



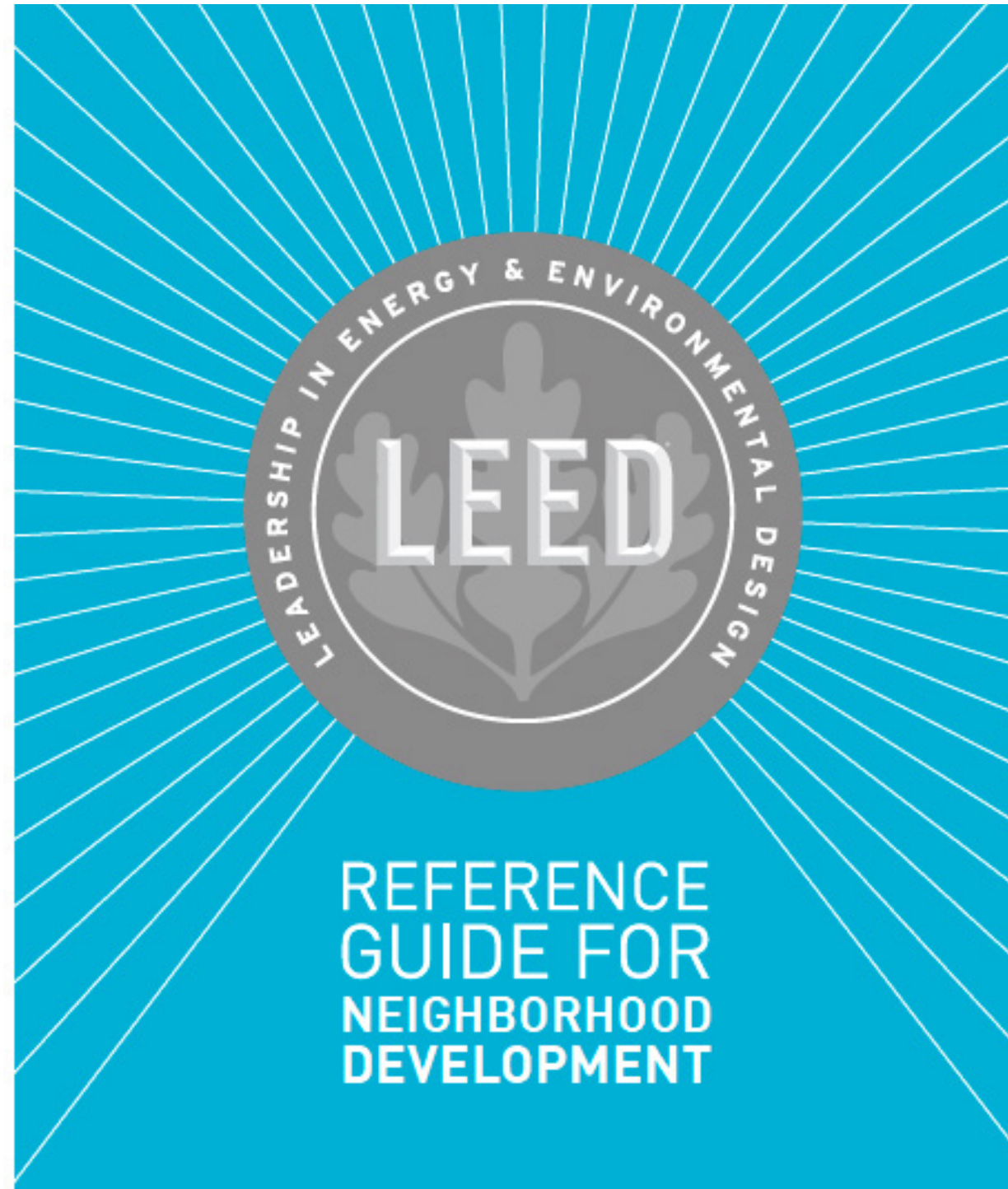
# Chain Works District LEED for Neighborhood Development

October 16, 2015

## Objectives

- ✔ Learn the basic principles and benefits of smart growth development
- ✔ Describe the credit categories and credits of LEED for Neighborhood Development
- ✔ See our preliminary analysis of the basic LEED ND requirements as applied to the Chain Works District

LEED for Neighborhood Development  
version 4



# RANDALL + WEST

C.J. Randall, LEED AP ND  
David West, LEED AP



reduces VMT

20-40%

per capita

walkability adds

\$82 per s.f.

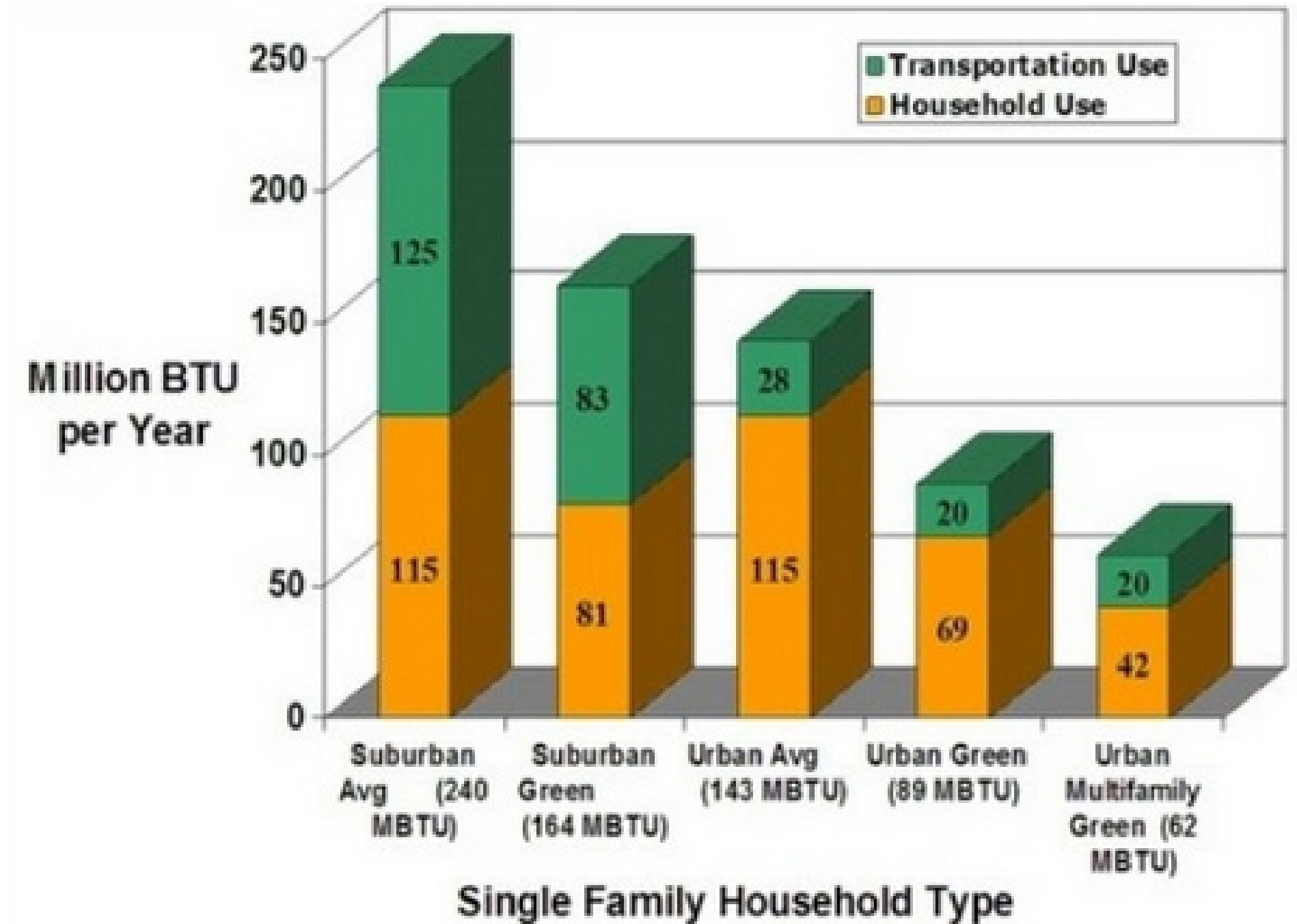
to home values

compact +

efficient home +

efficient vehicle

56% savings



## Why LEED for Neighborhood Development?

- ✔ New land development projects or redevelopment projects containing residential uses, nonresidential uses, or a mix.
- ✔ Projects may be at any stage of the development process, from conceptual planning through construction.
- ✔ At least 50% of the total building floor area should be new construction or major renovation.

