Warren
RHODE ISLAND

Strategic Tree Canopy Plan

Plan by the Green Infrastructure Center Inc. for the Town of Warren, Rhode Island

Town of Warren, Rhode Island
townofwarren-ri.gov

JULY 2026

Green Infrastructure Center
gicinc.org

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Prepared by the Green Infrastructure Center Inc.
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URBAN & COMMUNITY FORESTRY PROGRAM

Green Infrastructure Center

TOWN OF WARREN, R.I. Incorporated 1747

Town of Warren RHODE ISLAND

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Executive Summary

The urban forest is a critical asset for healthy, resilient, and sustainable cities. Trees provide benefits that directly support public health by cleaning the air and filtering and reducing stormwater runoff, reducing urban temperatures, and fostering greater economic development. However, these benefits are at risk because tree canopy cover is declining across many U.S. localities. This Strategic Tree Canopy Plan provides data and strategies for maintaining and restoring tree canopy in Warren.

This plan is the culmination of an eleven-month planning process that included workshops and strategic planning sessions led by the Green Infrastructure Center Inc. (GIC) with Town staff and community partners. The public was engaged in this process through outreach events, a community open house and community interviews. The extent of urban forest cover was determined by analyzing aerial imagery to map the town's land cover. Open space was evaluated to determine the Potential Planting Area where future trees might be planted, along with assessments of the environmental and social benefits the town's trees provide. Strategies for retaining, protecting, and restoring tree canopy coverage were created.

Town Goal: The Town of Warren has 37% tree canopy coverage town-wide. The Town's Urban Area currently has 29% tree canopy coverage with a goal to increase that to 30% over the next 10 years. The boundary for the Urban Area was developed by the Tree Canopy Advisory Committee (TCAC) using the Urban Area as the base and modifying it to include additional high-density areas and excluding low-density conservation areas and parks. Additional tree planting will be needed to increase the tree canopy by 1% because trees will die from pests, storms, landowner removals, additional development, or old age.

Warren Canopy Goal: Increase the Urban Area Tree Canopy by 1% to 30% over the next 10 years.

Five Strategies to Achieve This Goal

1. **Developing and adopting a Stormwater Master Plan that includes an impervious surface ordinance.**
2. **Applying for grant funds to support the removal of impervious surfaces and expand tree planting efforts in the business district.**
3. **Updating the existing *Warren Tree Administrative Guidelines* to include best practices for tree care and maintenance, including guidance that encourages species diversity at both the project and town scale.**
4. **Establishing a tree bank to fund public tree planting and support mitigation efforts.**
5. **Establishing a free back-of-sidewalk tree planting program that incorporates education and outreach in neighborhoods with the lowest tree canopy cover and most severe heat.**

How Trees Benefit the Town

Tree canopy provides benefits such as cleaner air, urban cooling, stormwater capture, wildlife habitat, and natural beauty. This plan quantifies and identifies strategies to increase these benefits.

Air Quality

Trees sequester carbon and clean the air of particulate matter and ground-level ozone. Each year Warren's trees remove:

- 856 metric tons of carbon
- 25,269 lbs. of ground-level ozone (O_3)
- 4,703 lbs. of airborne particulate matter

Urban Cooling

Excessive pavement and lack of shade create urban heat islands. Warren's trees counter urban heating by shading hot areas. Tree canopy cover lowers surface temperatures and cools the town.

Stormwater Uptake

Trees capture rainfall and filter pollutants. During a ten-year/ 24-hour rainfall event (5.05 inches) the town's trees:

- soak up 11.9 million gallons of water
- reduce runoff pollution loads for nitrogen by 19%, phosphorus by 22%, and sediment by 13%

Canopy Goals

Warren's goal is to increase tree canopy coverage in the Urban Area to 30% over the next 10 years. This goal requires planting:

- 67 trees on Town-owned land annually
- 143 additional trees on private property through education and tree giveaways annually.

Tree Canopy and Potential Planting Area

The Town of Warren now has baseline data to identify opportunities to plant new trees for shade, energy savings, increased stormwater uptake, and improved air and water quality.

Introduction

Long before European settlement, the area now known as Warren was part of the ancestral homeland of the Pokanoket people, a subgroup of the Wampanoag nations. Known as Sowams, the region was rich in forests, rivers, and fertile land, supporting Indigenous villages for thousands of years. It was the residence of Chief Massasoit Ousamequin, who maintained alliances with neighboring tribes and forged early relations with English colonists, including the Pilgrims of Plymouth. Figures like Roger Williams were given shelter here before founding Providence, highlighting Sowams' role as a hub of diplomacy, sustenance, and Native governance.

English settlement began in the mid-17th century, when Massasoit and his son Wamsutta sold land to Plymouth colonists. As colonial pressure increased, relations deteriorated, culminating in King Philip's War (1675–1676), which devastated Native communities and resulted in the seizure of much Pokanoket territory. The town, initially part of Massachusetts after colonization, was ceded to Rhode Island in 1747 and renamed Warren in honor of Admiral Sir Peter Warren.

The Warren Town Hall sits on Main Street and serves as the municipal hub for the town.

FAST FACTS

Warren

Total Town Area: 6.2 sq. miles

Land Area: 5.7 sq. miles

Lakes & Ponds: 64 acres

Wetlands & Marshes: 582 acres

Streams: 13.3 miles

Total Tree Canopy: 1,328 acres

Potential Planting Area: 412 acres

Impervious Surfaces: 755 acres

Population: 11,095 people*

90.4% Non-Hispanic Whites,
4.2% Hispanic or Latino,
1.7% Black/African Americans,
0.7% Asian

**(U.S. Census 2024 estimate)*

Through the 18th and 19th centuries, Warren developed as a port and shipbuilding center, later shifting toward textile manufacturing as industries grew. Its waterfront and historic districts preserve a layered history that reflects Indigenous stewardship, colonial settlement, and economic transformation, illustrating the rich cultural and environmental legacy that continues to shape the town today.

This *Strategic Tree Canopy Plan* provides a vision and a roadmap for protecting and maintaining the town's urban forest and other natural assets, such as the rivers and streams. The plan is the first of its kind for the Town of Warren and includes the first canopy analysis ever completed. The plan calls for increasing the current tree canopy by 1% in the urban area, which requires active care for existing trees and expanding the Town's tree-planting program to target low canopy neighborhoods.

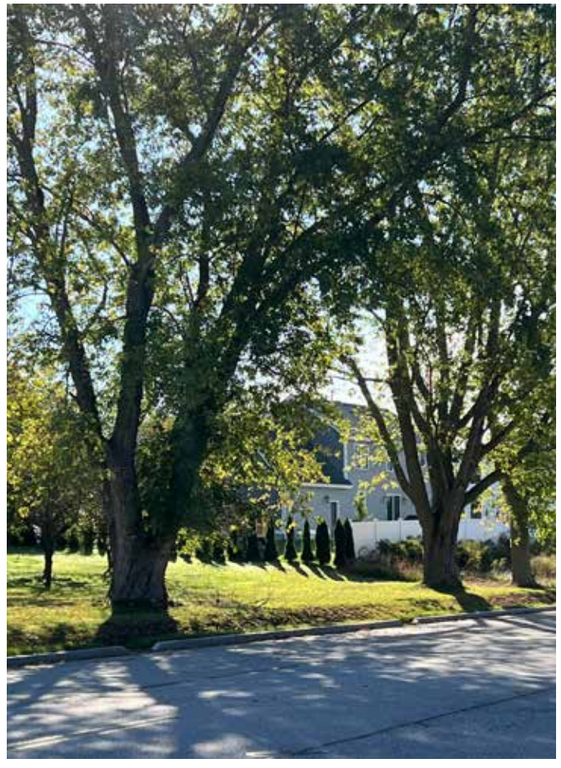
This *Strategic Tree Canopy Plan* advances the vision of Resilient Warren: Comprehensive Community Plan for Adaptation (Adopted by Warren Town Council November 2024) by addressing the town's most pressing challenges: ensuring safe and affordable housing, preserving historic buildings, protecting agricultural lands and wildlife habitat, remedying poorly planned past development, enhancing pedestrian and bicycle networks, and adapting to the impacts of sea level rise.

