

Part 3: Communication through ArcGIS StoryMap

Communication of need for Urban Heat Island mitigation, implementation

- Using ArcGIS Story Map compared to comprehensive Greenprint
- Selection of team – new idea to Alabama
- Choices in language, audience – communicate basic principles to general public to effect policy, investment
- Visual presentation helps understanding
- Beta testing – colleagues, across disciplines. COVID stopped direct presentation to public.
- Implementation plan: 2 areas highlighted in Story Map

Inspiration: “Greenprint” to tell the story

- How Cool Green is similar to Greenprint
- How Cool Green is not like a Greenprint

Not a comprehensive green print

Cool Green had very small budget

Interactive Greenprint Bernalillo County California

Bernalillo County Greenprint A COMMUNITY-DRIVEN CONSERVATION PLAN

To learn more, click [here](#). Para ver en español, haga clic [aquí](#).



Intro/Combined Results

Preserve agriculture

Protect cultural areas

Protect water quality

Protect wildlife habitat

Provide outdoor recreation

Learn more

Bernalillo County Greenprint

The Bernalillo County Greenprint is a **community-driven conservation plan**. The Trust for Public Land worked with Bernalillo County Parks and Recreation Department and a local steering committee to develop the Greenprint based on community input. The



Examples of comprehensive Greenprint

- San Bernalillo California
- Created by Trust for Public Lands
- <https://www.bernco.gov/community-services/greenprint.aspx>
- <https://web.tplgis.org/Storymaps/Templates/MapSeries/?appid=f4c12ff3d0be48619bde39b1c9c6fe54>

Telling the story:

Climate change mitigation vs adaptation

- COOL GREEN Focuses on both approaches:
- *Mitigation* through introducing urban trees for carbon storage, future flooding control through tree leaf transpiration, and stormwater management.
- *Adaption* though adjusting to actual or expected future climate. The goal is to reduce our vulnerability to the harmful effects of climate change (like sea-level encroachment, more intense extreme weather events or food insecurity).
- While climate change is a global issue, it is felt on a local scale. *Cities and municipalities are therefore at the frontline of adaptation*

Data Sources

- High Risk areas were based on elements from

EnviroAtlas Birmingham Community Study Area - percent green space, percent impervious, percent of summer night cooling reduction, annual runoff, and acute respiratory symptoms.

- Tree canopy data were calculated using US Forest Service

i-Tree landscape. The map shows 'plantable space' within the high-risk areas. The dark blue areas have the most potential - areas worth exploring for Cool Green solutions.

Team selection

- **Francesca Gross:** The Nature Conservancy Alabama office, Urban Conservation Program (program has been discontinued)
- **Maianna Voge:** UC Berkley, previous GreenInfo Network, previous Trust for Public Lands Greenprint Team
- **Ariann Nassel:** UAB School of Public Health, Director of Spatial Data Visualization and Senior GIS Analyst, Lister Hill Center for Health Policy
- **Liz O'Donoghue:** The Nature Conservancy California office, Spatial Data Scientist

Audience and content

- The **ArcGIS** work from UAB will be used for researchers, scientists and planners.
- **StoryMap** provides basic information about the results of the study
- **StoryMap** audience includes non-scientists, decision makers, stakeholders, public officials
- **StoryMap** will be used in Grant Proposals to fund projects in high risk areas
- **GOAL** : Communicate basic principles to general public to effect policy, investment
- Visual presentation helps understanding

Intro to our COOL GREEN StoryMap

This is one interpretation of the UAB GIS data.

Other EnviroAtlas data uses might include:

- Focus on climate induced flooding
- Focus on historical health conditions – post War ‘red lining’
- Focus on policy for maintaining existing tree canopy
- Focus on one section of the study area for adaption/mitigation

COOL GREEN StoryMap Main Pages

- Why Plant Trees
- Green Natural Solutions
- Birmingham Study Area
- The Data Driven Case for more Trees
- Key Metrics: Urban Heat Island
- Key Metrics: Air Quality
- Key Metrics: Flooding

Opportunity Areas

The intersection of data:

- Urban Heat-

 - data tree canopy*

 - night time temperature change*

 - Impervious surfaces*

- Air Quality

- Flooding

Opportunity Areas

The intersection of data:

- Urban Heat
- Air Quality –
 - Reduction in Ozone*
 - Reduction in PM 2.5*
- Flooding

Opportunity Areas

The intersection of data:

- Urban Heat
- Air Quality
- Flooding –
 - Reduction in annual runoff from tree canopy
 - Available open spaces for flood control
 - FEMA Flood zones

COOL GREEN study results

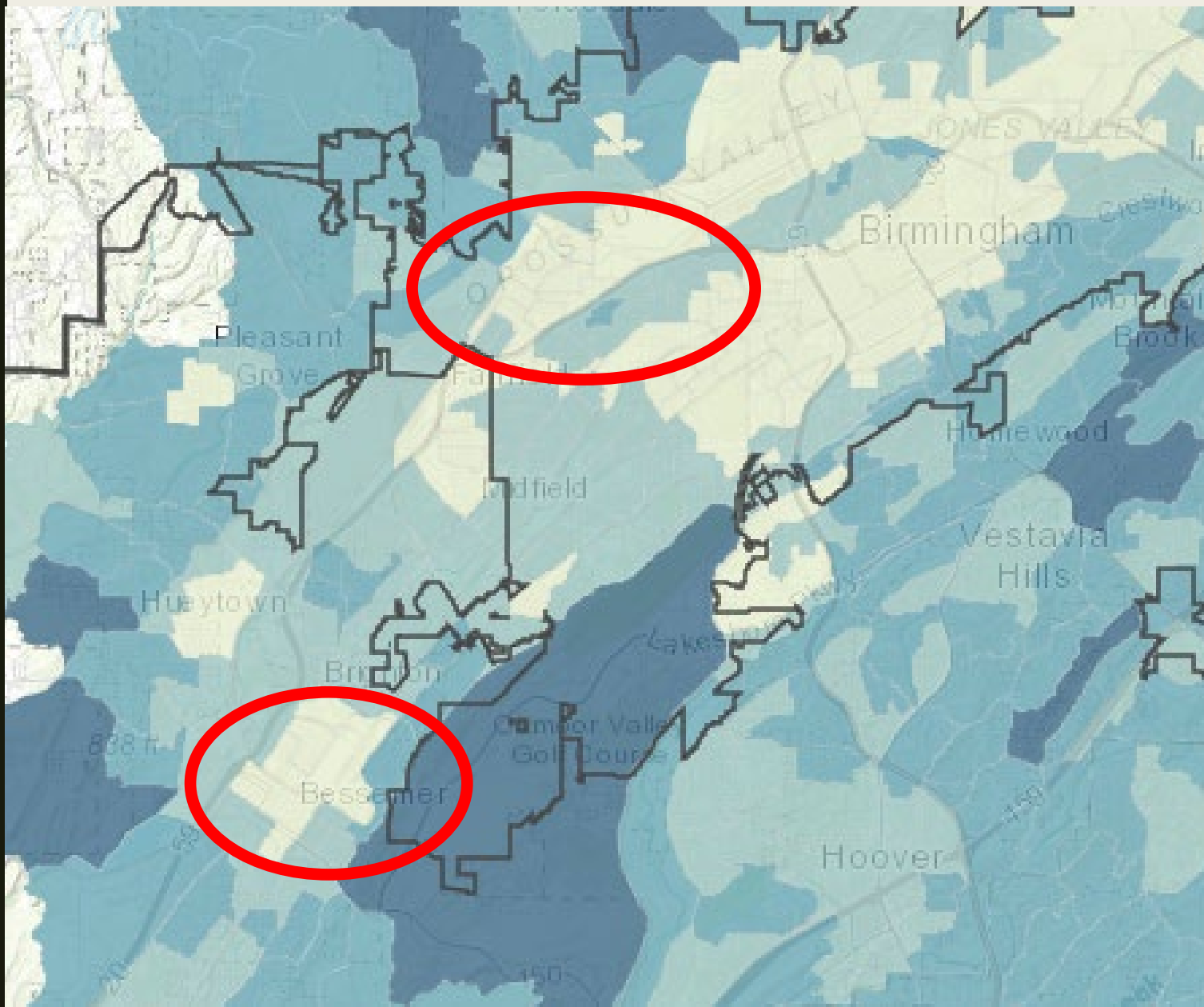
- Opportunity zone in Ensley-Pratt Neighborhood, Birmingham Alabama
- Opportunity zone in Bessemer, Alabama

