

WHY ARE WE INTERESTED IN TREES IN CITIES?

249,253,271: Total urban population
in the United States

80.7%: Percent of the U.S. population
that is urban

Data from US Census Bureau (2010)



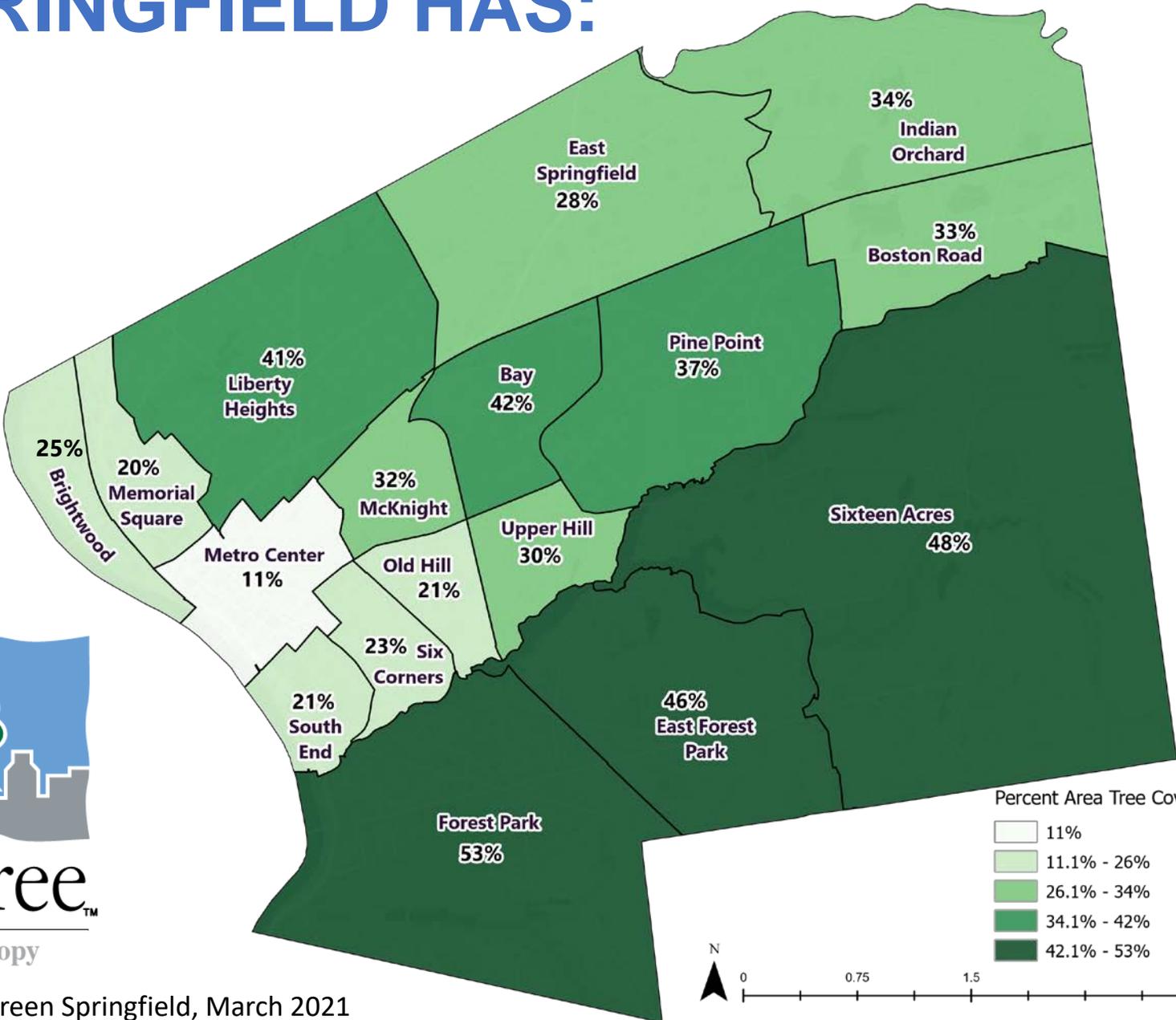
HOW DO TREES INFLUENCE THE ENVIRONMENT AROUND US?