By strategically expanding tree canopy in low- and moderate-income neighborhoods, this plan promotes equitable access to the benefits of urban forestry while supporting stormwater management, reducing urban heat, and enhancing overall community resilience. Trees have been identified as a "high need" priority for achieving these outcomes, providing both ecological and social benefits that directly align with the Town's goals for a healthier, more sustainable, and resilient Warren.

Tree Benefits

Trees benefit communities ecologically, economically, and socially. Some of the many benefits include:

- Cleaner air and water
- Enhanced natural beauty
- Bird and wildlife habitat
- Reduced town heat
- Reduced levels of crime
- Reduced vehicle crashes
- Increased revenues from sales and property taxes
- Lower vacancy rates
- Improved mental health and focus
- Improved metabolic function
- Increased access to outdoor fitness opportunities



Large canopy trees provide greater benefits than smaller trees. The USDA Forest Service found that in 2025 dollars, a large tree is worth $7,411 in annual benefits while a small tree is worth just $450 (Center for Urban Forest Research and Southern Center for Urban Forestry Research & Information 2006).

Trees Are Green Infrastructure

Trees and other vegetation serve as the Town's "green infrastructure." Just as localities manage grey infrastructure (roads, sidewalks, bridges, and pipes), they should also manage vegetation as infrastructure. Trees support a vibrant, safe, and healthy community while adding to its historic character. They enhance sustainability by filtering stormwater and reducing runoff, cooling streets, cleaning the air, capturing carbon emissions, and increasing property values.

Gray vs Green. The image on the left shows the Town of Warren's gray infrastructure, including buildings and roads. Classified high-resolution satellite imagery (on the right) adds the Town's green infrastructure (trees and other vegetation). This green infrastructure provides cleaner air and water, energy savings, and natural beauty.

Reducing Stormwater Runoff and Filtering Pollutants

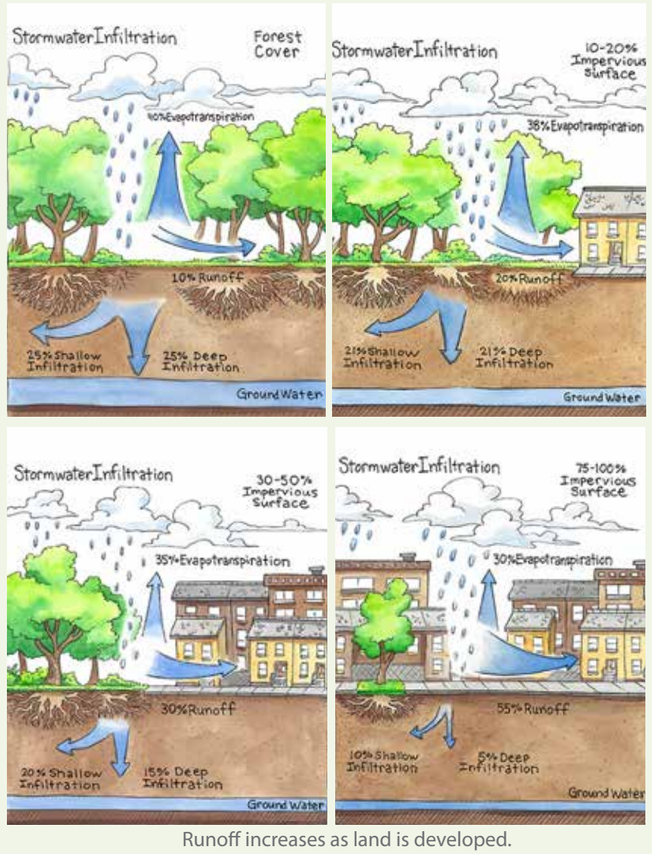
Trees protect communities from problems associated with stormwater runoff. As forested land is converted to impervious surfaces (e.g. roads, buildings, and parking), urban stormwater runoff increases, resulting in excess stormwater runoff which can cause temperature spikes in receiving waters, increased pollution of surface and ground waters, and greater potential for flooding.

Trees reduce nitrogen, phosphorus, and sediment in stormwater by filtering runoff of these pollutants. Increased loads of nutrients in stormwater runoff reduce oxygen in surface water, causing harm to fish and other aquatic life. Nitrogen and phosphorus can cause harmful algal blooms, while sediment can clog fish gills, smother aquatic life, and necessitate additional dredging of canals and waterways. As tree cover is lost and impervious areas expand, the excessive urban runoff of these harmful pollutants greatly increases. The presence of trees means fewer pollutants enter the Town's many watersheds, including the Barrington and Warren River, Plamer River, and Mount Hope.

The average annual precipitation in Warren is 44.2 inches (National Weather Service 2025). Much of this runoff flows into the municipal separate storm sewer system, transporting surface pollutants from the land to local waterways. Large paved areas contribute significant volumes to this runoff. While stormwater ponds and other best management practices (BMPs) are designed to mimic natural land cover rainfall release by detaining and filtering runoff, they do not fully replicate pre-development hydrology. In addition, older parts of the town may lack updated stormwater management practices required for new developments, so not all runoff is captured or treated before it flows into open waterways.

Since trees filter stormwater and reduce overall flows, planting or conserving trees is a natural, cost-effective way to mitigate stormwater. Each tree plays an important role in stormwater management. Based on the GIC's review of canopy rainfall interception studies, a typical street tree's crown can intercept between 760 and 4,000 gallons of water per year, depending on the tree's species and age.

Stormwater Infiltration Rates with Development



Runoff increases as land is developed.

Graphic adapted by GIC. Data Source: U.S. EPA Watershed Academy 2025.

Trees filter and clean stormwater runoff before it enters surface waters, ensuring healthy waterways for recreation and habitat.

Excess impervious areas cause hotter temperatures and increased runoff. This parking lot could be retrofitted to add more trees, bioswales, and pervious surfaces that allow water to seep into the ground.

The weeping cherry tree at this home provides stormwater management benefits for this home and the surrounding watershed.

Riparian forests, marshes and other natural lands buffer the town from storms, flooding and rising sea levels.

Buffering Storm Damage with Green Infrastructure – Trees!