# LEED for Neighborhood Development



# LEED for Neighborhood Development





Getting started:  
Devising a LEED ND work plan

# LEED® for Neighborhood Development

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**Total Possible Points\*\* 110\***

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 **Smart Location & Linkage 27**

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 **Neighborhood Pattern & Design 44**

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 **Green Infrastructure & Buildings 29**

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*\* Out of a possible 100 points + 10 bonus points*

*\*\* Certified 40+ points, Silver 50+ points,  
Gold 60+ points, Platinum 80+ points*

 **Innovation & Design Process 6**

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 **Regional Priority Credit 4**

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## LEED ND: Plan

- ① **Step 1:**  
Identify project site and prepare preliminary development program
- ② **Step 2:**  
Select rating system
- ③ **Step 3:**  
Assemble project team and identify relevant organizations

## LEED ND: Plan

-  **Step 4:**  
Check minimum program requirements and prerequisites
-  **Step 5:**  
Finalize project boundary and development program
-  **Step 6:**  
Reconfirm minimum program requirements and prerequisite compliance
-  **Step 7: Develop LEED scorecard**  
Check minimum program requirements and prerequisites
-  **Step 8:**  
Finalize project boundary and development program
-  **Step 9:**  
Develop consistent documentation
-  **Step 10:**  
Perform quality assurance review and submit for LEED ND: Plan certification



# LEED® FOR NEIGHBORHOOD DEVELOPMENT

110 TOTAL POINTS POSSIBLE



## SMART LOCATION & LINKAGE

27 POSSIBLE POINTS

PREREQ 1	Smart Location	REQ
PREREQ 2	Imperiled Species and Ecological Communities	REQ
PREREQ 3	Wetland and Water Body Conservation	REQ
PREREQ 4	Agricultural Land Conservation	REQ
PREREQ 5	Floodplain Avoidance	REQ
CREDIT 1	Preferred Locations	●●●●●●●●●●
CREDIT 2	Brownfield Redevelopment	●●
CREDIT 3	Locations w/ Reduced Automobile Dependence	●●●●●●●●
CREDIT 4	Bicycle Network and Storage	●
CREDIT 5	Housing and Jobs Proximity	●●●
CREDIT 6	Steep Slope Protection	●
CREDIT 7	Site Design for Habitat / Wetland & Water Body Conservation	●
CREDIT 8	Restoration of Habitat/Wetlands and Water Bodies	●
CREDIT 9	Long-Term Cnsrvtn. Mgmt. of Habitat/Wetlands & Water Bodies	●



## NEIGHBORHOOD PATTERN & DESIGN

44 POSSIBLE POINTS

PREREQ 1	Walkable Streets	REQ
PREREQ 2	Compact Development	REQ
PREREQ 3	Connected and Open Community	REQ
CREDIT 1	Walkable Streets	●●●●●●●●●●●●●●●●
CREDIT 2	Compact Development	●●●●●●●●
CREDIT 3	Mixed-Use Neighborhood Centers	●●●●
CREDIT 4	Mixed-Income Diverse Communities	●●●●●●●●
CREDIT 5	Reduced Parking Footprint	●
CREDIT 6	Street Network	●●
CREDIT 7	Transit Facilities	●
CREDIT 8	Transportation Demand Management	●●
CREDIT 9	Access to Civic and Public Spaces	●
CREDIT 10	Access to Recreation Facilities	●
CREDIT 11	Visitability and Universal Design	●
CREDIT 12	Community Outreach and Involvement	●●
CREDIT 13	Local Food Production	●
CREDIT 14	Tree-Lined and Shaded Streets	●●
CREDIT 15	Neighborhood Schools	●



## GREEN INFRASTRUCTURE & BUILDINGS

29 POSSIBLE POINTS

PREREQ 1	Certified Green Building	REQ
PREREQ 2	Minimum Building Energy Efficiency	REQ
PREREQ 3	Minimum Building Water Efficiency	REQ
PREREQ 4	Construction Activity Pollution Prevention	REQ
CREDIT 1	Certified Green Buildings	●●●●●
CREDIT 2	Building Energy Efficiency	●●
CREDIT 3	Building Water Efficiency	●
CREDIT 4	Water-Efficient Landscaping	●
CREDIT 5	Existing Building Use	●
CREDIT 6	Historic Resource Preservation and Adaptive Reuse	●
CREDIT 7	Minimized Site Disturbance in Design and Construction	●
CREDIT 8	Stormwater Management	●●●●
CREDIT 9	Heat Island Reduction	●
CREDIT 10	Solar Orientation	●
CREDIT 11	On-Site Renewable Energy Sources	●●●
CREDIT 12	District Heating and Cooling	●●
CREDIT 13	Infrastructure Energy Efficiency	●
CREDIT 14	Wastewater Management	●●
CREDIT 15	Recycled Content in Infrastructure	●
CREDIT 16	Solid Waste Management Infrastructure	●
CREDIT 17	Light Pollution Reduction	●



## INNOVATION & DESIGN PROCESS

6 POSSIBLE POINTS

CREDIT 1	Innovation and Exemplary Performance	●●●●●
CREDIT 2	LEED Accredited Professional	●



## REGIONAL PRIORITY CREDIT

4 POSSIBLE POINTS

CREDIT 1	Regional Priority	●●●●
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40-49 POINTS: CERTIFIED 50-59 POINTS: SILVER 60-79 POINTS: GOLD 80+ POINTS: PLATINUM  
FOR MORE INFORMATION SEE THE LEED REFERENCE GUIDE FOR GREEN NEIGHBORHOOD DEVELOPMENT



