Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: City of Springfield
Project Title: Community Resilience through Urban Forestry
Award Year (FY): 19
Grant Award: $274,554
Match: $78,500
Match Source: Cash Match
One or Two Year Project: 2year (1 year COVID Ext.)
Municipal Department Leading Project: Forestry Division
Project Website URL: www.regreenspringfield.org\mvp

Community Overview:

- What is the population size of your community and where is it located?

Springfield is located in Hampden County in Western Massachusetts. Springfield has a population of 153,000 residents.

- Do you have any Environmental Justice or other Climate Vulnerable communities? (Think about both those who live and work in your town.)

More than 29% of Springfield residents live below the poverty line and as a result a majority of the City is considered an Environmental Justice Population. The 2017 Springfield Climate Action & Resiliency Plan revealed that much of the population is at risk of significant negative impacts of climate change.

- Other unique traits of your municipality like who the top employers are, geography, history, etc.

The City of Springfield has a long history as the economic hub of Western Massachusetts. Like many other post-industrial cities in the North East, Springfield has experienced many changes over the last century. Much of the manufacturing industry has left the City and currently two major medical centers are among the top employers. Both Baystate Medical Center and Mercy Medical Center provide top quality medical services for the greater Springfield area and Western Massachusetts. Mass Mutual is another top employer located in Springfield providing insurance and investment services. Finally, Smith and Wesson firearms is located in Springfield providing many manufacturing jobs.

Springfield is known as the birthplace of basketball which was invented by James Naismith at Springfield College. The City hosts the Naismith International Basketball Hall of Fame which is a major tourist attraction for the region. More recently the fully licensed casino, MGM Springfield, opened in 2018 bringing further development and economic vitality to downtown Springfield.

In 2011 Springfield suffered the effects of an EF3 Tornado which caused severe structure damage and almost complete loss of tree canopy along its path. This event has brought the City's Forestry Division, which was founded in 1898, to prominence during the clean-up and recovery from this and a severe October snow storm also in 2011. This project has provided much needed resources to the Springfield Forestry Division and increased organizational capacity.

Project Description and Goals:

- Where was the project located?

The resource assessment and street tree inventory occurred City-wide. Every existing street tree was inspected for health and condition and a tree risk rating was also calculated for each tree. Additionally, several thousand tree planting locations were identified by certified arborists.

The tasks related to the municipal tree nursery occurred at Forest Park. The city has maintained a tree nursery in Forest Park since 1905. The addition of the propagation greenhouse will significantly increase the ability of the City to produce high quality trees at a lower cost.

The STEW-MAP project was a City-wide effort to connect civic groups who are engaged in environmental stewardship across the City.

The outreach programs were open to any City residents and other interested parties. Due to COVID restrictions these events were held virtually and subsequently reached a wide audience including community members, students from Springfield Technical Community College and UMass Amherst, and other engaged community leaders.

- What climate change impacts did the project address?

The project addressed multiple climate impacts by focusing on the impact Urban Forestry and trees will have on the Springfield's micro climate. Trees have the ability to address a wide range of Climate impacts and are the most tried and tested form of green infrastructure.

Trees have been shown to reduce the urban heat island effect and reduce average air temperature. This type of large-scale passive cooling will be important to mitigate an increase in overall temperature as well as acute heat waves that impact vulnerable communities.

Trees also reduce peak storm water flow and can help to mitigate the effects of extreme precipitation events. Localized flooding of streets is an expected impact of climate change and increasing overall tree canopy will help to mitigate this problem.

- What were the specific goals and tasks of the project as stated in your application?

Task 2: Resource Assessment
Sub-task 2.1 Street Tree Inventory
Sub-task 2.2 Stew Map Development

Task 3: Municipal Nursery Expansion
Sub-task 3.1 Tree Propagation Greenhouse and Urban Forestry Classroom
Sub-task 3.2 Nursery Expansion

Task 4: Urban Forestry Outreach and Education
Sub-task 4.1 Citizen Science Programming
Sub-task 4.2 Public Outreach

- Did your project meet the goals set forth in your application in terms of:
    - Employing nature-based solutions
    - Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations
    - Providing regional benefits
    - Implementing the public involvement and community engagement plan set forth in your application
    - Finishing the project on time

The project succeeded in achieving all goals set in the initial application. Results and deliverables varied slightly for some tasks mainly due to changes required by the COVID-19 pandemic. The goal of employing nature-based solutions was achieved through the expansion of the municipal nursery. Over 400 new trees were added to the growing fields which are anticipated to be planted throughout the City over the next three years. Additionally, the tree propagation greenhouse has added the capacity of the City to produce up to 4,000 seedlings annually and will significantly reduce the cost of planting stock in the coming decades. We anticipate the first year of full production in the Spring of 2022. The outreach and education portion of the project was conducted mainly through virtual meetings and limited outdoor events due to the COVID-19 pandemic. As people became more accustomed to virtual meetings. I believe this format allowed us to reach a wider audience than a strictly in-person event. Unfortunately, the COVID-19 pandemic created difficulty in completing the project on the original timeline proposed. A one-year extension was provided by EEA giving ample time to complete all project tasks.

Results and Deliverables:

- Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created, increase in tree canopy coverage, etc.). Report out on the metrics outlined in your application.