Another benefit of conserving trees and forests is buffering against storms and reducing losses from flooding. According to the U.S. Environmental Protection Agency (EPA), excessive stormwater causes increased flooding, property damage, and public safety hazards. The EPA recommends ways to use trees to manage stormwater in its book *Stormwater to Street Trees*. Link: https://www.epa.gov/sites/default/files/2015-11/documents/stormwater2streettrees.pdf

Retaining trees and forests along streams prevents erosion and provides key habitat for fish, birds, animals, and people, too. A community can categorize their trees as "green infrastructure" to help justify spending money on town trees because they function as natural infrastructure by reducing standing water, preventing erosion, serving as windbreaks, and shading areas to reduce excessive temperatures.

In some cases, FEMA has reimbursed communities for lost tree cover when those trees were part of identified infrastructure, such as when a stream restoration project was damaged by a hurricane and the community had already identified the planted trees as infrastructure. To qualify, trees must be inventoried, have records of maintenance, and be specifically utilized for stormwater management, buffers, or other "green infrastructure" functions. Trees should also be recognized as infrastructure in policy documents such as the Comprehensive Plan, the Capital Improvement Plan (CIP), and even the Town's tree ordinances.

Improving Air Quality, Public Health, and Economic Values

Trees Clean the Air

Higher tree canopy cover is correlated with better air quality. Trees reduce ground-level ozone (O_3) while filtering out fine particulate matter, which can damage lungs and lead to respiratory distress and conditions such as asthma. In fact, well-treed neighborhoods have lower rates of respiratory illness (Rao *et al.* 2014). Trees capture such greenhouse gases as sulfur dioxide and carbon dioxide. These gases contribute to a warming planet and are associated with health problems from excessive heat. Trees also sequester carbon by storing it as wood, preventing its release into the atmosphere and mitigating the impact of climate change.

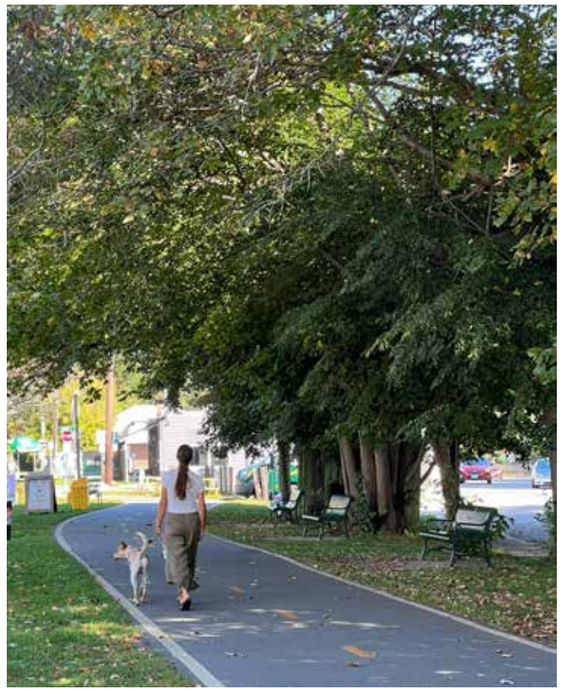
Trees Cool the Town

Tree shade provides an important refuge for children and the elderly during hot summers. Excessive heat can lead to heat stress, especially affecting infants and children up to four years of age, and people 65 years of age and older, or people with obesity or other health issues (Centers for Disease Control and Prevention 2024).

Tree canopy shades streets, sidewalks, parking lots, and homes, making urban locations cooler and more pleasant for outdoor activities, such as hiking, gardening and playing in town parks. Multiple studies have found significant cooling (2-7°F) and energy savings from shade trees in cities (McPherson et al. 1997, Akbari et al. 2001). Individual trees can transpire hundreds of liters of water per day, creating a cooling effect equivalent to the energy needed to power two average household central air-conditioning units (Ellison et al. 2017). Proper tree placement can reduce summer air conditioning costs by up to 35% (Arbor Day Foundation 2025). Pavement shaded by trees has a longer lifespan than pavement in full sun, reducing maintenance costs associated with roadways and sidewalks (McPherson and Muchnick 2005).

Trees Improve Walkability

Trees result in people walking more and walking farther. The cooler temperatures, aesthetics, and traffic calming effect increase a community's walkability, which is a priority of the Town of Warren. When trees are not present on a street, people perceive distances to be longer, hotter, and less pleasant, making pedestrians less inclined to walk than if streets are well-treed (Tilt, Unfried, and Roca 2007).



Trees buffer neighborhoods against air pollutants such as car exhaust and well-treed sidewalks and paths encourage people to walk.

Warren's trees reduce temperatures during hot summers through evapotranspiration and by casting shade, which make spaces like this playground more enjoyable for children.

Exposure to green spaces for 20 minutes a day can improve cognitive function.

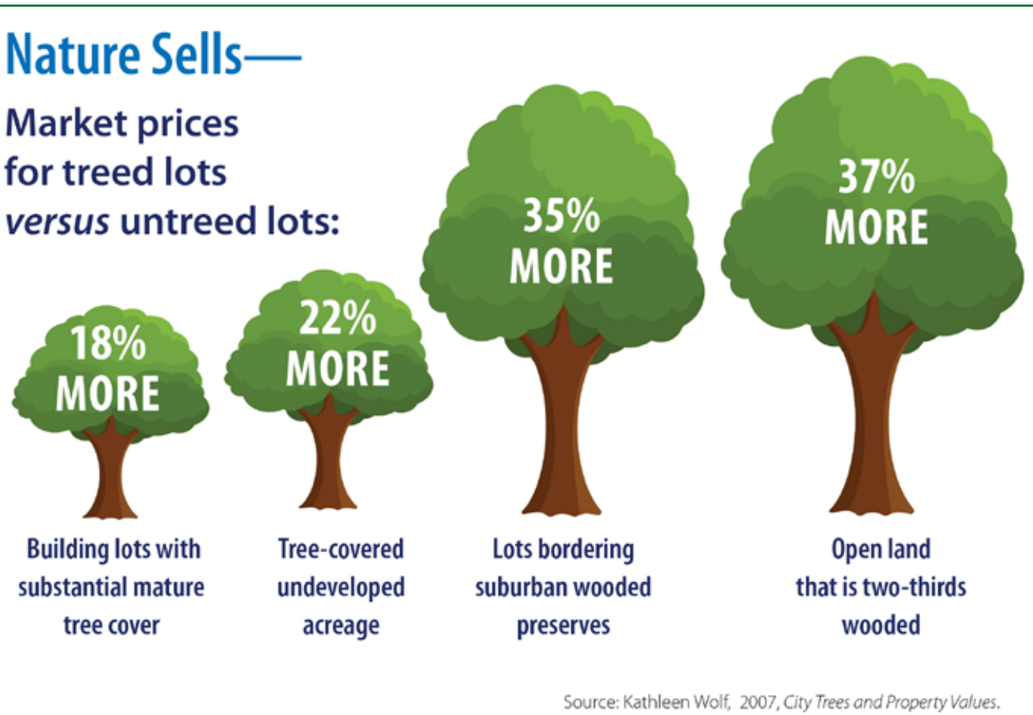
Trees Improve Cognitive Function

Exposure to green spaces such as parks or treed landscapes for just 20 minutes a day can significantly improve cognitive function, emphasizing the need for green spaces around schools to allow children to learn to their best ability. Children with Attention Deficit Hyperactivity Disorder (ADHD) benefit from exposure to green spaces. Children who regularly play in green spaces have milder symptoms of ADHD (Faber Taylor and Kuo 2011).