Bessemer and Pratt City Neighborhood

- Historic context of flooding, wide streets, no green infrastructure
- Population has poor health conditions due to history and poverty
- “Its not about the trees” – crime/safety, home (social cohesion), co-benefits (relief from flooding and future climate change power)

High Risk = Green Opportunity

- *percent green space,*
- *percent impervious*
- *percent of summer night cooling reduction*
- *annual runoff*
- *acute respiratory symptoms*
- *'plantable space'*



LEGEND

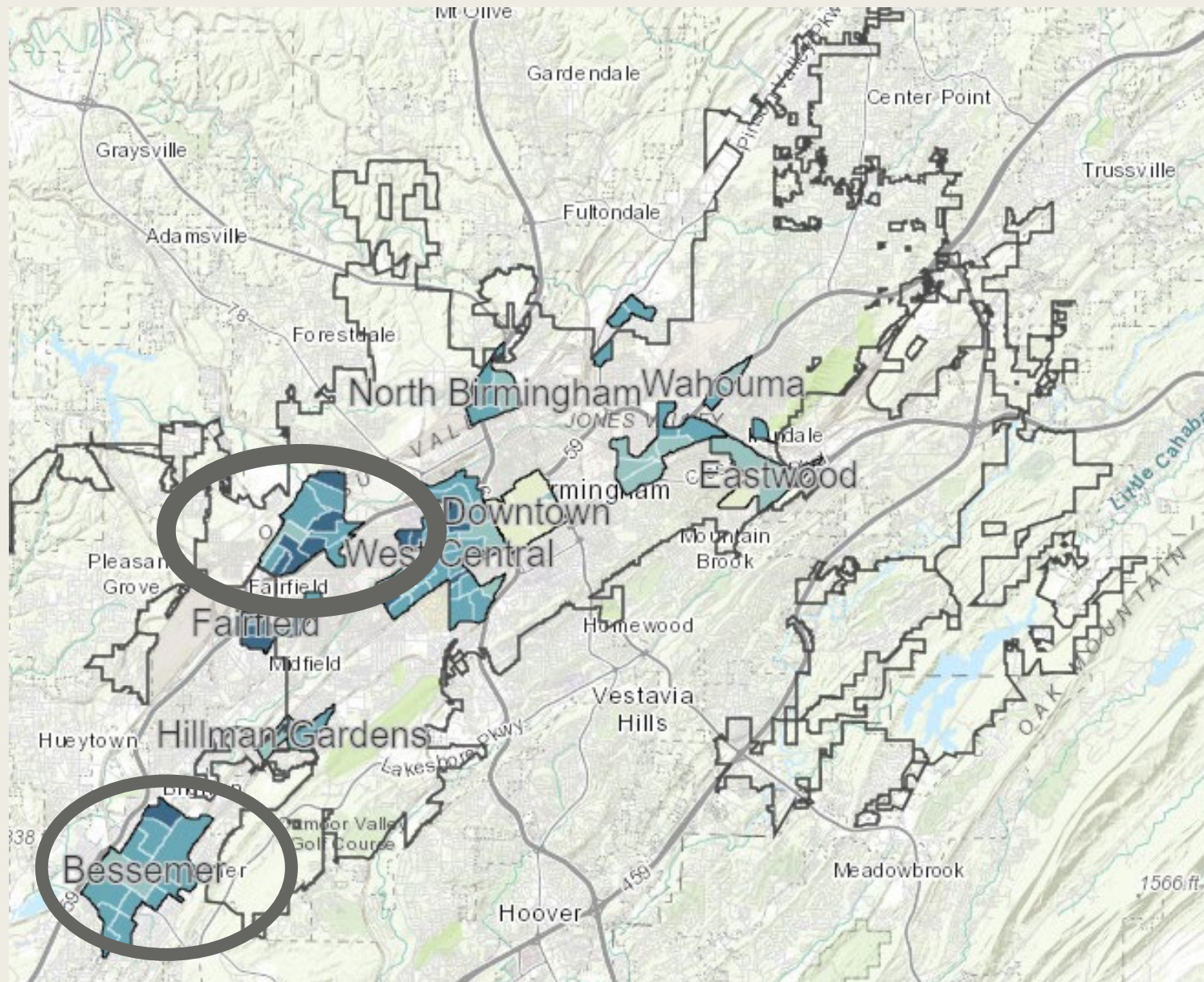
BirminghamBoundary



Average Temperature
Reduction by Block
Group (°F)