# Smart Location and Linkage (SLL): Prerequisite 1: Smart Location

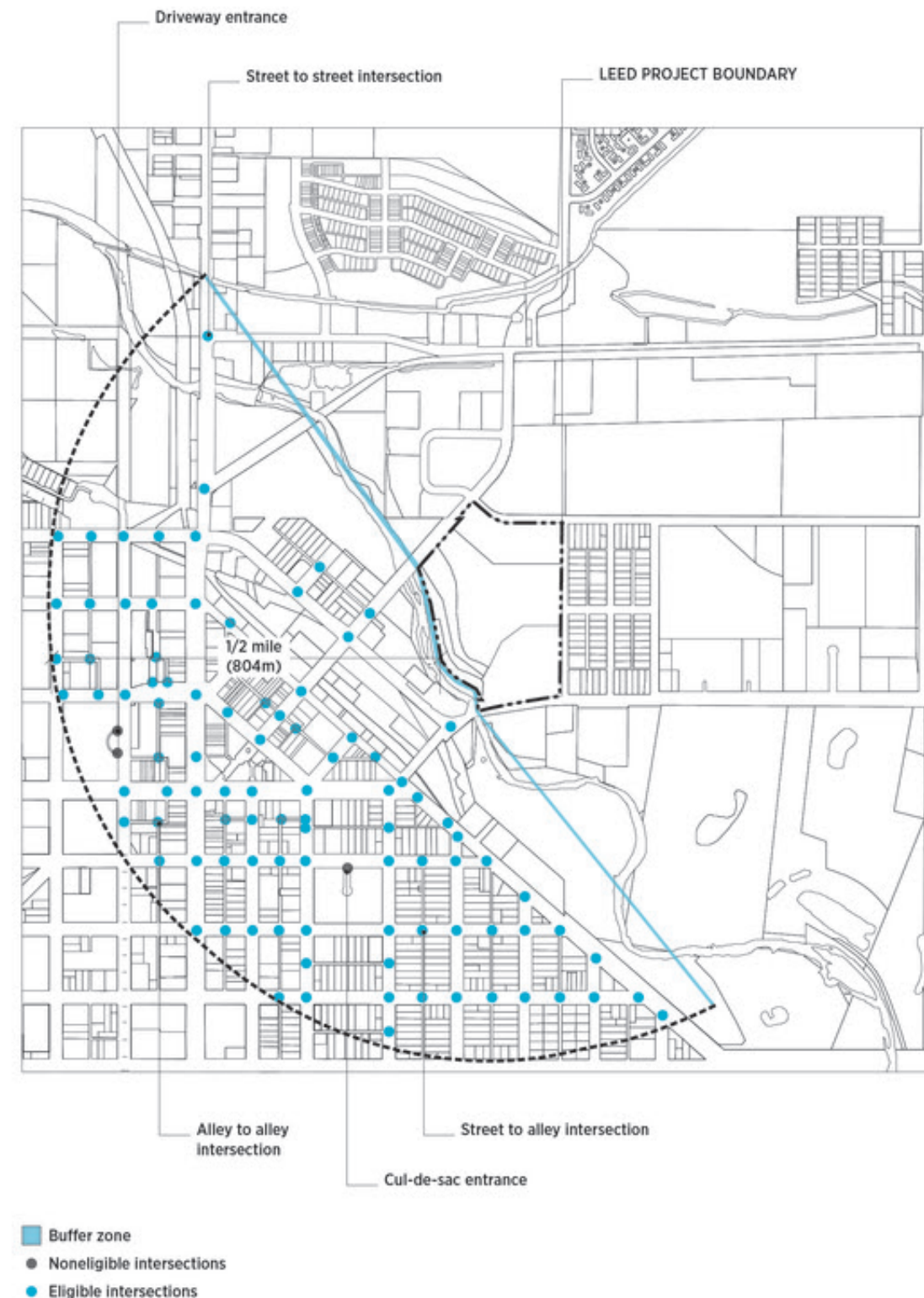
**Pick the right site**

**Build on the right portion**

**create or obtain maps of  
existing water and wastewater  
infrastructure**

**document one of three  
development statuses:**

- infill
- infill with connectivity
- transit corridor
- nearby assets





## Smart Location and Linkage (SLL): Prerequisite 2: Imperiled Species and Ecological Communities Conservation

**biological survey**

**Habitat Conservation Plan,  
if necessary**

**document project's role  
in the regional Habitat  
Conservation Plan, if any**

**transfer land rights**





## Smart Location and Linkage (SLL): Prerequisite 3: Wetland and Water Body Conservation

### **Don't build within 50 feet of wetlands or within 100 feet of any other water body**

acquire information on any wetlands  
on site and prepare maps indicating  
required buffers

### **Build on the right portion:**

If development too close to wetlands  
or water, build at higher density and  
earn a point in GIB c8: Rainwater  
Management





## Smart Location and Linkage (SLL): Prerequisite 4: Agricultural land conservation

**Likely not an issue based on cursory review of soil maps**

**Build on the right portion:**

Avoid development on USDA prime or unique soils or farmland of statewide importance

**However, if that's unavoidable:**

Then be sure it's transit corridor  
Comply with mitigation ratios





## Smart Location and Linkage (SLL): Prerequisite 5: Floodplain Avoidance

**Likely not an issue based on cursory review of FEMA flood maps**

**If there are floodplains, build on the right portion:**

Develop only on portions of site not in floodplain or in nonconveyance area with no storm surge potential



# Smart Location and Linkage (SLL): +10

## Credit 1: Preferred Locations

**location type**

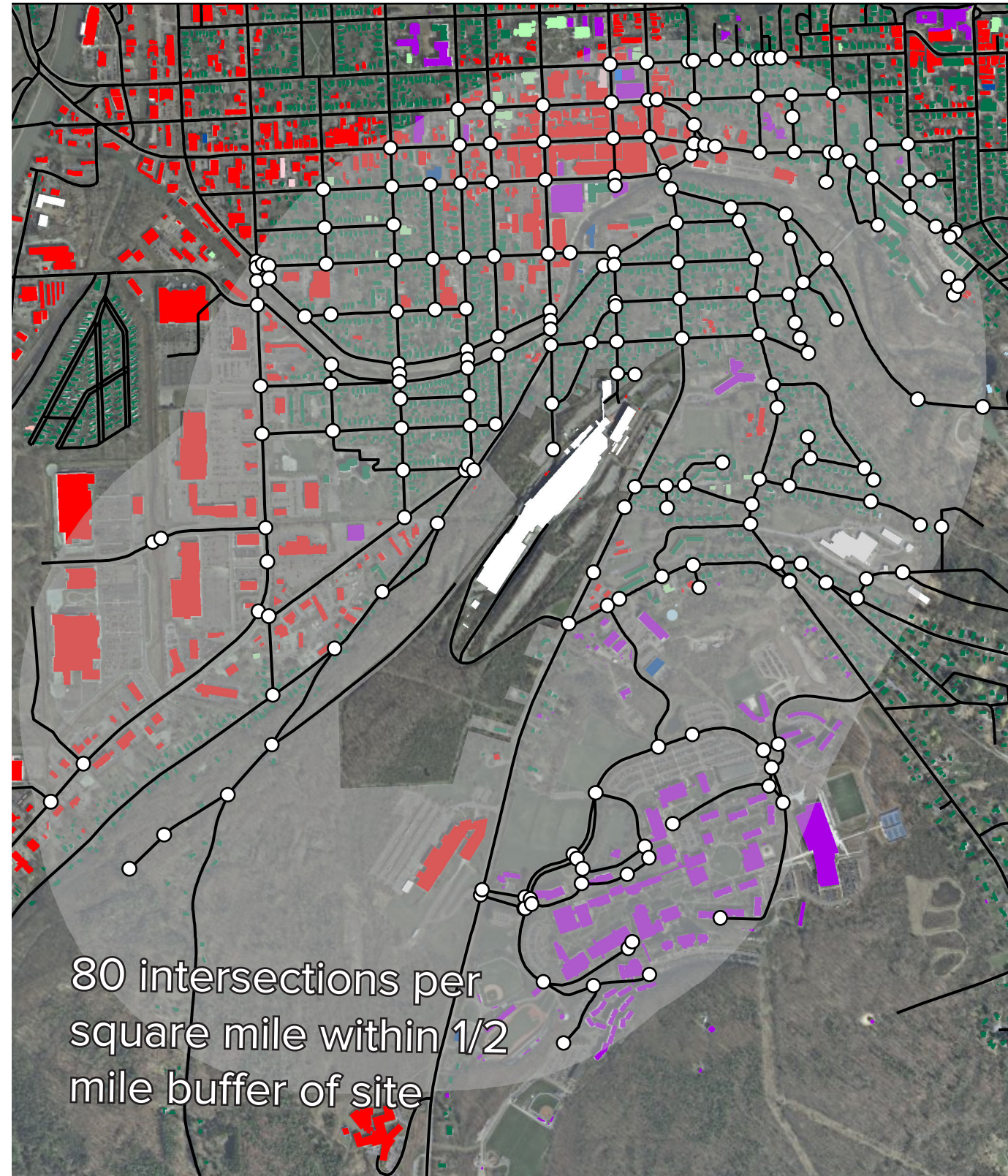
**AND/OR**

**connectivity**

points awarded by  
qualifying intersections  
per square mile

**AND/OR**

a federally designated  
high priority location





Smart Location and Linkage (SLL):  
Credit 2: Brownfield Remediation

+2

**remediated brownfield site**

**AND/OR**

a federally designated high priority  
redevelopment location



## Smart Location and Linkage (SLL): Credit 3: Access to quality transit

+7

**50% of dwelling unit and nonresidential entrances (including existing buildings) within 1/4 mi. walk of TCAT**

trip frequency minimum is 60 weekday trips and 40 weekend trips for +1 point





## Smart Location and Linkage (SLL): +2 Credit 4: Bicycle facilities

**Include in 90% of \*new\* buildings (follow Planning Board site plan review requirements)**

requirements are by use

- nonresidential
- retail
- multiunit residential

**Plus, must be on bike network**

State of play uncertain for Ithaca bicycle network at the moment





Smart Location and Linkage (SLL): +3  
Credit 5: Housing and jobs proximity

**Include affordable housing (+3)**

plus requirements below

**OR**

residential = 30% of building floor area  
center of project within 1/2 mi walking  
distance of FTE jobs > DU

**and**

extra point if it's an infill project





## Smart Location and Linkage (SLL): Credit 6: Steep slopes protection

+1

### **Build on the right portion:**

Avoid development on steep slopes

Don't disturb slopes  $> 15\%$

Restore the slopes that are disturbed;  
greater the slope, greater the restoration





Smart Location and Linkage (SLL):  
Credits 7,8,9: Habitat design and  
management

+1, +1, +1

**Site design for habitat:**

Avoid development on wetlands and sensitive habitats

**Restoration for habitat:**

Use only native plants

**Long-term conservation management plan**





## Neighborhood Pattern and Design (NPD) Prerequisite 1: Walkable Streets

### **Good urban design:**

- 90% of principal entries face public space, like circulation network
- 15% of block length meets 1:1.5 building height-to-centerline ratio
- 90% of streets have sidewalks
- 20% max garages or service bays on street frontages
- historic buildings exempt