Urban Trees:

- Create more livable spaces
- Reduce the Urban Heat Island
- Reduce Air pollution
- Intercept and Absorb Stormwater Run-off
- Increase Property Values



SPRINGFIELD HAS:



36%

FOREST COVER

Only 36% of Springfield has existing tree cover, which is below US Forest Service benchmark (40%)



Source: Regreen Springfield, March 2021

MUNICIPAL VULNERABILITY PREPAREDNESS (MVP)

What is MVP?

MVP Action and Planning Grants

MVP in Springfield

- Climate Action and Resiliency Plan (CARP) Planning Grant
- Public Outreach Action Grant
- Urban Forestry Action Grant



URBAN FORESTRY ACTION GRANT

Urban Forest Resource
Assessment

Municipal Nursery Expansion

STEW Map

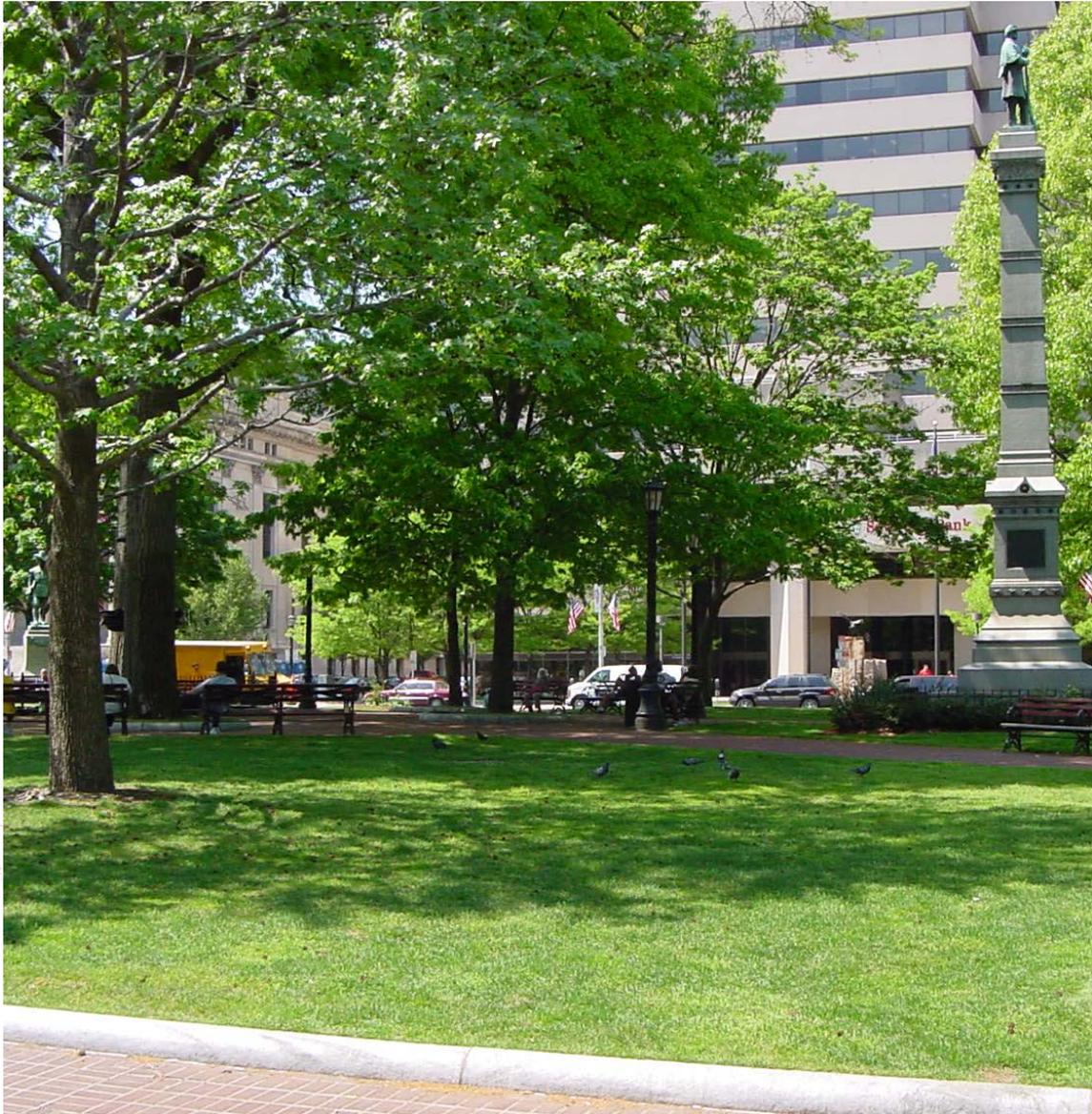
Community Engagement

ReGreenSpringfield



MVP

Municipal Vulnerability
Preparedness



URBAN FORESTRY RESOURCE ASSESSMENT

28,300 Street trees

\$2 Million in annual ecosystem benefits

\$900,000 in annual energy benefits

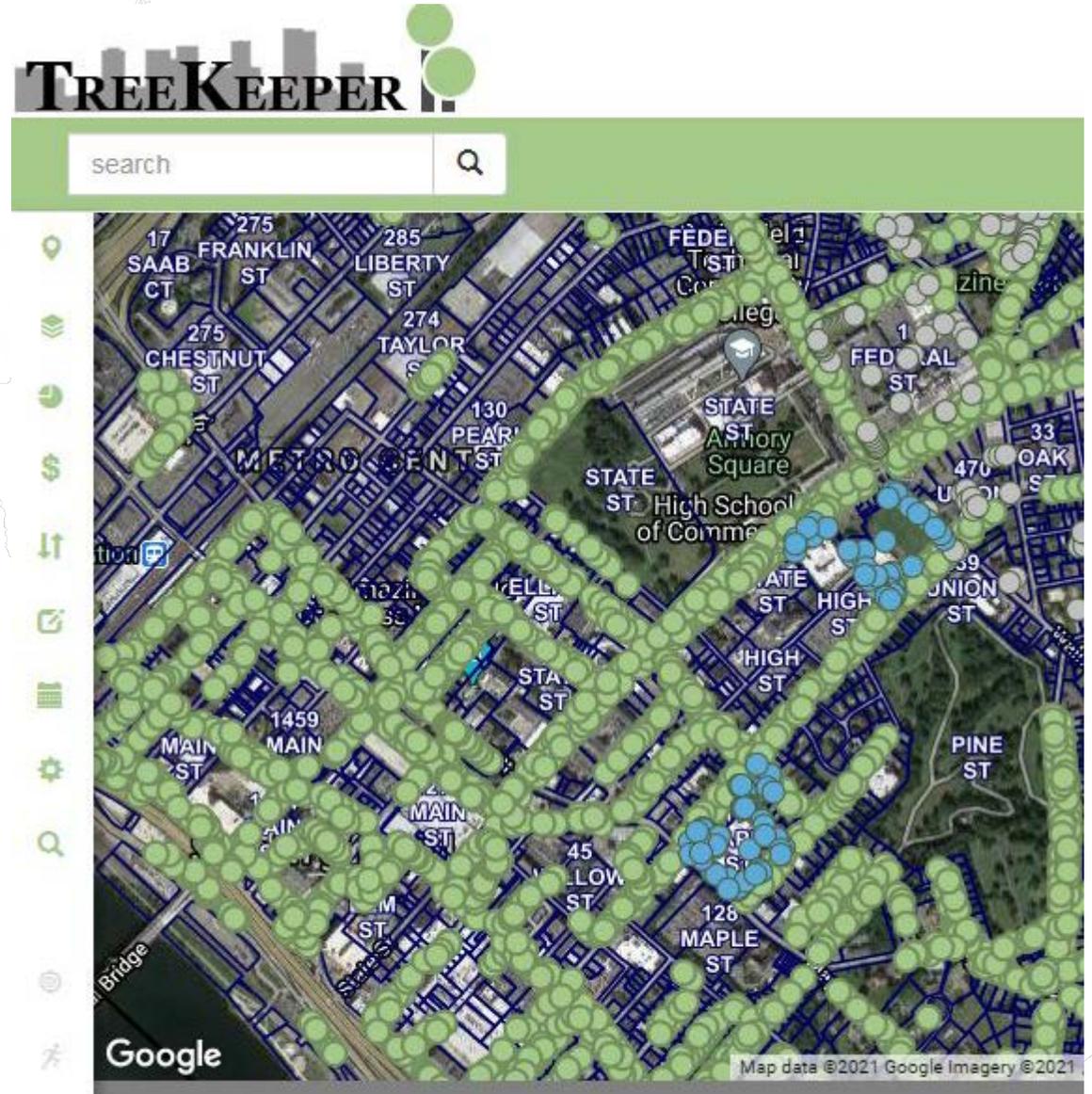
5.7 Million lbs CO₂ Avoided and Sequestered