Quantifiable results include:

- 32,403 tree sites evaluated, including identifying 13,000 available planting sites.
- Over 40 respondents to the STEW MAP survey
- A 900 sq. ft. greenhouse was constructed providing space to propagate 4,000 tree seedlings a year.
- A 600 sq. ft. class room was also constructed which can accommodate 20-30 students.
- 50,000 sq. ft. of growing space was added to the nursery production fields including associated deer protection and irrigation.
- Over 400 new liner trees were planted within the tree nursery to be planted throughout the city over the next several years.
- 4 community meeting were held focused on MVP activities, climate resilience, and air quality montoring.
- 1,000 carbon footprint posters were made to be distributed to schools throughout Springfield.
- 440 Tree owner's manuals were produced which will be distributed to community members and students.
- 285 storm water management booklets were produced to distribute to community members and students.
- Over 30 informational books and pamphlets were purchased for the Urban Forestry learning center library and to distribute to the Springfield public library system.

- Provide a brief summary of project deliverables with web links, if available.

Deliverables for this project included a complete re-inventory of the street tree population with added vacant planting sites. This information has already allowed the Forestry division to identify and address the most hazardous trees for removal and plan future planting projects. The Springfield STEW-MAP team focused on creating a streamlined version of the data collection methodology that could be replicated with other STEW-MAP projects across the country and world. This includes testing new digital data collection tools such as ArcGIS' Survey123 application. A series of STEW-MAP community meetings are planned for Summer 2021. The purpose of these meetings will be to demonstrate how STEW-MAP can be used as a tool by local organizations to coordinate work and grow their networks with the goal increasing cooperation and improving outcomes throughout the city.

The nursery expansion project dramatically increased the City's ability for tree planting. Total growing space was increased to accommodate 600 additional mature trees, with automated drip irrigation. The tree propagation greenhouse will allow the Forestry Division to produce 4,000 tree seedlings annually to

provide a consistent source of liner stock for the nursery operation. Tree planting is a key component of Springfield's Climate Action and Resiliency Plan (CARP). This project will aid the City in achieving its tree planting goal set forth in the 2017 CARP.

The community outreach portion of the project resulted four community events held virtually on March 24, 2021, April 14, 2021, May 12, 2021, and June 9, 2021. Several informational publications were purchased or created (see above) for distribution to Springfield residents.

The tree inventory is stored in Davy Resource Group Tree Keeper Software. A guest link to the Springfield inventory (login credentials can be provided upon request):

TreeKeeper 8 System for Springfield, MA (treekeepersoftware.com)

The STEW MAP project is included with the USDA Forest Service Project:

https://www.nrs.fs.fed.us/STEW-MAP/springfield/

Resources compiled by ReGreen Springfield related to the MVP Springfield Project:

https://www.regreenspringfield.org/mvp

https://vimeo.com/528945922

https://youtu.be/qhl5YenO5Kk

Lessons Learned:

- What lessons were learned as a result of the project? Focus on both the technical matter of the project and process-oriented lessons learned.
- What is the best way for other communities to learn from your project/process?

This project provided a wide range of data and information related to climate resiliency in the City of Springfield. The tree inventory data has provided updated tree metrics which are critical to quantifying the environmental benefits of Springfield's urban forest. This data also provides information on future needs of the urban forest and will be the basis of a comprehensive tree planting plan moving forward. One key process-oriented lesson was identifying the most relevant data to update give the limited budget for the project. Identifying the most important tree metrics allowed us to stream line the original inventory and update it to current industry standards.

The nursery expansion project provided the Forestry Division with the opportunity to examine in-house tree propagation and its benefits. We are excited to growing trees locally to ensure their suitability to Springfield's urban forest and its unique set of environmental conditions. Undertaking a building project such as this exposed the Forestry management

team to many new tasks and improved our overall organizational capacity to complete similar projects in the future.

The community outreach portion of the program was one of the more rewarding and informative components of the project. The ability to communicate with engaged community residents about what the City was doing to prepare for a changing climate and make our city more resilient is extremely important. Additionally, receiving feedback directly from residents provided an important perspective to City staff on how the public perceives our actions and where concerns may be. One of the biggest lessons learned from these sessions was the desire for improved communication. There was a common opinion that the City could do a better job of communicating its work to residents. These conversations have already triggered internal cross-departmental meetings to develop better communication strategies.

Partners and Other Support:

- Include a list of all project partners and describe their role in supporting/assisting in the project.

ArborPro Inc. – Conducted the street tree inventory update. Worked with the Forestry Division to develop the data collection protocols.

City of Springfield

Forestry Division – Overall project management and oversight.

Park Maintenance Division – Construction oversight for greenhouse complex.

Facilities Division – Oversight and installation of utilities for greenhouse complex.

Davey Resource Group – Seamless integration of new street tree data into existing system.

Hampden County Sherriff's Department – Provided skilled labor for construction of greenhouse complex.

Pioneer Valley Planning Commission – Participated in administration of STEW Map survey.

Public Health Institute of Western MA – Participated in public outreach events.

ReGreen Springfield – Participated in multiple aspects of the project including STEW-MAP and public outreach.

UMass Amherst – Participated in administration of STEW Map survey.

USDA Forest Service - Participated in planning and administration of STEW Map survey.

Project Photos:

- In your electronic submission of this report, please attach (as .jpg or .png) a few high-resolution (at least 300 pixels per inch) representative photos of the project. Photos should not show persons who can be easily identified, and avoid inclusion of any copyrighted, trademarked, or branded logos in the images. MVP may use these images on its website or other promotional purposes, so please also let us know if there is someone who should receive credit for taking the photo.

Digital photos provided separately.