## Neighborhood Pattern and Design (NPD) Prerequisite 2: Compact Development

### **Boosting transit accessibility:**

- residential within walking distance of transit = 12 DU minimum
- residential not in walking distance of transit = 7 DU minimum
- nonresidential within walking distance of transit = .80 FAR minimum
- nonresidential not in walking distance of transit = .50 FAR minimum



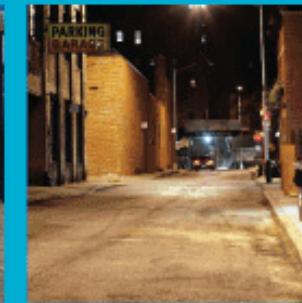


## Neighborhood Pattern and Design (NPD) Prerequisite 3: Connected and open community

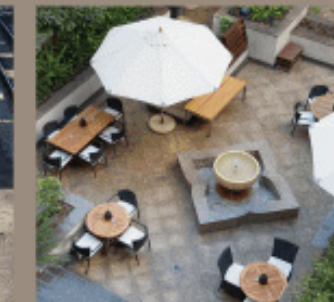
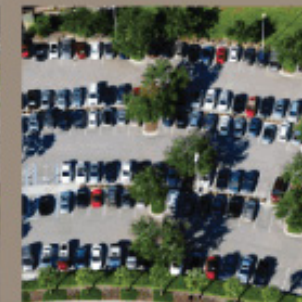
### Boosting internal connectivity:

- 140 intersections per square mile within the project boundary
- through-connections every 800 ft intersecting or terminating at project boundary
- not gated
- steep slopes or other natural physical obstacles exempt

#### INCLUDED



#### NOT INCLUDED

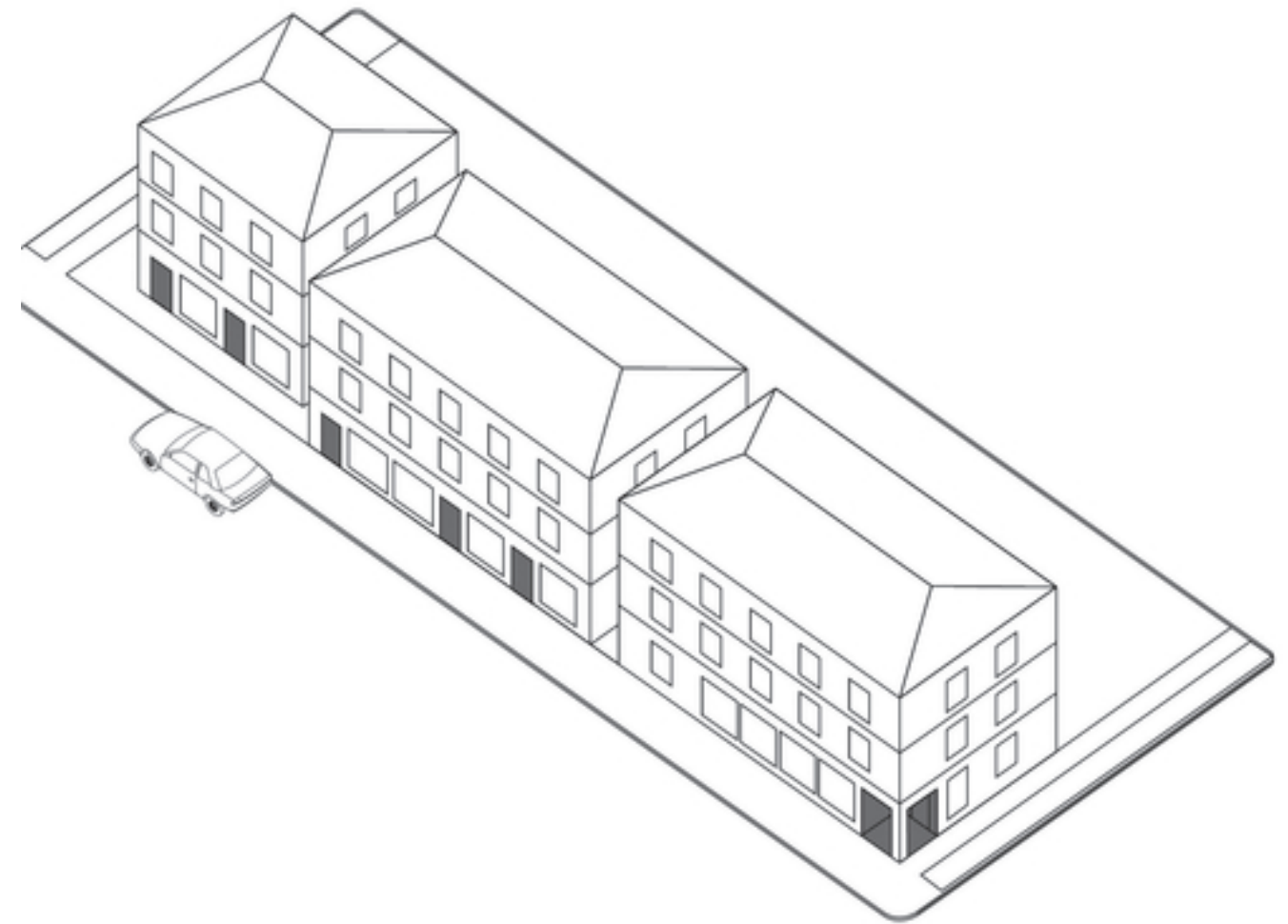




## Neighborhood Pattern and Design (NPD) +9 Credit 1: Walkable Streets

### **Good urban design is both a prerequisite and a hefty credit:**

- minimal setbacks and entries every 75'
- ground-level uses and on-street parking
- continuous sidewalks
- design speeds for safe pedestrian and bicycle travel
- limited curb cuts
- limited blank walls
- clear glazing within specified heights
- up to 9 points for 15-16 features





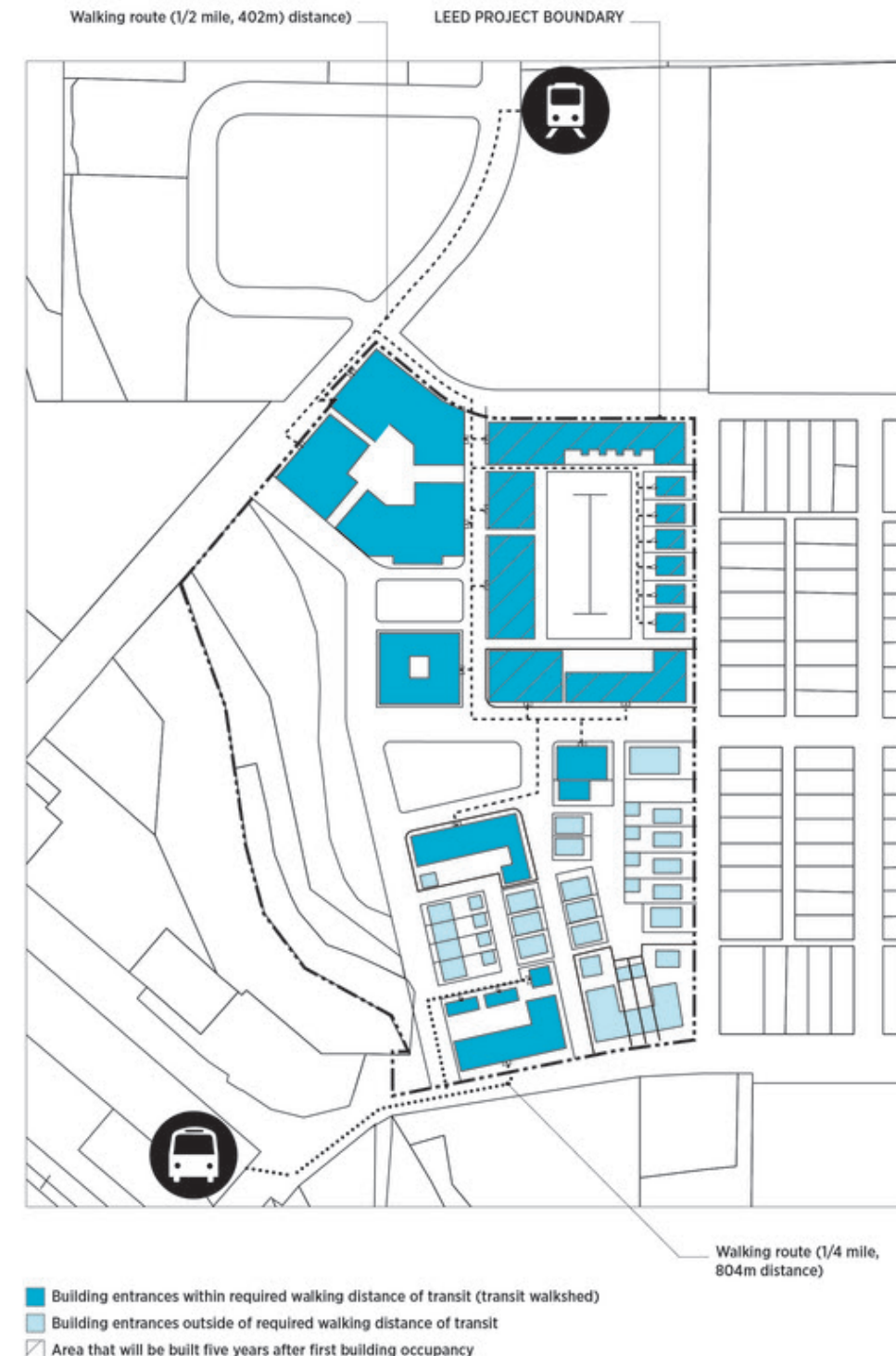
# Neighborhood Pattern and Design (NPD) Credit 2: Compact development