22 Million Gallons of Water Saved

22,000 lbs of particulate pollutants removed



MVP
Municipal Vulnerability
Preparedness



MUNICIPAL NURSERY EXPANSION

Expanded Production Fields

Propagation Greenhouse

Environmental Education Classroom



MVP

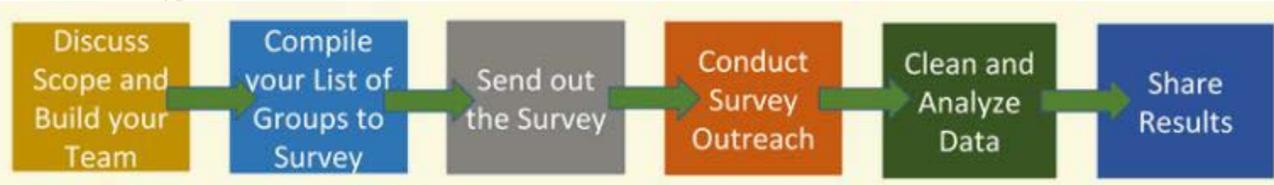
Municipal Vulnerability Preparedness



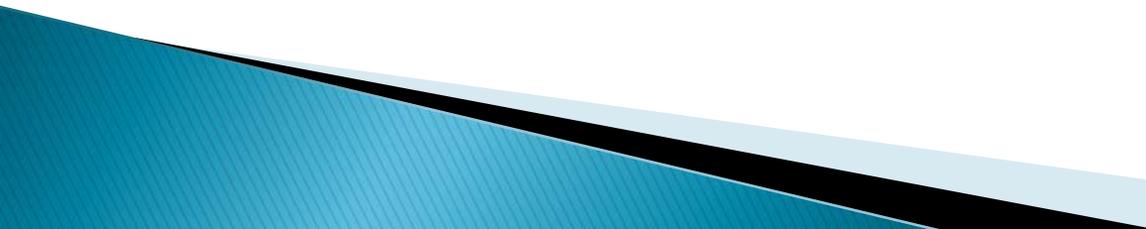
STEWARDSHIP MAPPING ASSESSMENT PROJECT

STEW-MAP

- Organizational Characteristics
- Geographical Turf
- Networks



Municipal Energy

- ▶ The City of Springfield Completed a building – by building survey.
 - ▶ The Information garnered a three–phase energy plan
 - ▶ Realized \$3.5 m in annual savings
 - ▶ Energy Improvements included:
 - New Boilers
 - Improved Air Quality in classrooms
 - Domestic Hot water Upgrades
 - Motors and Drives
 - Efficiencies in lighting
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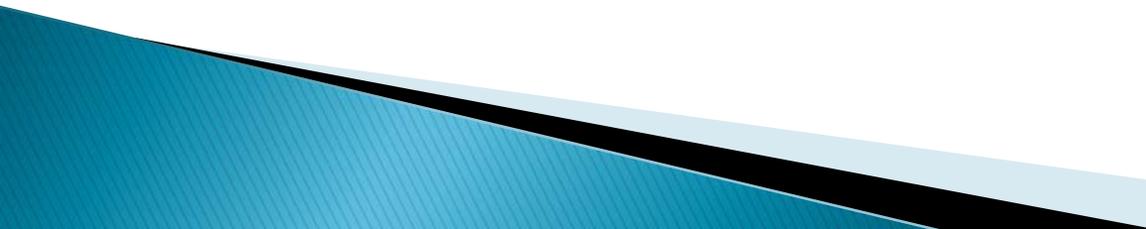
Implementing Energy Performance Contract

- ▶ Through procurement process, the City of Springfield chose Siemens Building Technologies as their partner to implement this substantial project for citywide facility improvements.
 - ▶ Major advantages of this approach include:
 - Accountability
 - Building Efficiency
 - Guaranteed Savings
 - Risk Reduction
 - Significant Energy Reduction
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Green Communities

- ▶ Springfield was one of the first communities to achieve the Green Communities program's energy reduction goal. Springfield has now reduced municipal energy consumption by 27% from their 2007 baseline and reduced annual energy costs by approximately \$3,500,000. Through this process, Springfield modernized its facilities by replacing outdated, unreliable equipment and improving comfort

Understanding Energy Use and Cost

- ▶ With almost 50 electric accounts and 80– natural gas accounts, they city collected the data from these accounts.
 - ▶ The largest users were identified, and on account with demand charges, this information was graphed to develop strategies.
 - ▶ Goal is to reduce demand without impacting building performance
 - ▶ Demand reduction resulted in avoided costs of \$51,000 annually.
 - ▶ By understanding the electric rate structure, the city avoided increased costs.
