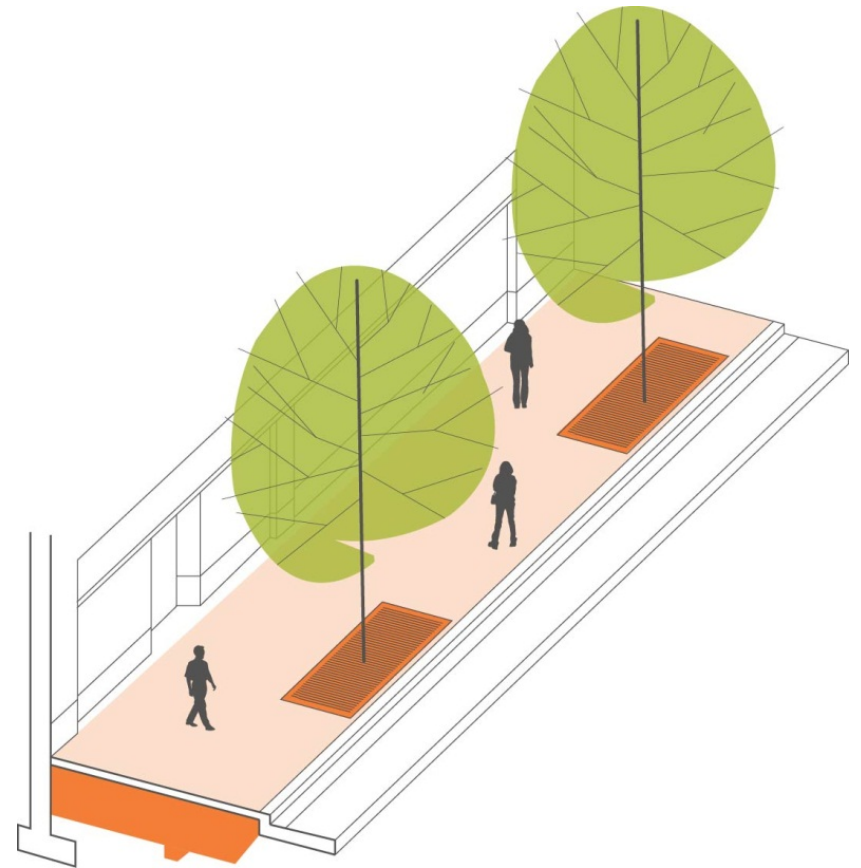
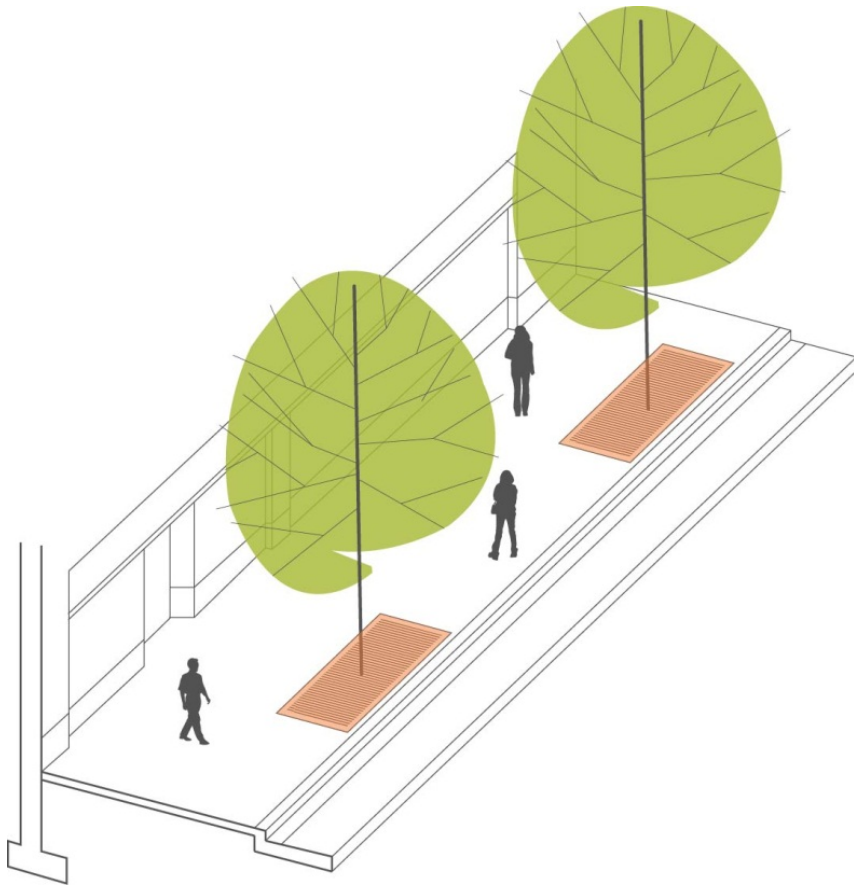