Average Nighttime
Cooling (F)





LEGEND

Birmingham Boundary



Final Green Opportunity Areas

Plantable Percent



> 50 - 56.8



> 40 - 50



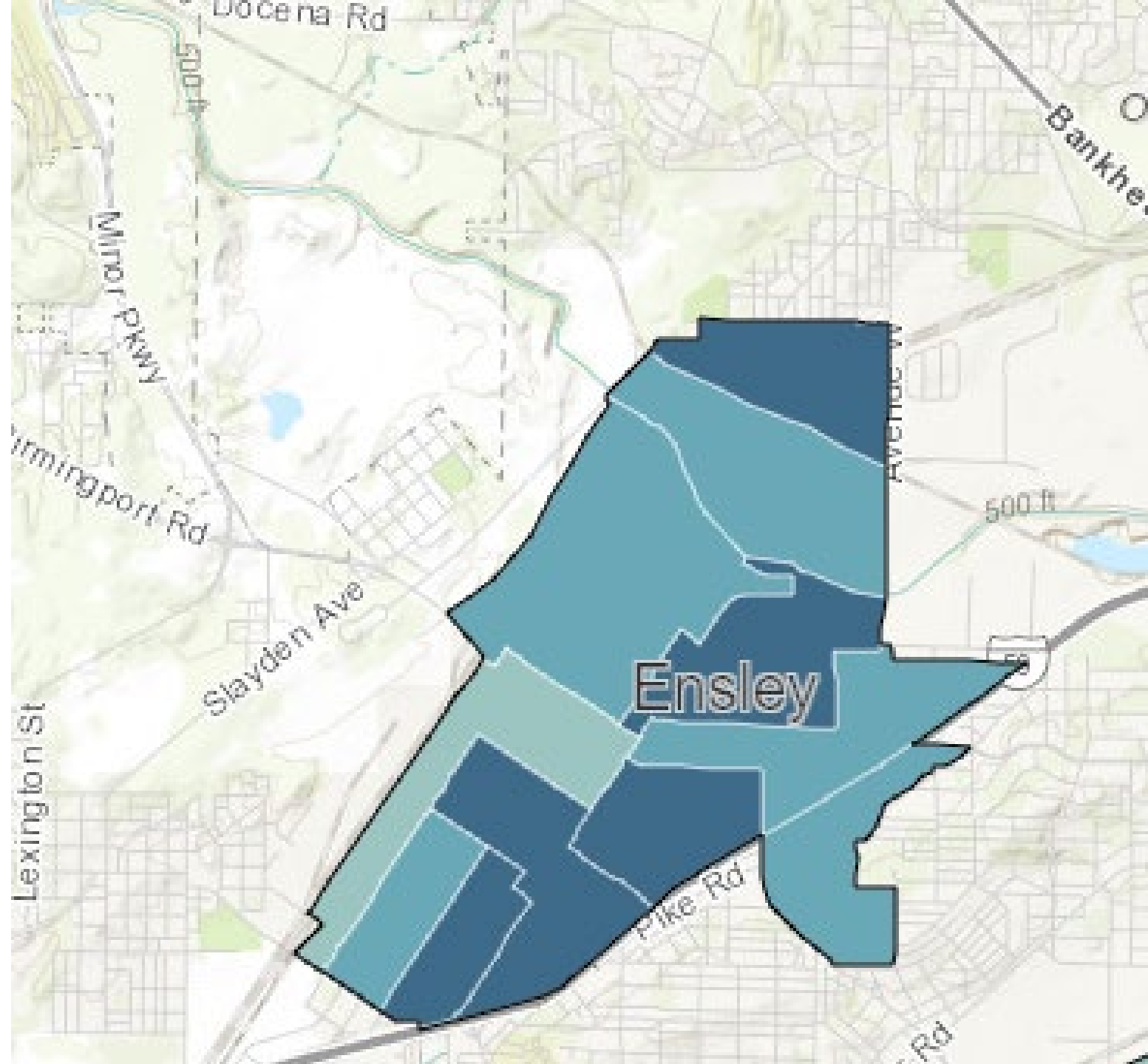
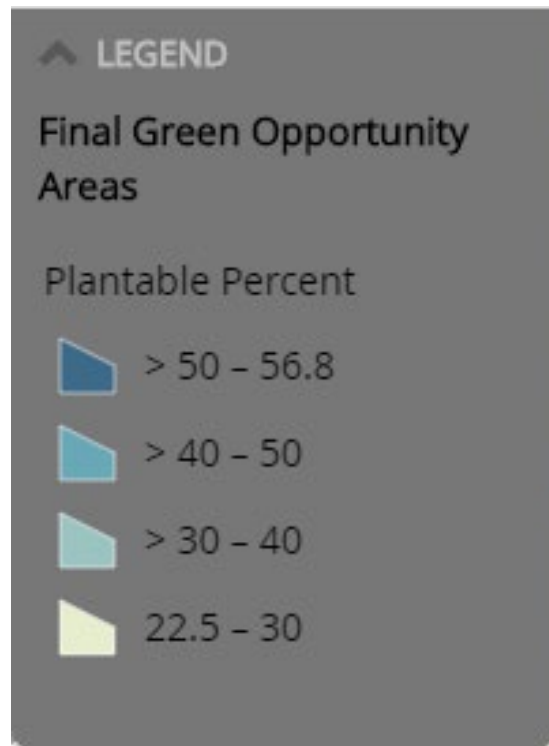
> 30 - 40