Trees Increase Property Values

Developments that include green space or natural areas in their plans sell homes faster and for higher profits than those that take the more traditional approach of building over an entire area without conserving natural space (Benedict and McMahon 2006). Individual trees and forested open spaces make lots more valuable. Trees on developed lots add about 18% to property assessments and real estate value. (Wolf 2007). *See the Nature Sells graphic, below.*

Home buyers will pay more for homes with mature trees.



Trees Pay Us Back

As the Town considers the cost of planting and caring for more trees, it's important to note that "every dollar invested in planting a tree results in an average return on investment of $2.25" (Endreny 2018). In fact, even a newly planted tree will immediately begin to provide benefits. So, while the Town will need to expend more funds to increase and maintain its canopy coverage, those trees will more than pay their way. This includes increases in property values, and, thus property tax revenue, the rejuvenation of business districts, tourism revenue, and makes the town more attractive to new businesses. For example, people were seen to shop longer and spend more in treed commercial shopping districts, which benefits the town through increased sales revenues (Wolf 2007).

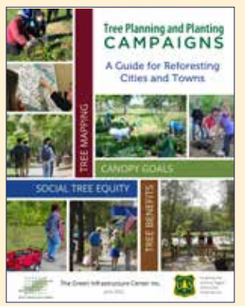
Planting trees should not be seen in isolation, but as part of a wider cycle of urban revitalization and growth, in which trees spur development and raise incomes, business sales and that 'feel-good factor', which can, in turn, lead to a desire for more trees, parks and outdoor leisure facilities. Trees help turn a downward spiral into an upward spiral, as part of a town's renewed sense of pride and prosperity.

Trees provide shade and make shopping districts more walkable.

Preventing "Green Gentrification"

Gentrification is a reasonable concern when it comes to community planting projects in lower-income neighborhoods. The concern is that beautifying a neighborhood with numerous shade trees, adding street medians with more trees, planting trees in front yards, and having more parks and other open spaces nearby will raise property values and make houses unaffordable, spur landlords to raise rents, and result in property tax increases. These concerns warrant a comprehensive approach that minimizes the negative consequences of green gentrification through policies that encourage residents to stay in their homes while enjoying the many benefits of trees and green space, such as cleaner air, cooler summers, less flooding, lower energy costs, and general social well-being.

To learn more about how to prevent "green gentrification", see the GIC's *Tree Campaign Guide* https://gicinc.org/books/tree-planning-and-planting-campaigns/.



Instead of holding back on greening projects, cities should address the sources of affordability problems. One example would be an agreement with landlords not to raise rents within five years of a planting project; another would be to engage the community housing and development staff in providing more affordable housing. The City of Greenville, South Carolina, for example, spent a decade and millions of dollars purchasing land around a future park development, Unity Park, that was to be built on city-owned land in historically black neighborhoods that experienced discrimination and disinvestment. The City created a housing fund to build one thousand affordable housing units around the new park, allowing low-income residents to remain in the adjacent neighborhoods and reduce the risk of gentrification. The desire for more affordable housing in the area surrounding the park was an idea driven by local residents and community activists during the planning of the park.

Tree Canopy Analysis Methods

The tree canopy analysis was performed to map current tree canopy, quantify the ecosystem services these trees provide, map potential planting areas, and estimate potential future canopy based on plantable areas. These new tree canopy data can be used to analyze urban cooling, walkability, and street tree plantings; or to inform area plans, urban forestry planning, and the Town's Comprehensive Plan updates.

Satellite imagery from the National Agricultural Imagery Program (NAIP) distributed by the USDA Farm Service Agency was classified to determine the types and extent of different land covers in Warren. The land cover map was created at 1-meter resolution using NAIP imagery from August 22, 2023. In addition, various vector data were used where possible (e.g., sidewalks, driveways, and other impervious surfaces). The tree canopy was mapped at 98% accuracy, with an overall land cover accuracy of 93%.

LiDAR (light detection and ranging) data from 2022 were used to determine height, in order to distinguish between large shrubs and trees.[1]

[1] LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the top of the vegetation, compared to the underlying surface of the Earth. The farther the laser beam travels, the shorter the vegetation.

Determining Plantable Acreage

Potential Planting Areas (PPA)

In urban areas, a realistic goal for expanding tree canopy depends on an accurate assessment of the total plantable open area. A *Potential Planting Area* (PPA) map estimates areas where it may be feasible to plant trees. The PPA is estimated by selecting land cover types that have space available for planting trees and accounts for the overlap of canopy (canopy that is intermingled or a large canopy tree that partially covers an understory tree).

Of the nine land cover types mapped, only pervious and bare earth were considered for the PPA. However, some paved areas could be removed or reduced, soils conditioned, and then used to plant new trees. For example, a parking lot could be redesigned in order to accommodate more tree canopy to absorb and clean stormwater runoff and provide shade for cars.

Eligible planting areas are also limited by their proximity to features that interfere with a tree's natural growth (such as buildings) or where a tree might affect the feature, such as power lines, street signs, or road junctions. The GIC buffers potential planting areas to exclude trees from these features. Town staff and the GIC reviewed the draft PPA map and removed recreation fields, cemeteries, and other land uses where trees would not be appropriate. The resulting PPA represents the maximum potential places trees can be planted and grow to full size.

NAIP Aerial Image (2023)

Potential Planting Area (PPA)

Despite the town being 21% impervious, there are still opportunities to plant more trees, such as the park on Kickemuit Road or in a residential side yard.

Based on a town-wide analysis of existing pervious surfaces, 11% of the land area, or 412 acres, could be planted with additional trees. The GIC recommends that no more than half the available PPA, 5.5% or 206 acres, is realistic to plant, since many other uses, such as vegetable gardens or swimming pools, require full sun. The Urban Area also has 11% PPA, or 179 acres, which could be planted with additional trees. With GIC's recommendations, the canopy goal in the urban area should not exceed 5.5% growth, or 90 acres of additional trees planted.

Potential Planting Spots (PPS)

Potential Planting Spots (PPS) are created from the PPA. A GIS modeling process is applied to select spots where a tree can be planted, depending on the desired mature size. For this analysis, expected canopy spreads of 20ft. and 40ft. diameter for individual mature trees were used, with priority given to 40ft. diameter trees, since larger trees provide more benefits.

Potential Canopy Area (PCA)

The *Potential Canopy Area* (PCA) is created from the PPS. Once the PPS are selected, the buffer around each point is created to represent the mature canopy spread. For this analysis, that buffer radius is either 10ft. or 20ft., which represents a 20ft. or 40ft. diameter canopy. These individual tree canopies are then merged to form a *Potential Canopy Area*.

Potential Planting Spots (PPS)

Potential Canopy Area (PCA)

Tree Canopy Maps and Findings

The *Tree Canopy Analysis* has been used to plan the Town's target tree canopy goal and will act as a benchmark to gauge the future status of the Town's tree canopy. An ArcGIS geodatabase with digital shape files produced during the study has been provided to the Town.