More Soil
Healthy Tree



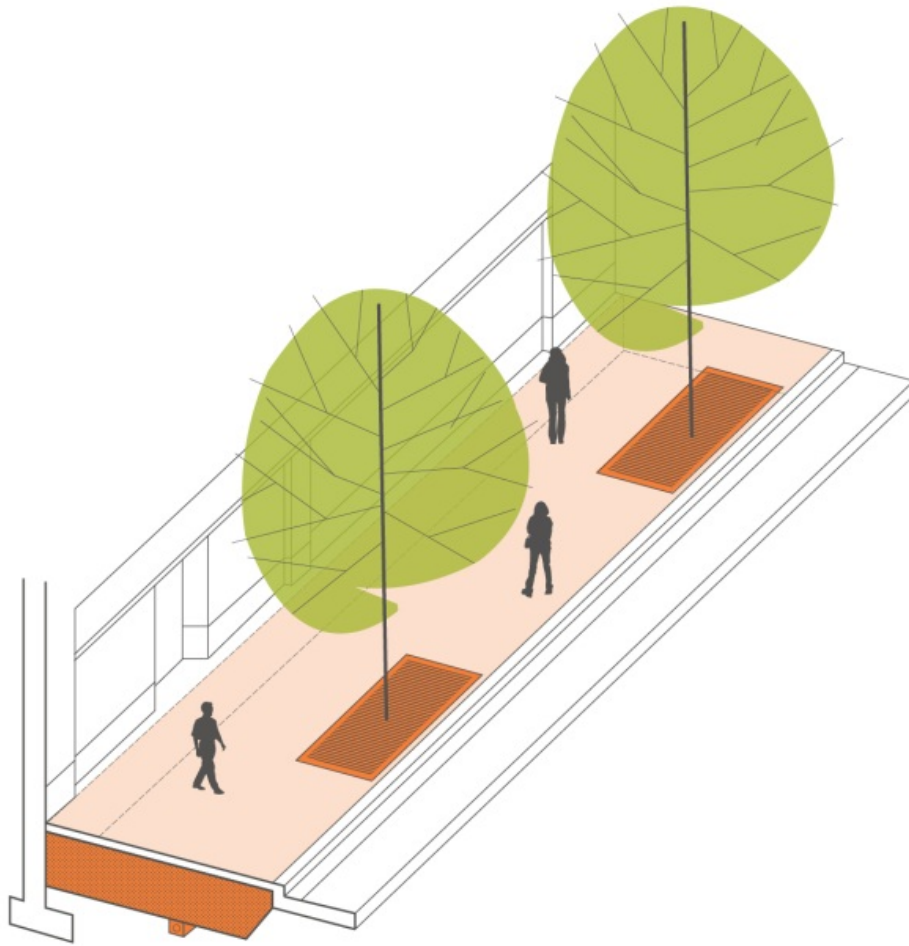
Less Soil
Unhealthy Tree

Regulate soil volume rather than soil area

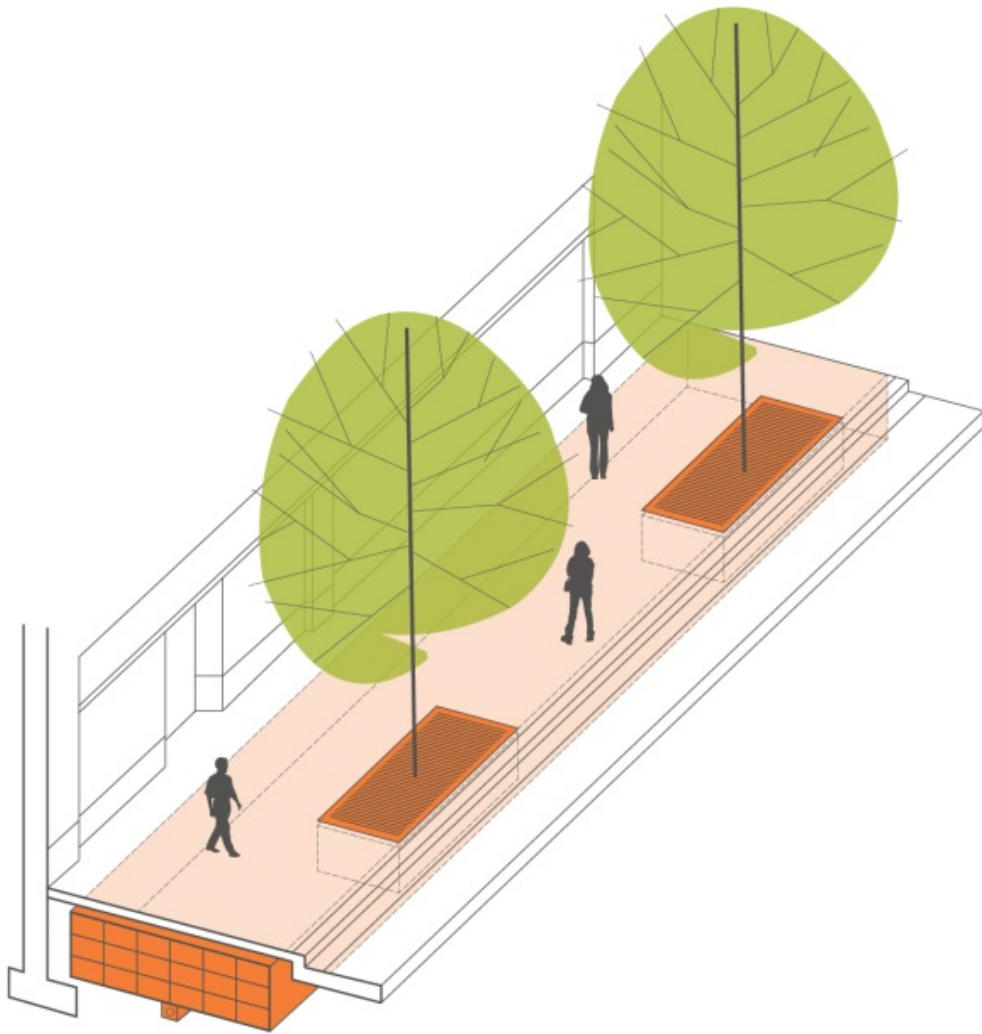




Solutions to support tree root growth under pavement