+6

**Compact development is both a prerequisite and a hefty credit:**

- 10-13 DU +1 point
- 13-18 DU +2 points
- 18-25 DU +3 points
- 25-38 DU +4 points
- 38-63 DU +5 points
- >63 DU +6 points

**weighted average with FAR for a mixed-use project**





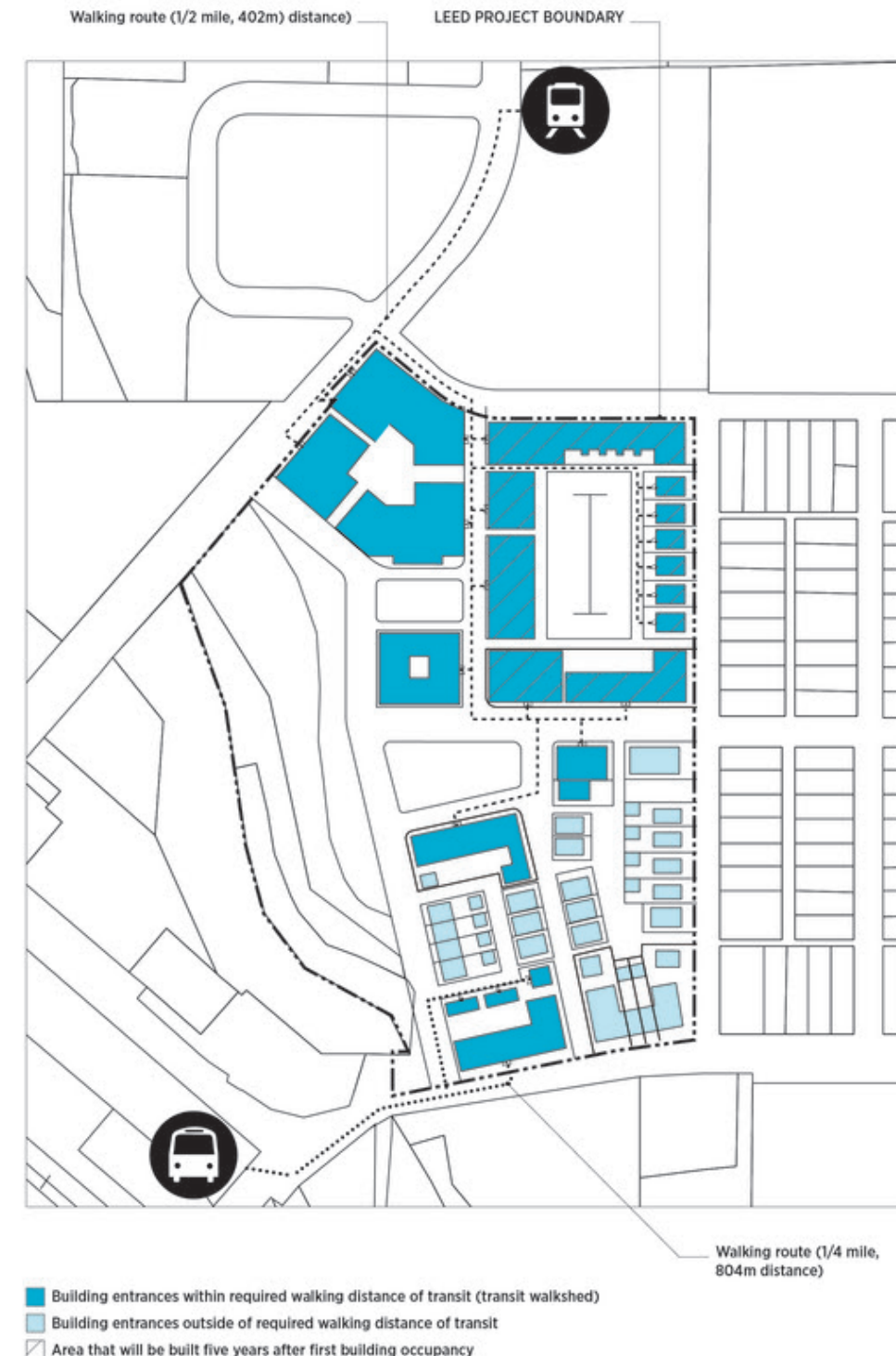
## Neighborhood Pattern and Design (NPD)

### Credit 3: Mixed-use neighborhoods

+4

**cluster diverse land uses such that 50% of DU are within 1/4 mi walk of diverse uses:**

- 4-7 uses +1 point
- 8-11 uses +2 points
- 12-19 uses +3 points
- >20 uses +4 points
  
- no more than 2 uses of one type may counted
- regional-serving retail considered separately





## Neighborhood Pattern and Design (NPD) Credit 4: Housing types and affordability +7

### Rewards diverse housing types

Unique opportunity for 'missing middle' of housing,  
based on housing categories and AMI

Documentation		Option 1	Option 2	Option 3
LS CP CB	Site or vicinity map showing dwelling unit locations	X		X
LS CP CB	Table of housing types by frequency	X		X
LS CP CB	Narrative describing strategy for providing affordable rental and for-sale housing		X	X
LS CP CB	Calculation for percentage of dwelling units at affordable housing levels		X	X
CP CB	Copy of agreement to maintain affordable rates for at least 15 years		X	X

LS = Letter of Support

CP = Certified Plan

CB = Certified Built Project





## Neighborhood Pattern and Design (NPD)

Credit 5: Reduced parking footprint +1

**minimize parking facilities and automobile dependence, land consumption, and rainwater runoff**

- no surface parking lots replacing building frontages
- parking no more than 20% of total development footprint (off-street)
- no lots bigger than 2 acres
- on-street parking OK