In addition, the Town received tree canopy statistics for the following areas:

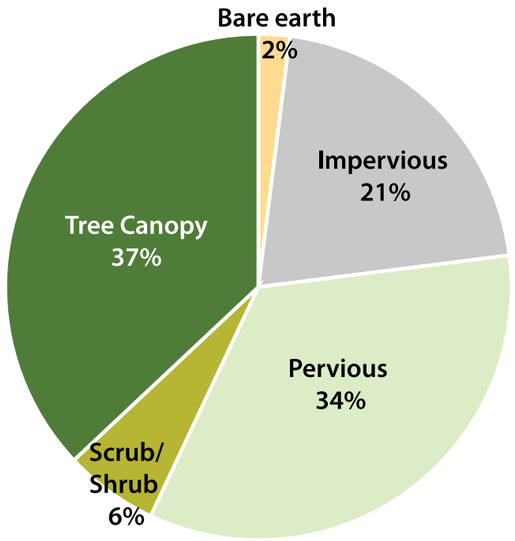
- Urban Area
- Parcels
- Parks
- Schools
- Streets
- Zoning

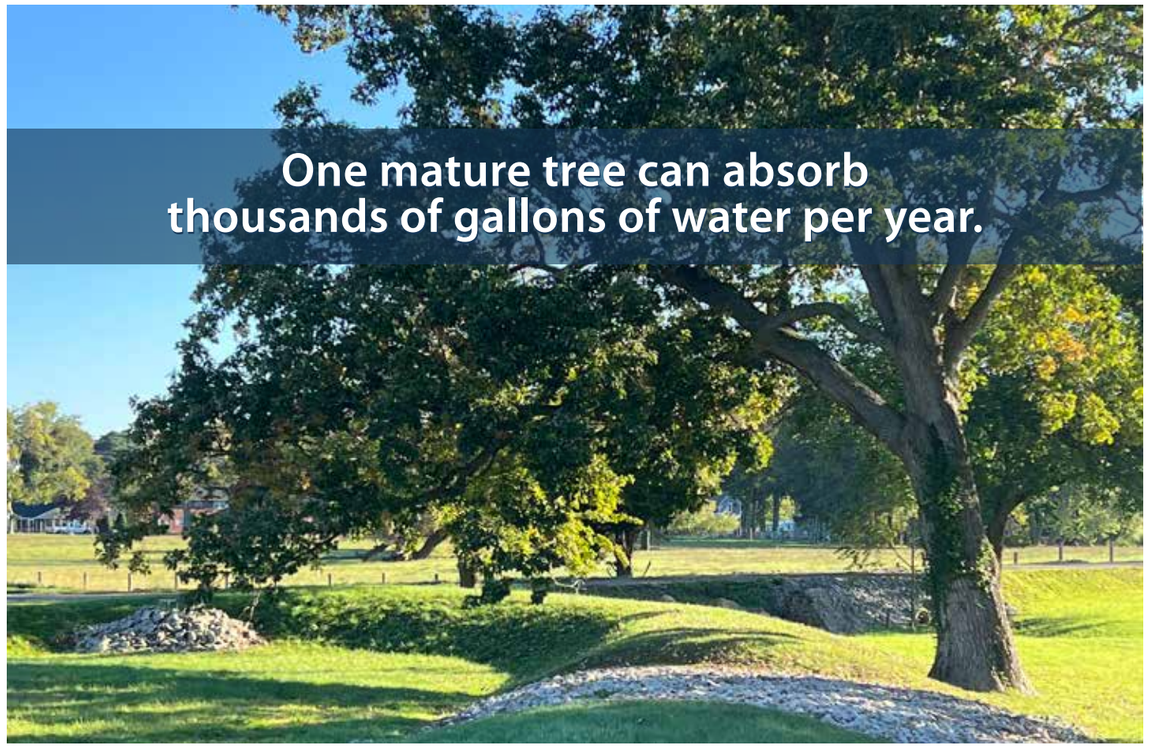
The *Tree Canopy Analysis* can inform tree-planting decisions to meet many goals, such as walkability, greenhouse gas emission reduction, energy savings, urban cooling, and economic revitalization.

The following pages contain Warren's *Tree Canopy Analysis* Maps.

Warren Landcover

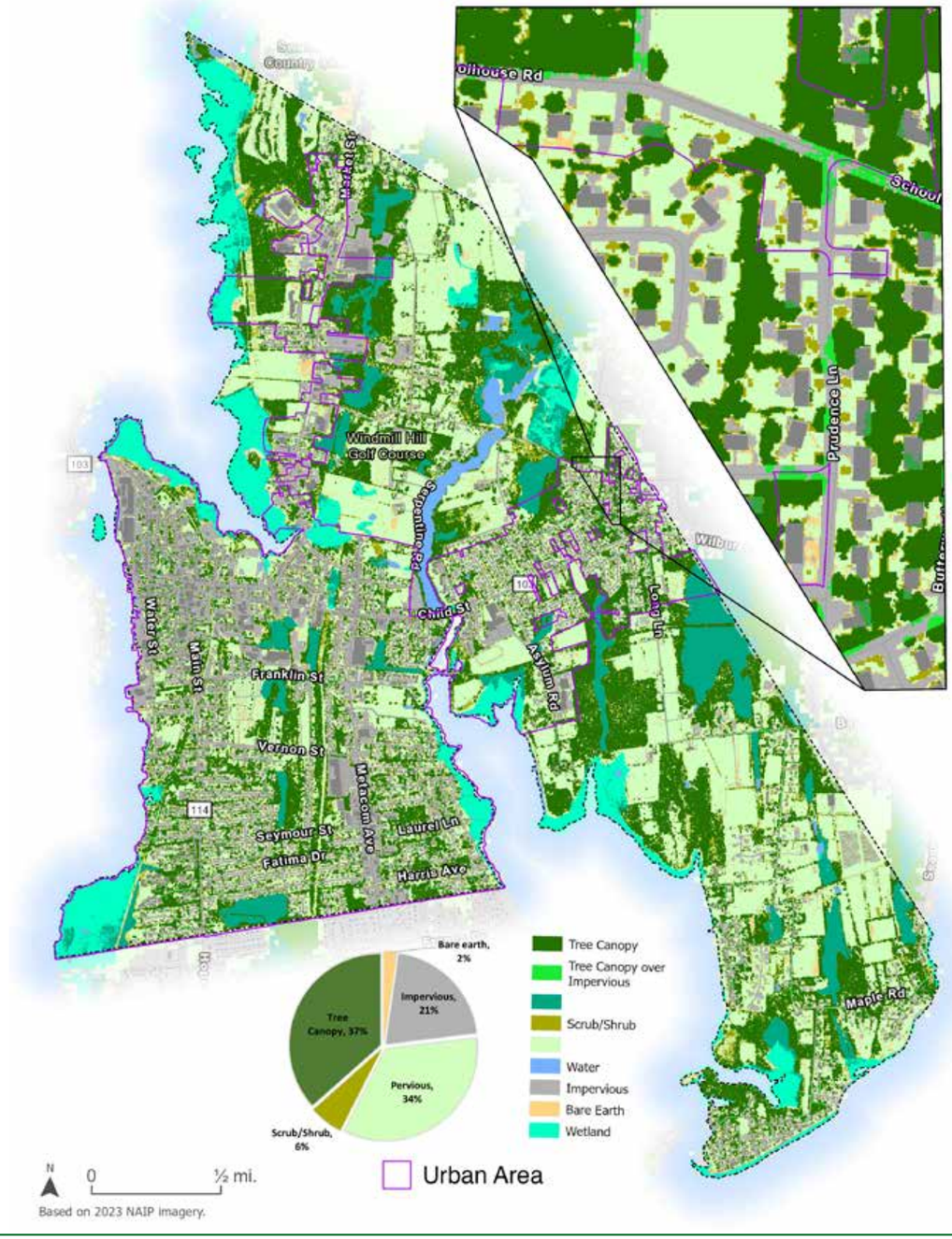
The Town of Warren's tree canopy is 37%.