Structural soil



Structural root box cells



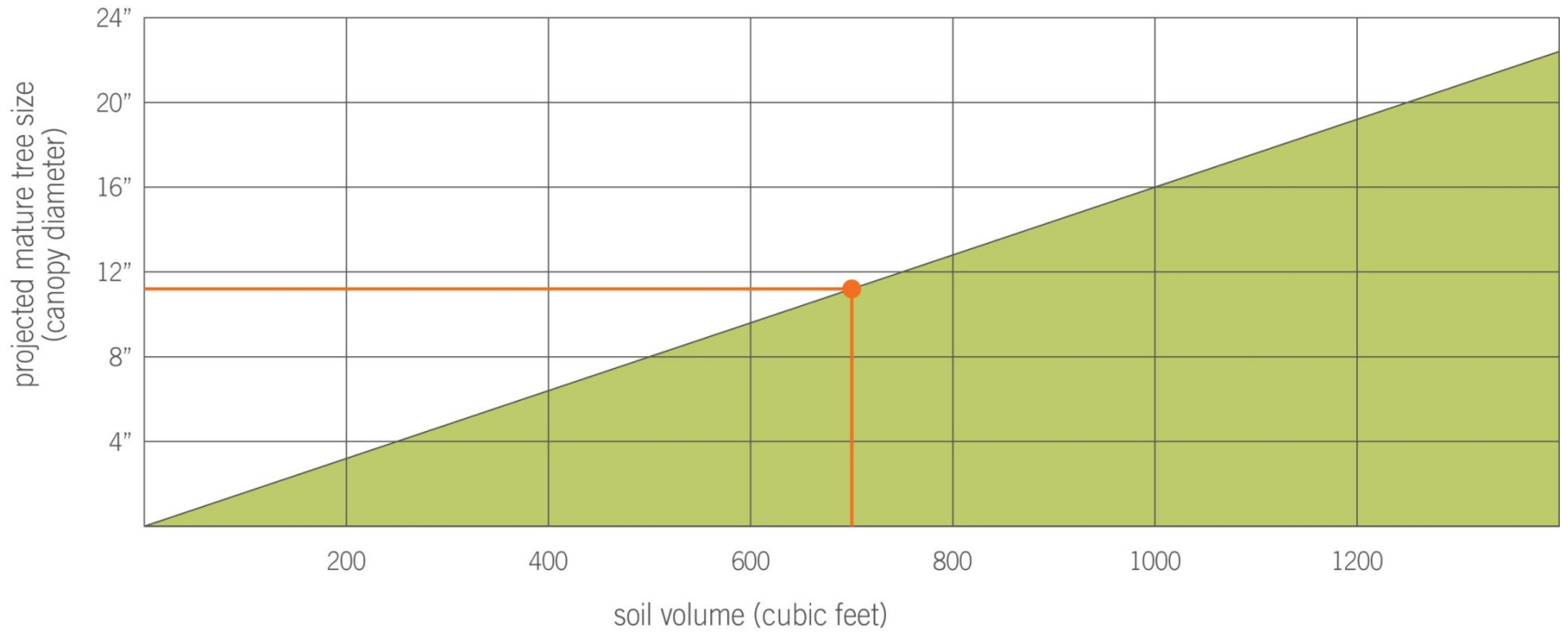
Soil Volume Ordinance Precedents

- Alexandria – 300 CF per tree
- Charlotte– 548 CF per tree
- Toronto – 1,100 CF per tree or 550 CF for trees that share soil