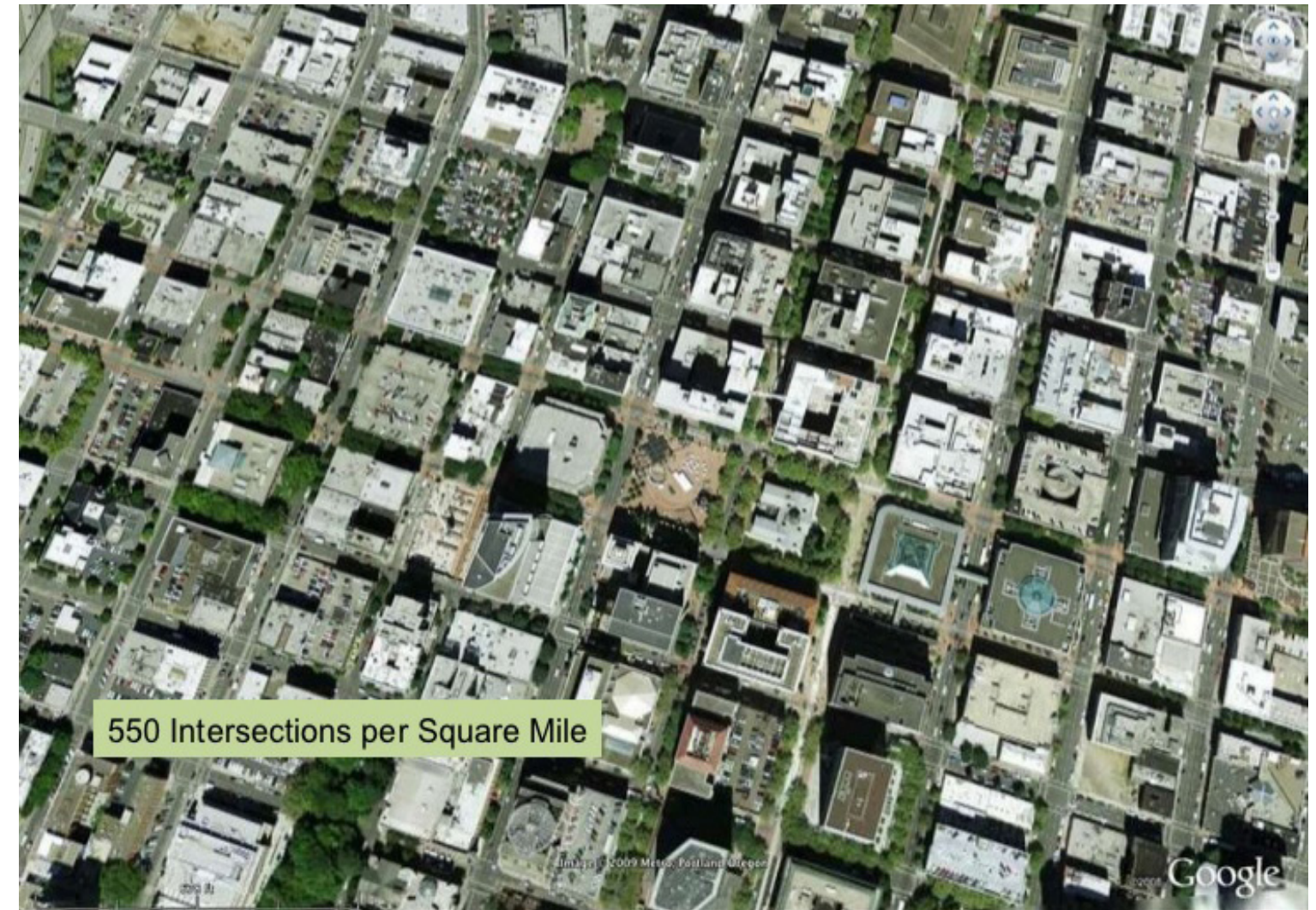
# Neighborhood Pattern and Design (NPD)

## Credit 6: Connected and Open Community

+2

### building on the connectivity prerequisite

- 300-400 intersections per square mile = +1 point
- >400 intersections per square mile = +2 points





# Neighborhood Pattern and Design (NPD) Credit 7: Transit facilities

+1

## opportunity to plan service

- inventory existing transit stops
- plan new stops and shelters
- confirm that service will be continued or expanded to the project site





# Neighborhood Pattern and Design (NPD) Credit 8: Transportation Demand Management +2 Management

**opportunity to plan service; +1  
point for every 2 options**

- transit passes subsidized for 3 years to each resident and employee
- sponsor CWD transit, shuttle buses
- Ithaca Car Share
- charge a fee for parking
- guaranteed ride home program offered by all major employers
- flex work arrangements





# Neighborhood Pattern and Design (NPD) Credit 9: Access to civic and public space

+1

**improve physical and mental health, boost social capital and time spent outdoors**

- 1/6 acre civic or passive use spaces located within 1/4 mi of 90% of planned and existing DU \*entrances\*
- median civic space size = 1 acre
- pocket parks, public squares, parks, etc. all counts

TABLE 1. Example determination of walking distances to public spaces

Building	Dwelling units and nonresidential use entrances	Closest qualifying public space	Walking distance to qualifying public space (meters)	Total entrances within walking distance of public space
Detached Residential A	1	Park	530	—
Detached Residential B	1	Park	429	—
Detached Residential C	1	Park	379	1
Detached Residential D	1	Park	322	1
Detached Residential E	1	Park	305	1
Detached Residential F	1	Park	277	1
Duplex A	2	Metro plaza	455	—
Duplex B	2	Metro plaza	394	2
Duplex C	2	Metro plaza	316	2
Duplex D	2	Metro plaza	354	2
Multifamily Dwelling A	64	Public space	55	64
Multifamily Dwelling B	46	Public space	115	46
Multifamily Dwelling C	52	Public space	115	52
Office-Retail A	3	Metro plaza	210	3
Office-Retail B	4	Metro plaza	225	4
<b>Total</b>	<b>183</b>			<b>179</b>



## Neighborhood Pattern and Design (NPD) Credit 10: Access to recreation facilities

+1

### **improve physical and mental health, boost physical activity**

- publicly accessible outdoor facility at least 1 acre (or 25K s.f. if indoors) within 1/2 mi. walking distance of 90% of the new and existing DU and non-residential entrances
- tot lots, swimming pools, sports fields, baseball diamonds, etc.





## Neighborhood Pattern and Design (NPD) Credit 11: Visitability and universal design

+1

### **increase access for a spectrum of ages and abilities**

- design with a minimum of 20% of new DU in accordance with ICC A117.1, Type C, Visitable Unit
- universal design requirements for multiunit buildings



Neighborhood Pattern and Design (NPD)  
Credit 12: Community outreach and  
involvement