Map of Town Land Cover

GIC classified 9 land cover types for the Town of Warren from 2023 NAIP aerial imagery.



Based on 2023 NAIP imagery.

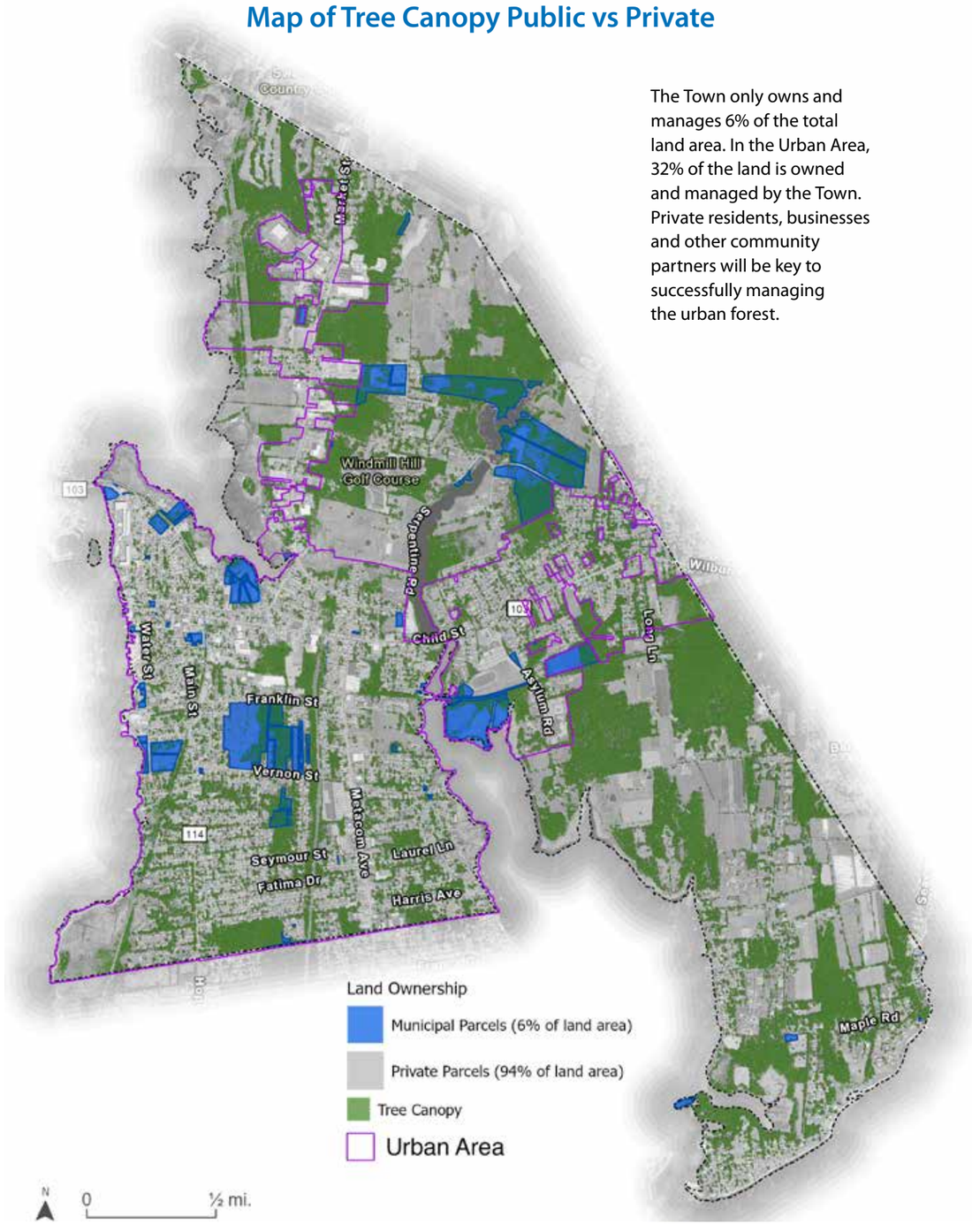
Map of Tree Canopy and Potential Planting Areas

Existing tree canopy (green) and potential planting area (orange) were determined based on land cover data and input from the Town. Potential planting areas (PPA) depict areas where it may be possible to plant trees. All sites would need to be confirmed in the field prior to planting. The map shows PPA on both private and public lands.

Based on 2023 NAIP imagery.