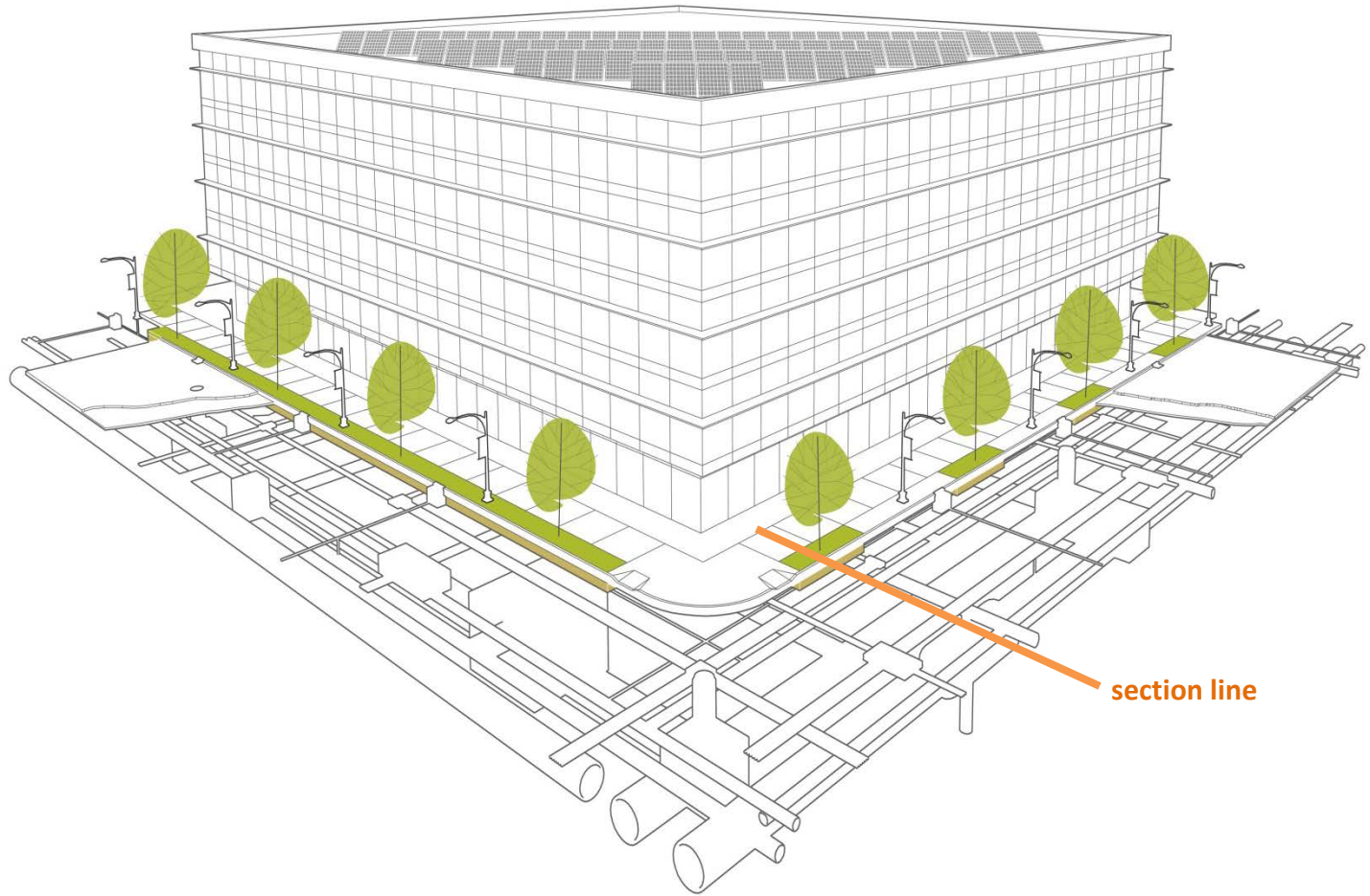


Innovation Square Gainesville, FL

PERKINS
+ WILL

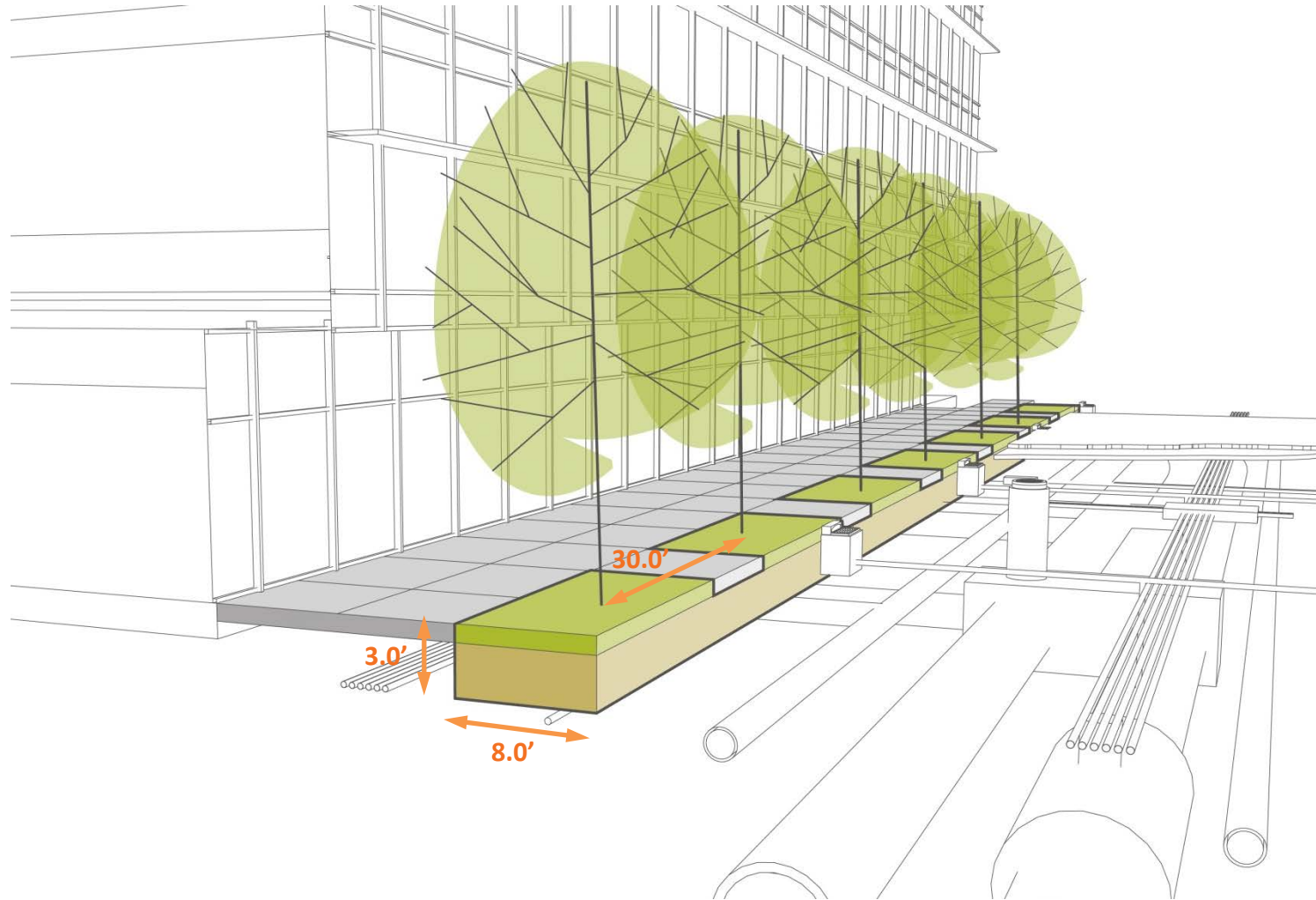


Innovation Square Ordinance Standard
700 cubic feet of soil per tree or 550 cubic feet for shared trees