+2

**involves community in the  
design and planning of the  
project**

- community outreach +1 point
- charrette +2 points





## Neighborhood Pattern and Design (NPD) Credit 13: Local food production

+1

- neighborhood gardens
- CSA drop point
- proximity to farmer's market

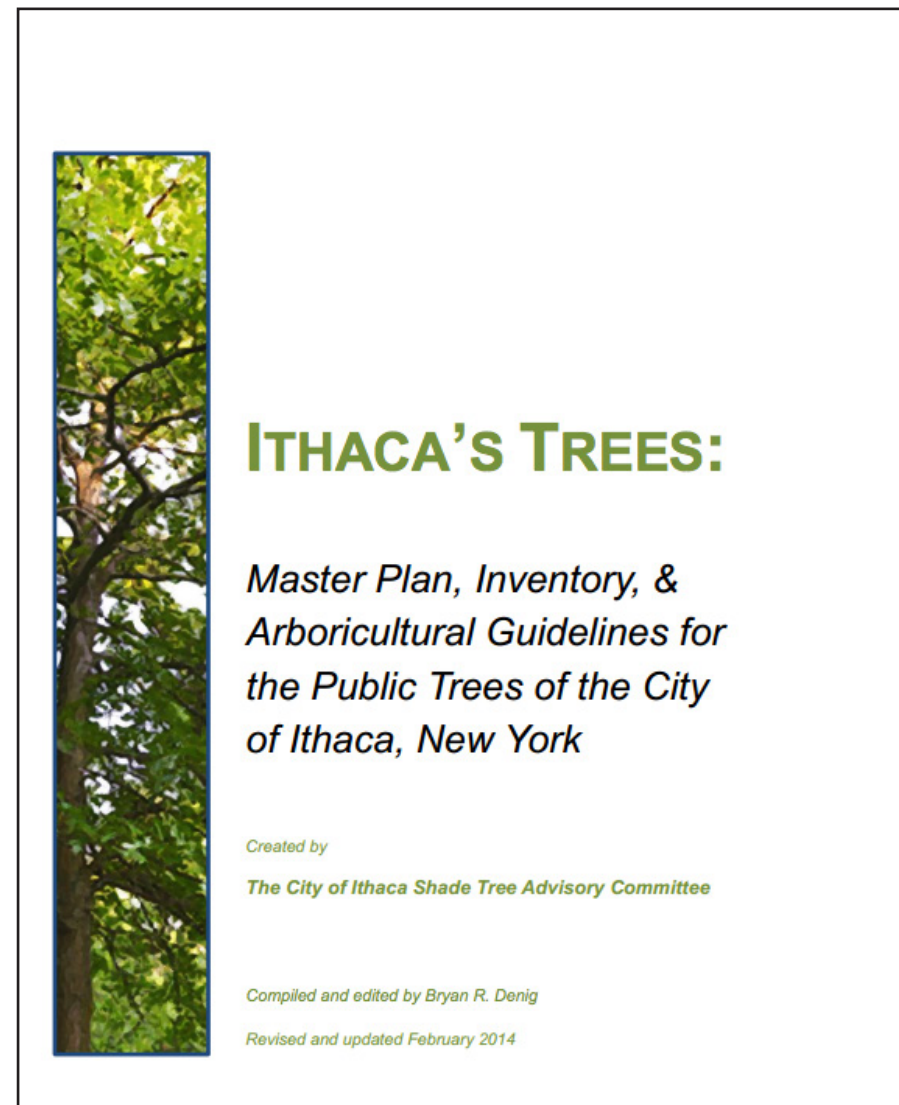


## Neighborhood Pattern and Design (NPD) Credit 14: Tree-lined and shaded streetscapes

+2

**encourage bicycling, discourage speeding, reduce heat island effect, improve air quality**

- tree-lined blocks and/or
- shaded sidewalks AND
- planting plan stamped by RLA





## Neighborhood Pattern and Design (NPD) Credit 15: Neighborhood schools

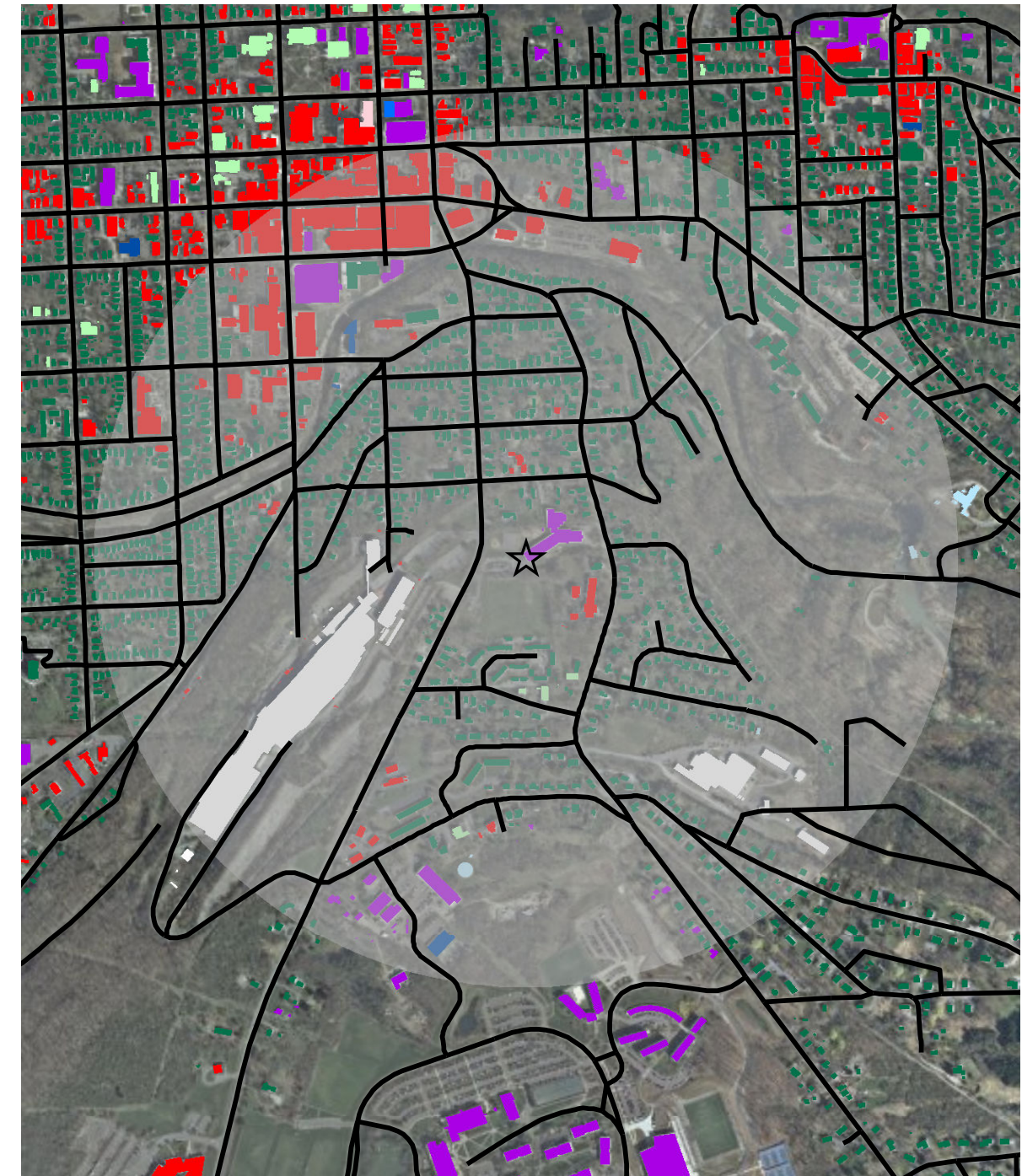
+1

**encourage kids to bike and walk to school, promote community interaction and engagement in education**

- 50% of DU within 1/2 mile walking distance of functional entry of new or existing elementary or middle school

OR

- 50% of DU within 1 mile walking distance of functional entry of new or existing high school
- school district must commit to new school





## Green Infrastructure and Buildings (GIB)

### **Reduce resource use:**

Prerequisite: one green building  
cleaner, renewable energy systems  
reducing energy demand  
reducing emissions

### **Addresses a wide range of building and infrastructure**

adaptive reuse  
low impact development  
holistic focus on energy efficiency at neighborhood scale

## Step 4: Minimum Program Requirements

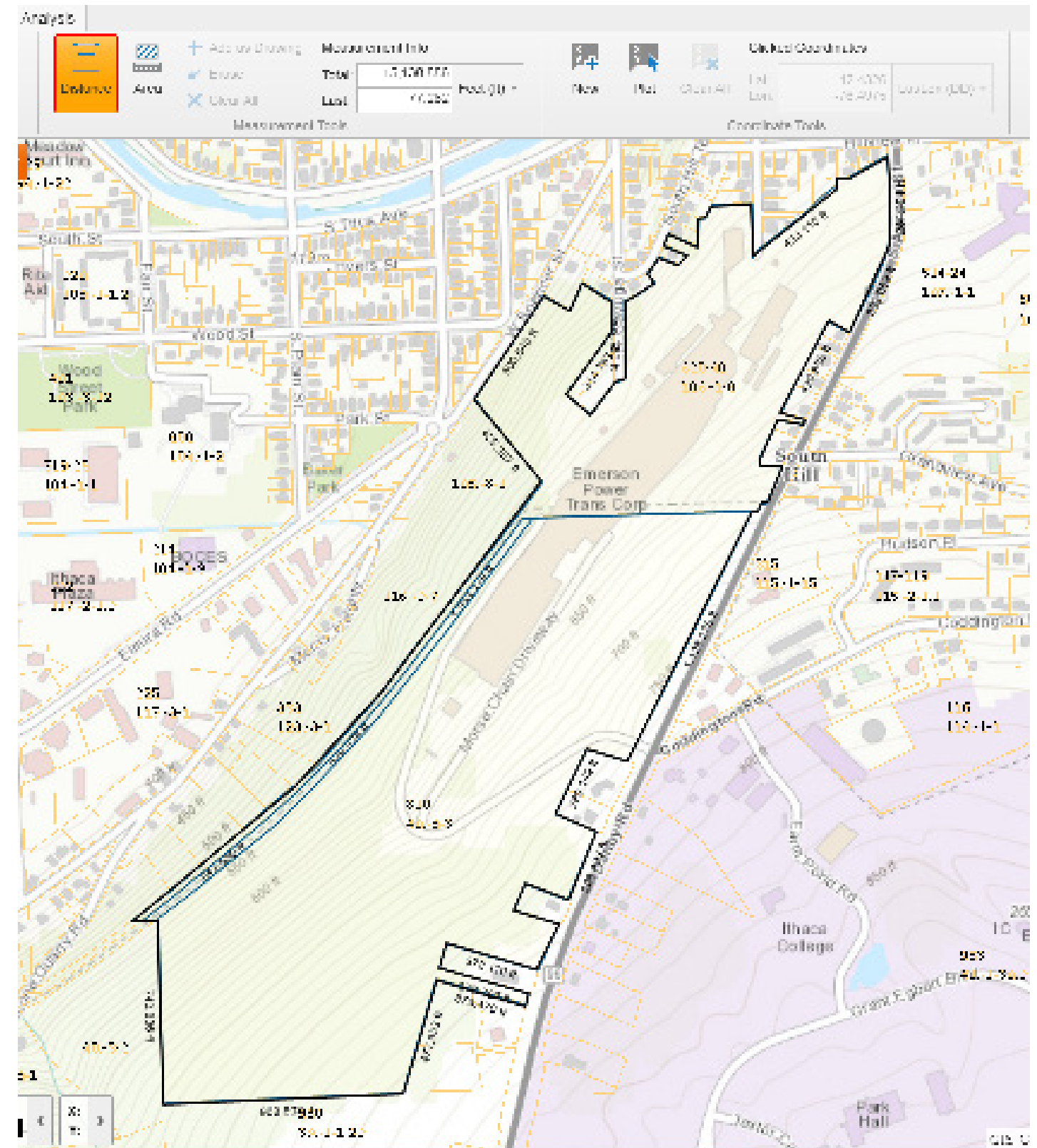
- ✔ **In a permanent location on existing land**
- ❓ **Use reasonable project boundaries**
- ✔ **Comply with project size requirements**