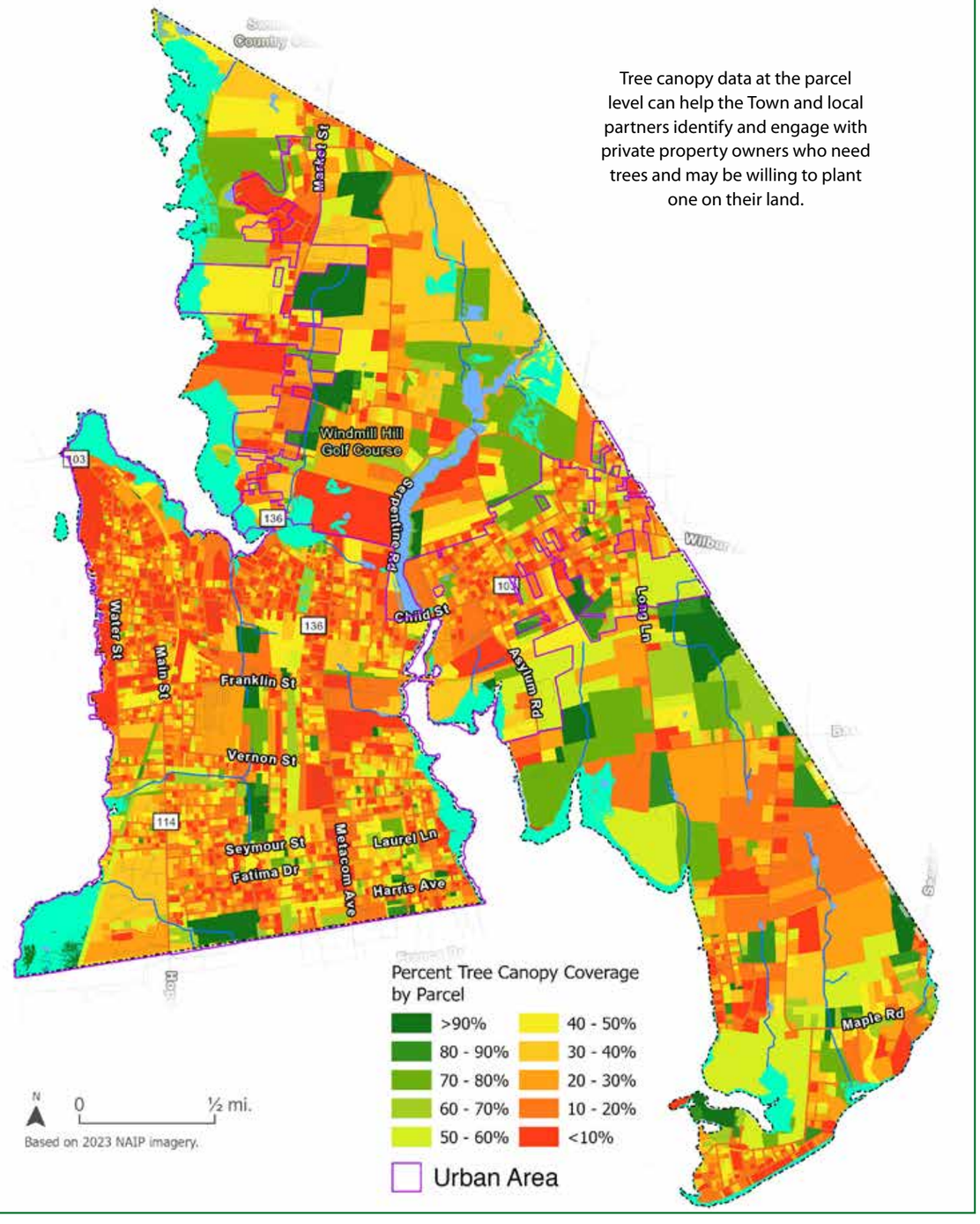
Map of Tree Canopy Public vs Private

The Town only owns and manages 6% of the total land area. In the Urban Area, 32% of the land is owned and managed by the Town. Private residents, businesses and other community partners will be key to successfully managing the urban forest.

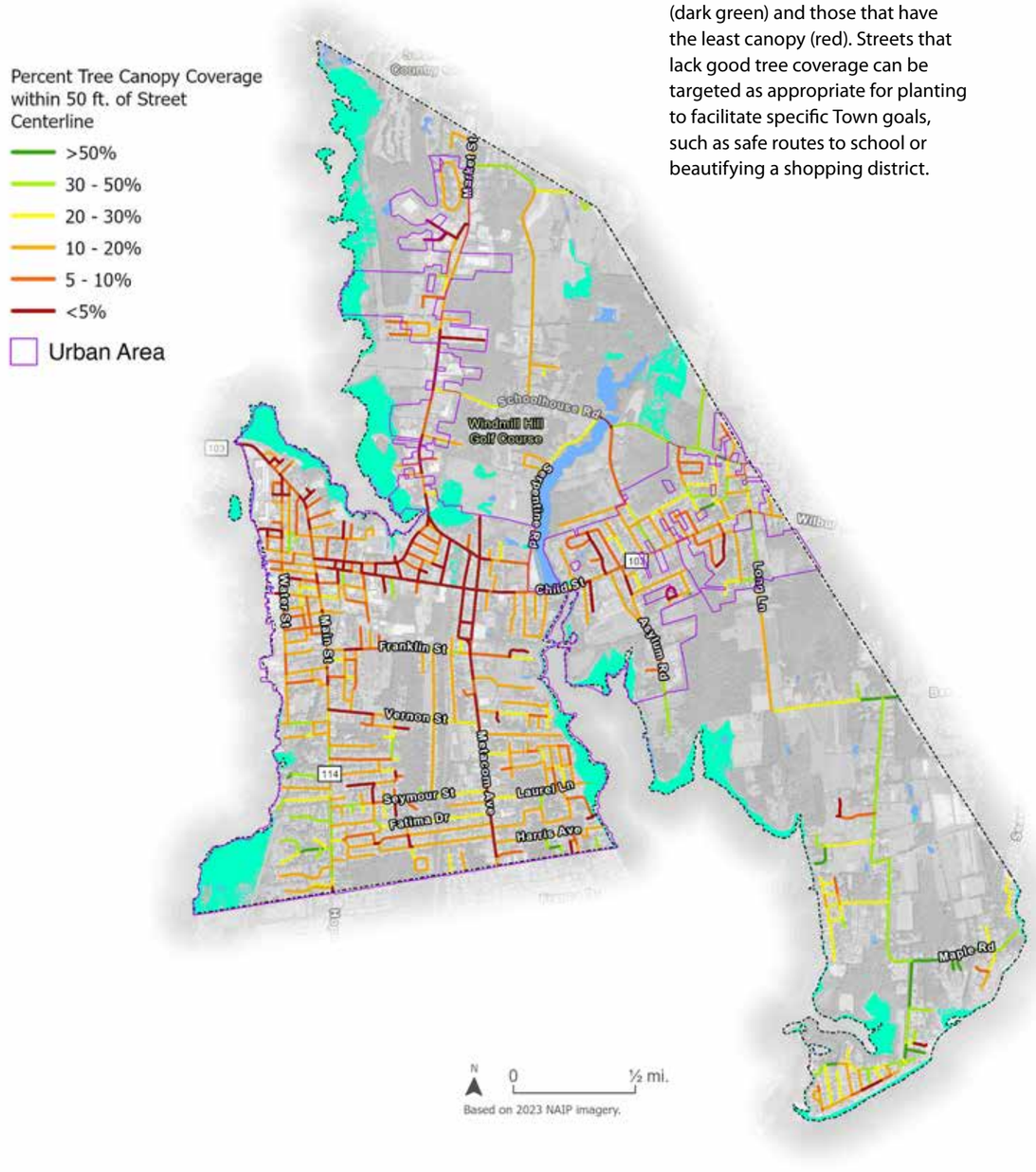


Map of Tree Canopy Coverage by Parcels

Tree canopy data at the parcel level can help the Town and local partners identify and engage with private property owners who need trees and may be willing to plant one on their land.