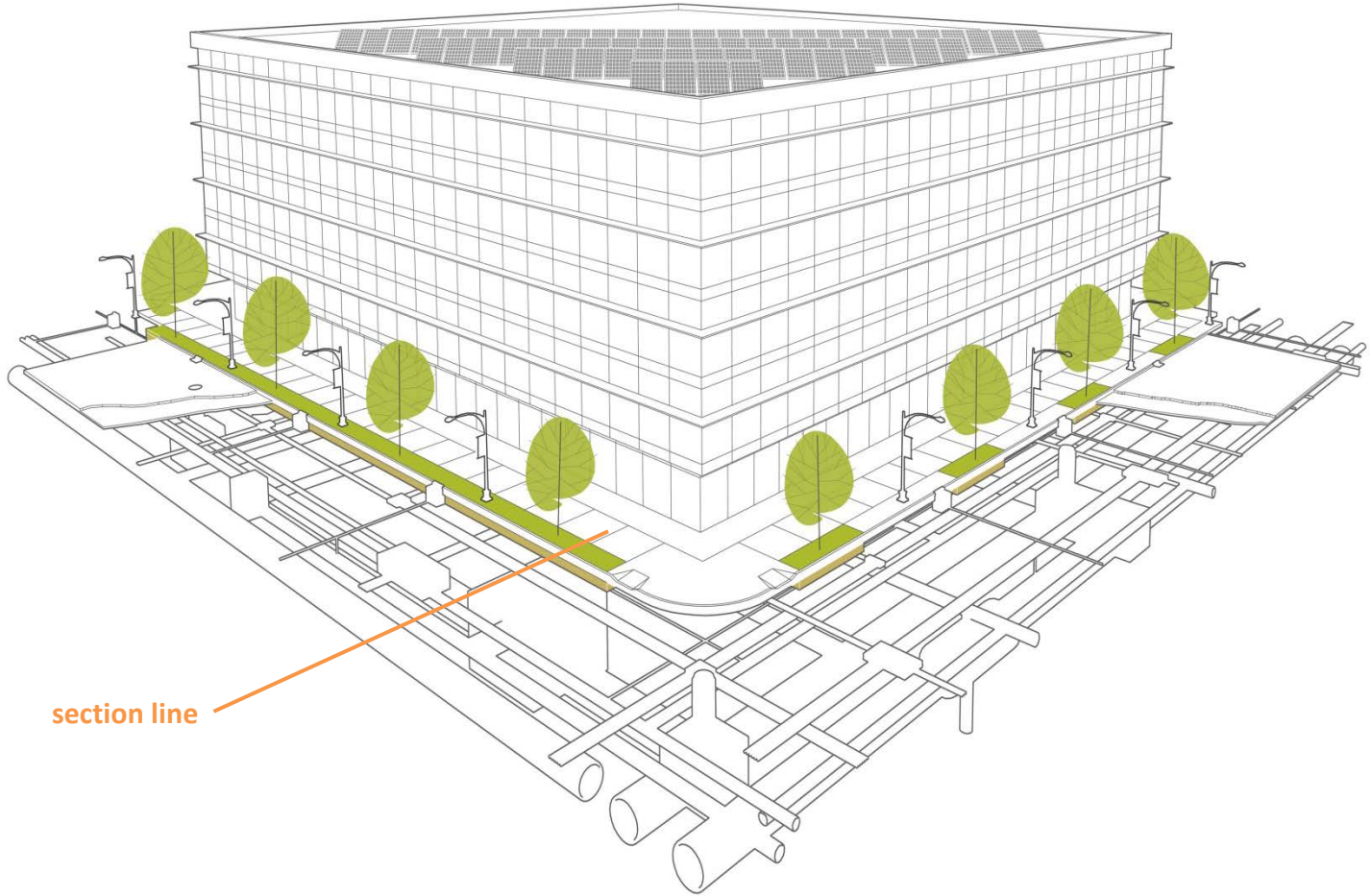


section line

Root zone under pavement

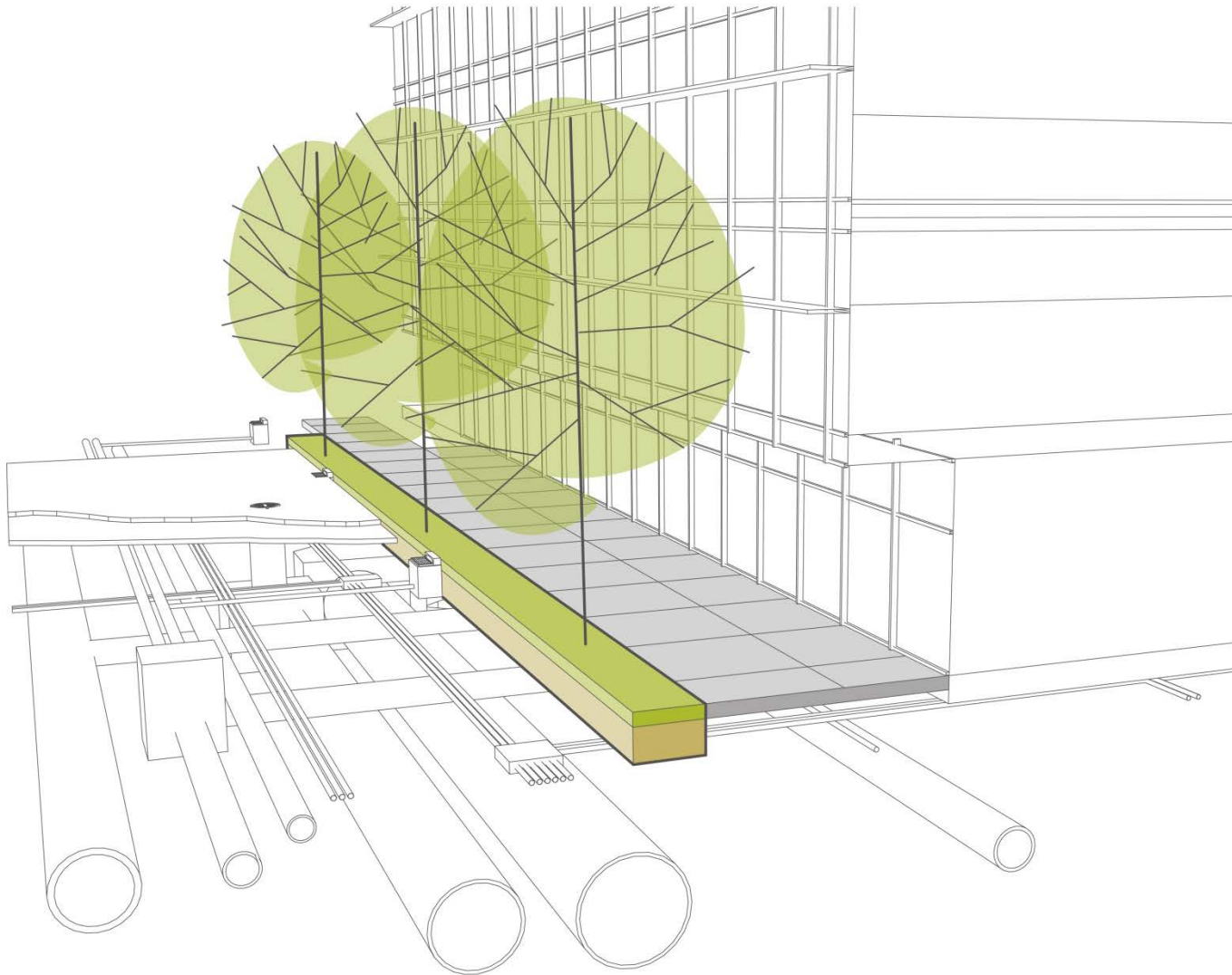


700 CF=3' depth x 8' width x 30' tree spacing