22.5 - 30



Opportunity: Ensley-Pratt Neighborhood



Green Opportunity Metrics

- Ensley/South Pratt Study Area - 11 block groups
- A 1612 acre area in Ensley has a low tree canopy of only 7 percent but 48 percent 'plantable' space is available for more shade!
- Data shown at right are from one census block in Ensley

Total Acres	171.90
Canopy Acres	7.00
Canopy Percent	4.05
Impervious Acres	103.50
Impervious Percent	60.22
Plantable Acres	60.80
Plantable Percent	35.37
Carbon Sequestration (\$)	40,682
Carbon Sequestration (t/yr)	238.50
CO2 Equivalent Storage (\$)	1,815
CO2 Equivalent Storage (t/yr)	10.70

CO2 Equivalent Storage (t/yr)	10.70
CO2 Equivalent Storage (\$)	40,682
CO2 Equivalent Storage (t/yr)	874.70
CO2 Equivalent Sequestration (\$)	1,815
CO2 Equivalent Sequestration (t/yr)	39.00
Transpiration (mg/yr)	1.10
Rainfall Interception (mg/yr)	0.60
Avoided Runoff (mg/yr)	0.10
Avoided Runoff (\$/yr)	819

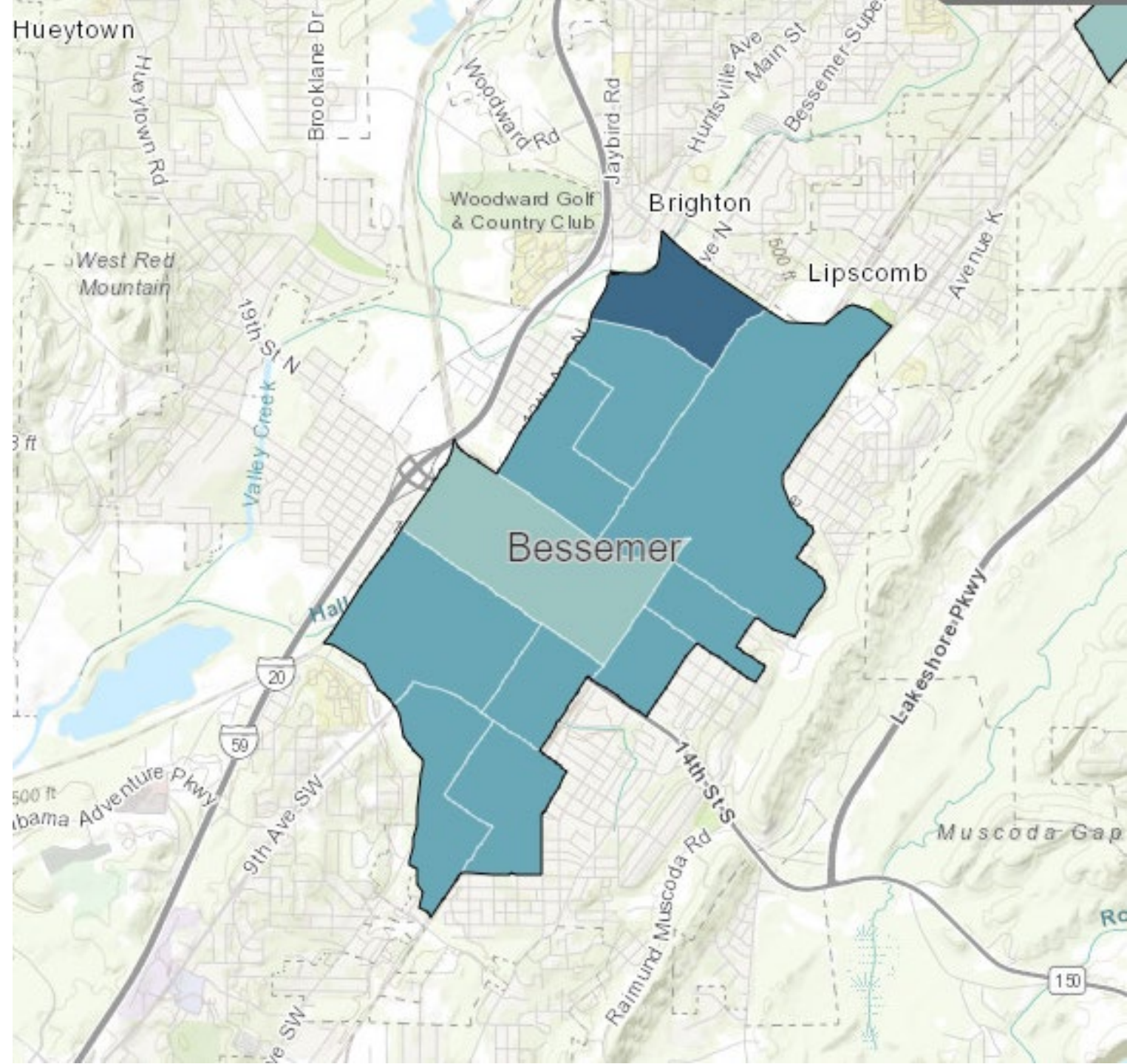
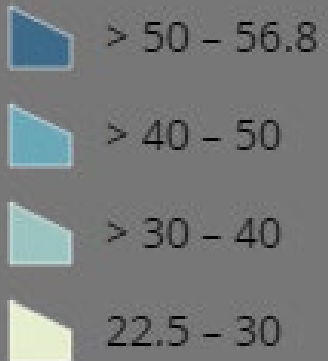


Opportunity: Bessemer Alabama

LEGEND

Final Green Opportunity Areas

Plantable Percent



Green Opportunity Metrics:

Bessemer, Alabama -
11 census block
groups

The historic city of
Bessemer also has
low tree canopy
coverage and high
potential for hotter
summer nights from
urban heat island
effect.

One of the 11 census
blocks is shown at
right as example of
level of detail.

Total Acres	419.20
Canopy Acres	17.80
Canopy Percent	4.24
Impervious Acres	259.00
Impervious Percent	61.80
Plantable Acres	142.50
Plantable Percent	33.99
Carbon Sequestration (\$)	103,895
Carbon Sequestration (t/yr)	609.10
CO2 Equivalent Storage (\$)	4,634
CO2 Equivalent Storage (t/yr)	27.10

CO2 Equivalent Storage (\$)	103,895
CO2 Equivalent Storage (t/yr)	2,233.60
CO2 Equivalent Sequestration (\$)	4,634
CO2 Equivalent Sequestration (t/yr)	99.60
Transpiration (mg/yr)	2.90
Rainfall Interception (mg/yr)	1.40
Avoided Runoff (mg/yr)	0.20
Avoided Runoff (\$/yr)	2,093

FREDDO VERDE

- Please take a look and send comments to:
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