# Site Overview

**Location:**  
Ithaca, New York

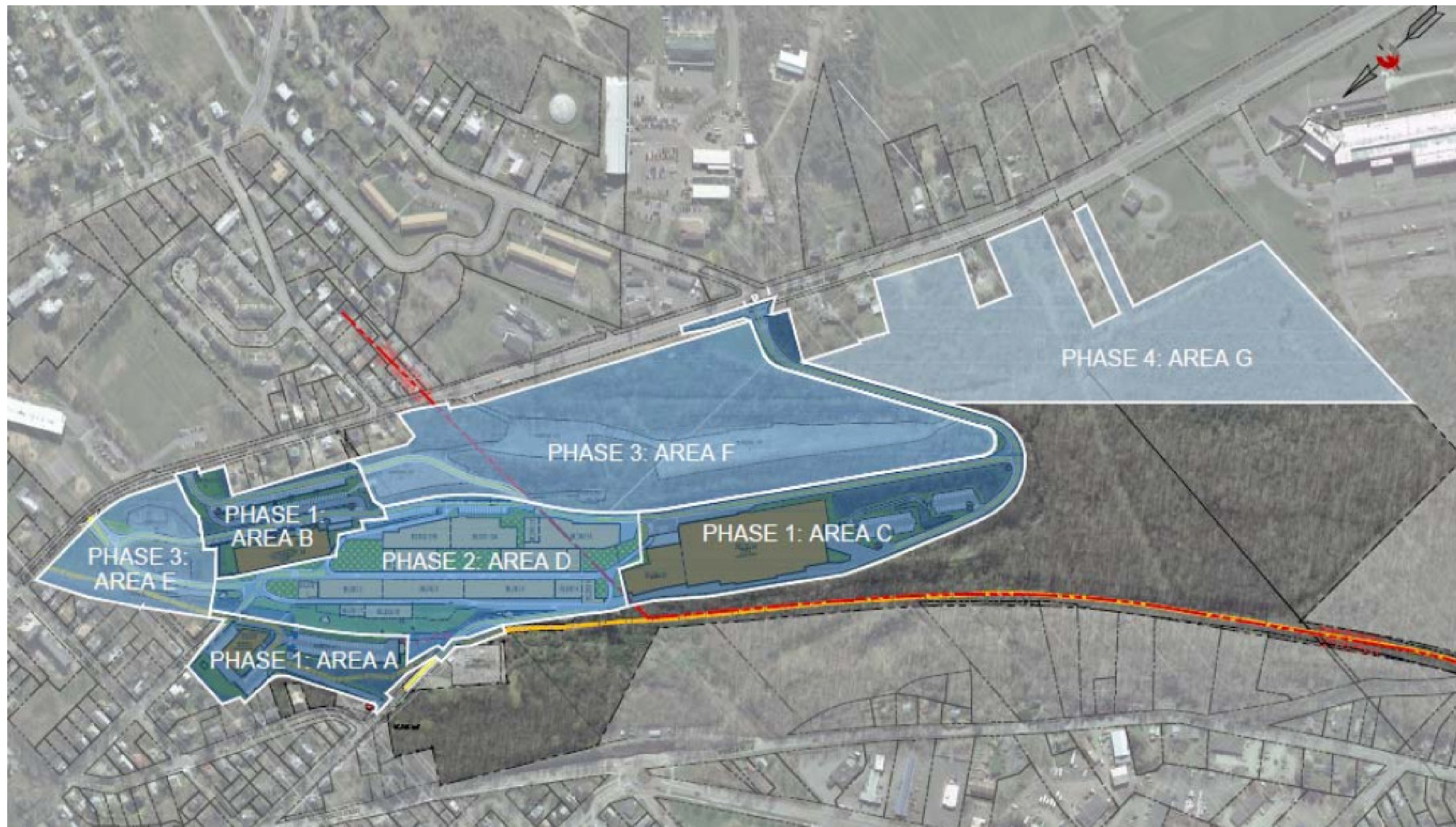
**Site type:**  
adjacent, infill, or previously developed

**Total project site perimeter:**  
+/- 15,130 ft



**Our next steps in defining the reasonable project boundary:**

- ① Survey perimeter and area of all adjacent parcels**
- ② Determine how much of the land within 1/2 mile is previously developed**
- ③ Calculate qualifying street intersections within 1/2 mile of project boundary**
- ④ Calculate buildable land, excluding natural features like steep slopes and wetlands**







# LEED v4 for Neighborhood Development Plan Project Checklist

Project Name: Chain Works District  
Date: 1/28/15

Yes	?	No			
5	7	13	<b>Smart Location &amp; Linkage</b>		<b>28</b>
Y			Prereq	Smart Location	Required
Y			Prereq	Imperiled Species and Ecological Communities	Required
Y			Prereq	Wetland and Water Body Conservation	Required
Y			Prereq	Agricultural Land Conservation	Required
Y			Prereq	Floodplain Avoidance	Required
2	3	7	Credit	Preferred Locations	10
1	1		Credit	Brownfield Remediation	2
	1	8	Credit	Access to Quality Transit	7
	2		Credit	Bicycle Facilities	2
2			Credit	Housing and Jobs Proximity	3
1			Credit	Steep Slope Protection	1
1			Credit	Site Design for Habitat or Wetland and Water Body Conservation	1
1			Credit	Restoration of Habitat or Wetlands and Water Bodies	1
1			Credit	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1

Yes	?	No			
17	21	3	<b>Neighborhood Pattern &amp; Design</b>		<b>41</b>
Y			Prereq	Walkable Streets	Required
Y			Prereq	Compact Development	Required
Y			Prereq	Connected and Open Community	Required
5	4		Credit	Walkable Streets	9
1	2	3	Credit	Compact Development	6
2	2		Credit	Mixed-Use Neighborhoods	4
2	5		Credit	Housing Types and Affordability	7
	1		Credit	Reduced Parking Footprint	1
	2		Credit	Connected and Open Community	2
1			Credit	Transit Facilities	1
1	1		Credit	Transportation Demand Management	2
1			Credit	Access to Civic & Public Space	1
	1		Credit	Access to Recreation Facilities	1
	1		Credit	Visitability and Universal Design	1
2			Credit	Community Outreach and Involvement	2
	1		Credit	Local Food Production	1
2			Credit	Tree-Lined and Shaded Streetscapes	2
	1		Credit	Neighborhood Schools	1

Yes	?	No			
12	19	0	<b>Green Infrastructure &amp; Buildings</b>		<b>31</b>
Y			Prereq	Certified Green Building	Required
Y			Prereq	Minimum Building Energy Performance	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Construction Activity Pollution Prevention	Required
	5		Credit	Certified Green Buildings	5
	2		Credit	Optimize Building Energy Performance	2
	1		Credit	Indoor Water Use Reduction	1
1	1		Credit	Outdoor Water Use Reduction	2
1			Credit	Building Reuse	1
1	1		Credit	Historic Resource Preservation and Adaptive Reuse	2
1			Credit	Minimized Site Disturbance	1
1	3		Credit	Rainwater Management	4
1			Credit	Heat Island Reduction	1
1			Credit	Solar Orientation	1
1	2		Credit	Renewable Energy Production	3
	2		Credit	District Heating and Cooling	2
1			Credit	Infrastructure Energy Efficiency	1
1	1		Credit	Wastewater Management	2
1			Credit	Recycled and Reused Infrastructure	1
	1		Credit	Solid Waste Management	1
1			Credit	Light Pollution Reduction	1

Yes	?	No			
3	3	0	<b>Innovation &amp; Design Process</b>		<b>6</b>
2	3		Credit	Innovation	5
1			Credit	LEED <sup>®</sup> Accredited Professional	1

Yes	?	No			
2	2	0	<b>Regional Priority Credits</b>		<b>4</b>
1			Credit	Regional Priority Credit: Region Defined	1
1			Credit	Regional Priority Credit: Region Defined	1
	1		Credit	Regional Priority Credit: Region Defined	1
	1		Credit	Regional Priority Credit: Region Defined	1

<b>43</b>	<b>52</b>	<b>16</b>	<b>PROJECT TOTALS (Certification estimates)</b>		<b>110</b>
Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+ points					