or 550 CF with shared root volume



section line

Tree lawn option



Incentives for specimen tree preservation



Incentives for specimen tree preservation

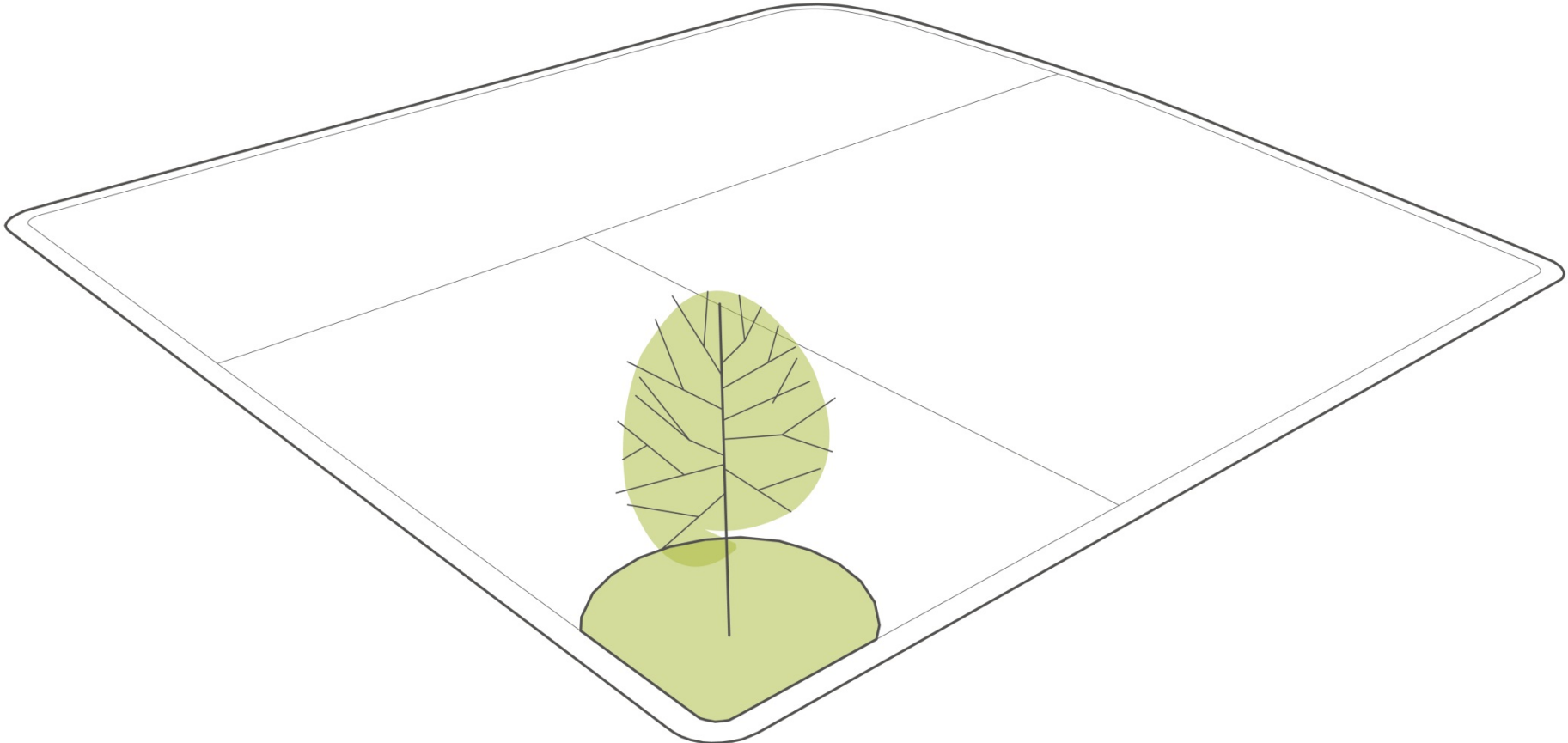
Charlotte NC

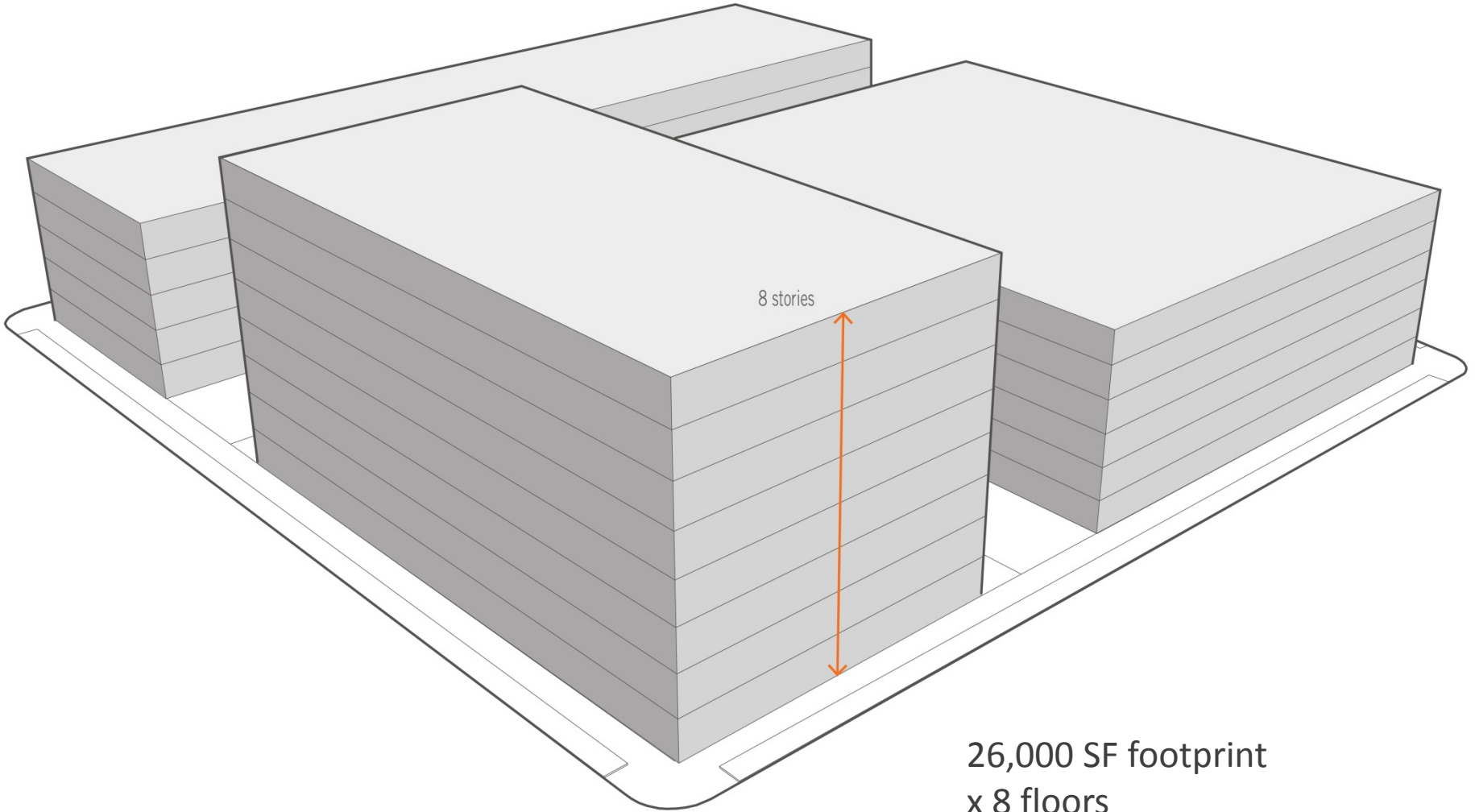
- reduced setbacks (residential)
- density bonus
- reduced lot sizes