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Emission Reductions	In One Year	In 5 Years	Program Term
Pounds of Carbon Dioxide	13,309,968	66,549,839	266,199,354
Pounds of Sulfur Dioxide	20,765	103,826	415,306
Pounds of Nitrogen Oxide	13,546	67,729	270,916
Environmental Impact	In One Year	In 5 Years	Program Term
Passenger cars off the Road	1,282	6,410	25,640
Passenger Car Miles Driven	9,034,582	45,172,910	180,691,640
Planted Acre Trees	7,105	35,525	142,100
Gallons of Gasoline	679,281	3,396,405	13,585,620
Barrels of Oil	13,976	69,880	279,520
Number of Powered Homes	722	3,610	14,440

Saving On Energy Procurement

- ▶ The City engages in a highly competitive bidding process
 - ▶ City issues RFP for energy broker services
 - ▶ City watches the market and analyzing trends to purchase at the lowest costs.
 - ▶ The City can lock-in pricing per therm or kilowatt hour.
 - ▶ The city is safeguarded from the volatility in the energy markets.
 - ▶ This approach has resulted in hundreds of thousands of dollars saved thus resulting in more investment into additional energy savings measures across the city.
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Utility Incentives and Rebates

- ▶ In working with Siemens , the city learned about the considerable advantages available by working with the electric and natural gas utilities to improve energy efficiency. The first two phases of the performance contract included over \$1.5 m in financial incentives. The city continues with partnering with Eversource and is averaging over \$1.0 m annually in incentives and improvements to lightings and controls.
 - 1. More energy is saved
 - 2. Additional Greenhouse gases reduced.
 - 3. Facilities continued to be improved.

Additional Significant Efforts

- ▶ Other significant efforts by the city has resulted in a steady reduction in greenhouse gas and proven Springfield's commitment to energy reduction and the environment.
- ▶ 1. Oil to Natural Gas Conversions
- ▶ 2. Separation of Space Heating and Domestic Hot Water Systems.
- ▶ 3. Improved Preventative Maintenance
- ▶ 4. Recycling Program
- ▶ 5. New School Construction– Brookings, Brightwood, Homer
- ▶ 6. Athletic Field Organic Fertilization