Athens, GA

- specimen trees credited two times actual canopy cover



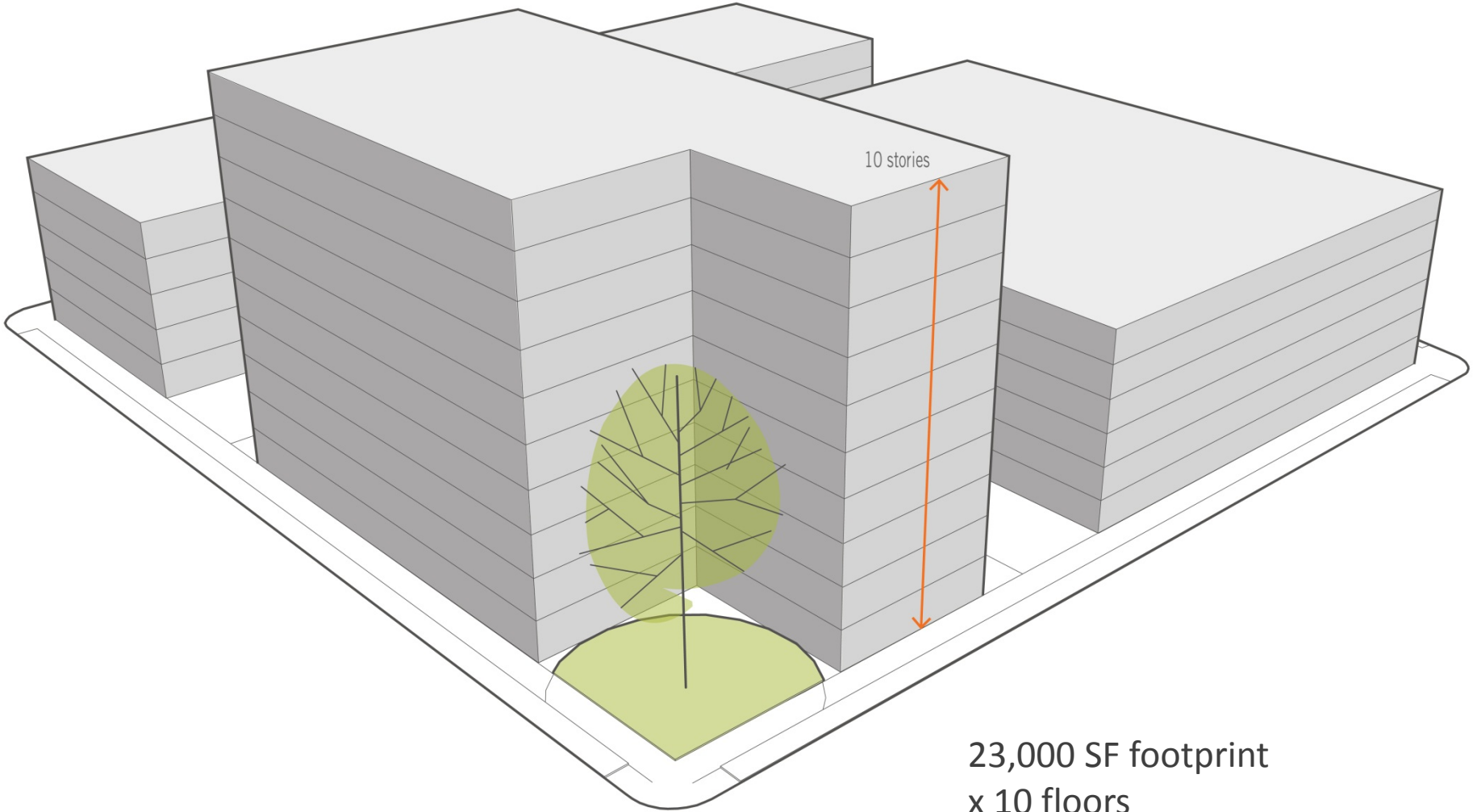




26,000 SF footprint
x 8 floors

208,000 SF total floor area

Heritage tree incentive

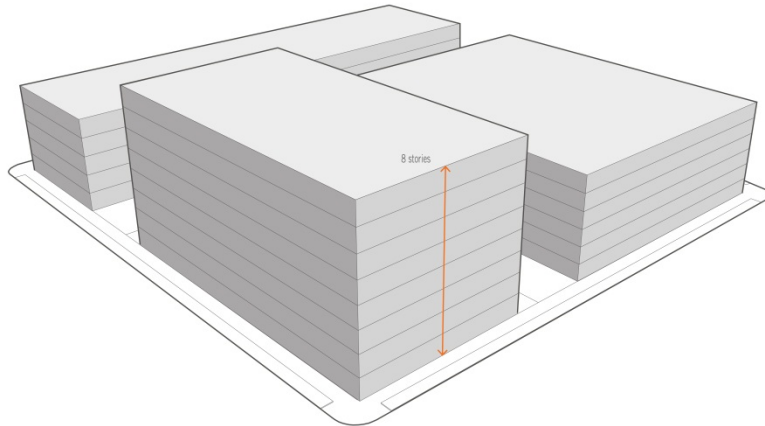


23,000 SF footprint

x 10 floors

230,000 SF total floor area

Heritage tree incentive



23,000 SF Floor plate excluding tree save area
x 8 floors
184,000 SF building area without incentive (8
story total height)

26,000 SF buildable area
x 0.2 incentive factor
5,200 SF per floor
x 8 floors

41,600 SF net area incentive yield
÷ 23,000 SF

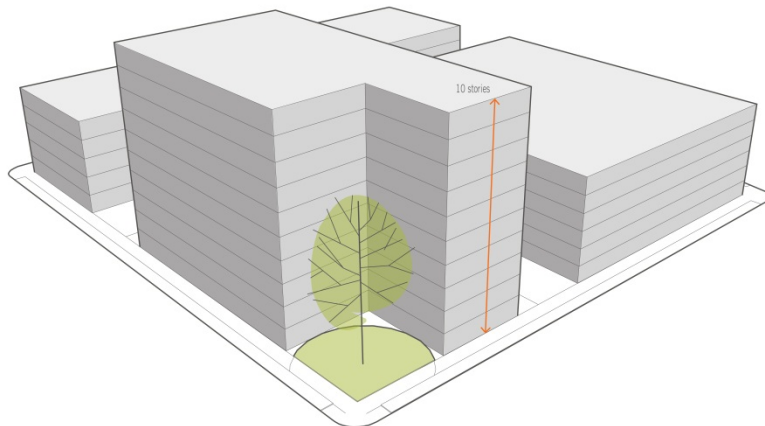
1.8 additional floor factor (rounded up to 2
floors)

23,000 SF floor plate with incentive
X 10 stories

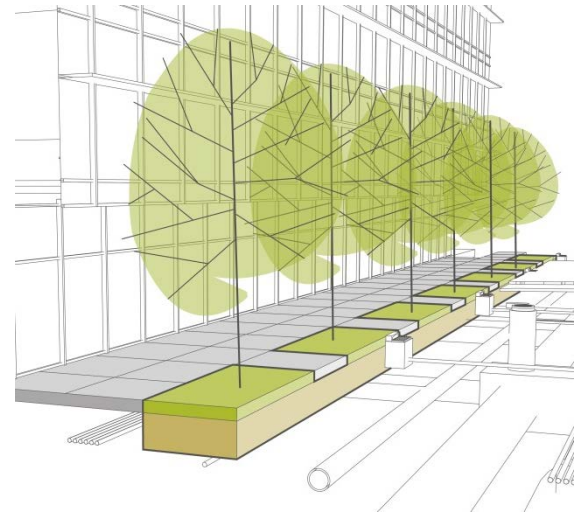
**230,000 SF building area with incentive (10 story
height)**

Versus

184,000 SF building area without incentive



Innovation Square Heritage tree mitigation funds returned to District





IS HIE 7 WA
IS HIE 7 WS
IS HIE 7 WS

W UNIVERSITY AVE

SW 1ST AVE

SW 2ND AVE

SW 3RD AVE

SW 4TH AVE

IS HIE 4 WS
IS HIE 4 WS

SW 5TH AVE

SW 6TH AVE

IS HIE 4 WS
IS HIE 4 WS

IS HIE 4 WS
IS HIE 4 WS

N PARK ST
N PARK ST
N PARK ST

PROPOSED PARK

PROPOSED PARK

TUMBLIN CREEK
TUMBLIN CREEK PARK

Questions for the future?

- How is the technology of inventory, analysis, and monitoring going to effect the future implementation of ordinances?
- Will future national and state environmental policy affect the demand, context and content of future ordinances?
- Will ordinance account for dynamic ecological and biological processes – employing systems theory?
- How can ordinances help communities manage for risk, climate change, build resilience, and manage the global risk of invasive species?



Questions?