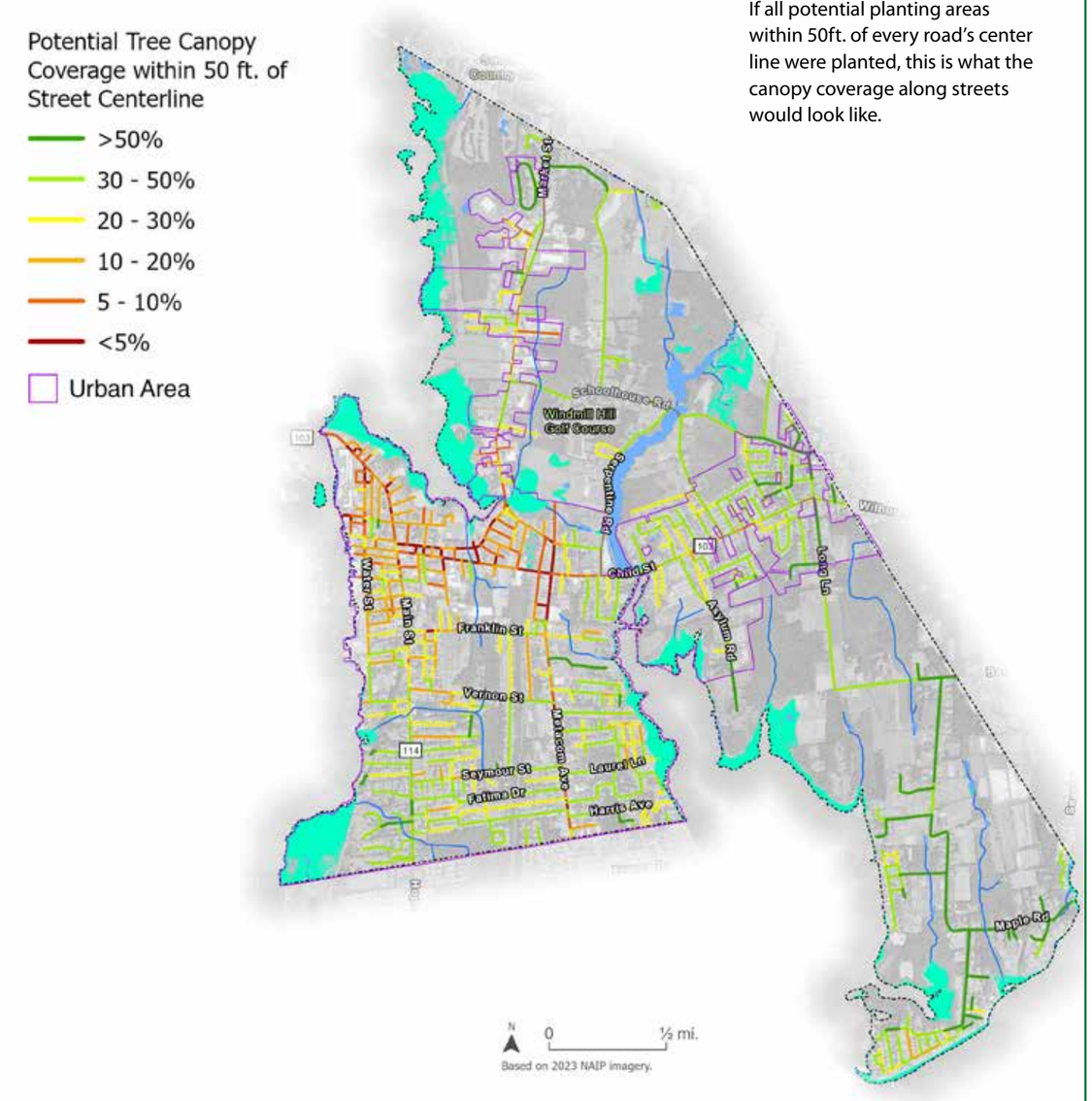


Map of Existing Tree Canopy Coverage Along Streets



Streets that have the most canopy (dark green) and those that have the least canopy (red). Streets that lack good tree coverage can be targeted as appropriate for planting to facilitate specific Town goals, such as safe routes to school or beautifying a shopping district.

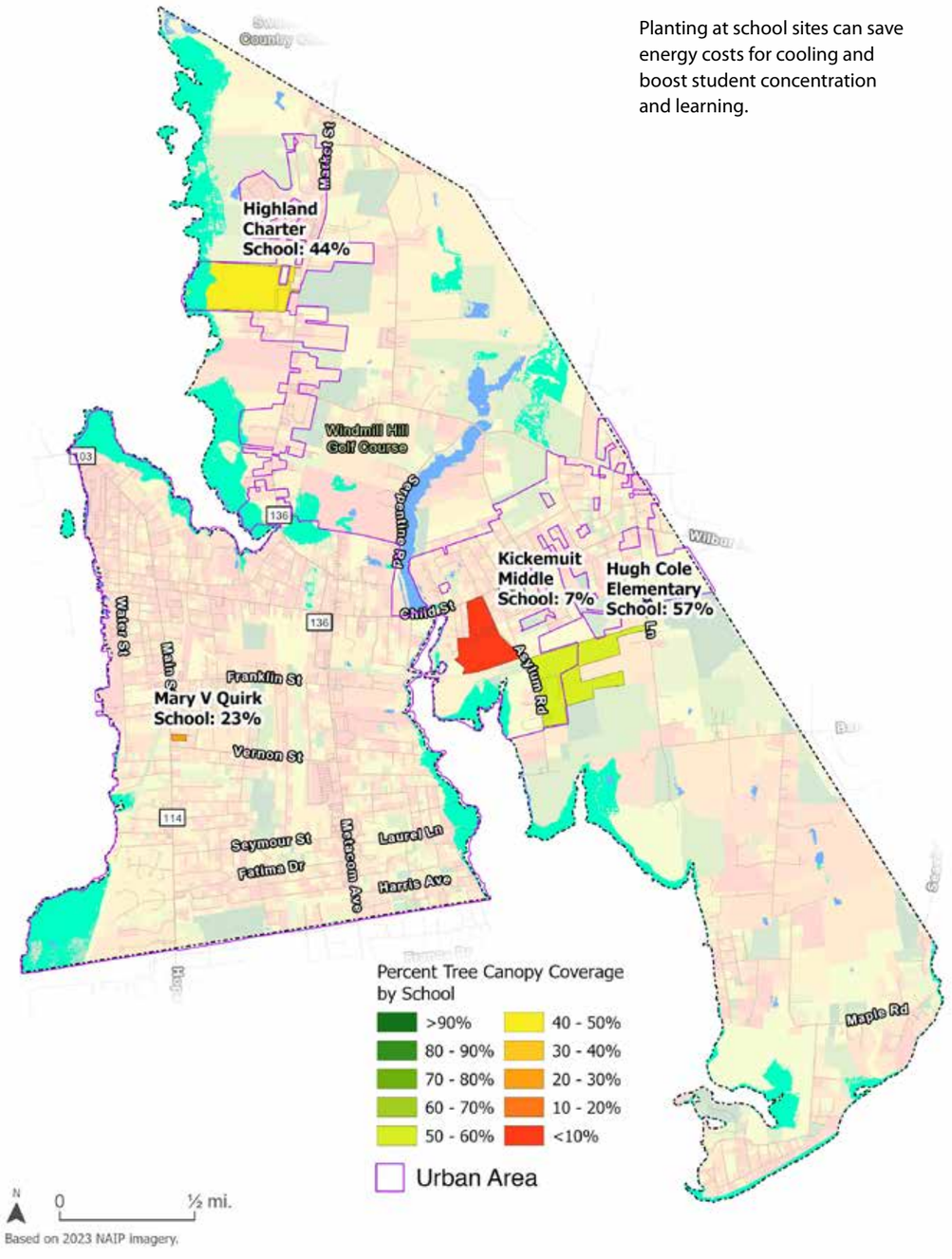
Map of Potential Tree Canopy Coverage Along Streets



If all potential planting areas within 50ft. of every road's center line were planted, this is what the canopy coverage along streets would look like.

Disclaimer: *This map is based on Potential Planting Areas (PPA) within 50 ft of the Right-of-Way. As such, it identifies unconstrained planting sites based on the best available GIS data, meaning that existing underground tree wells or narrow landscape strips (under 6 ft) are not included in this analysis. As with the overall PPA map, it does not account for utilities, and all locations must be field verified. There may be more or less available street tree planting opportunities than are depicted on the map.*

Map of Tree Canopy Coverage by School



Planting at school sites can save energy costs for cooling and boost student concentration and learning.

School Name	Current tree canopy (percent)	Potential tree canopy (percent)	Potential planting area (acres)	Small trees to be planted	Large trees to be planted	Total potential trees to be planted
Highland Charter School	44%	58%	3.50	143	189	332
Hugh Cole Elementary School	57%	65%	2.00	198	112	310
Kickemuit Middle School	7%	26%	3.78	87	203	290
Mary V Quirk School	23%	37%	0.05	5	4	9

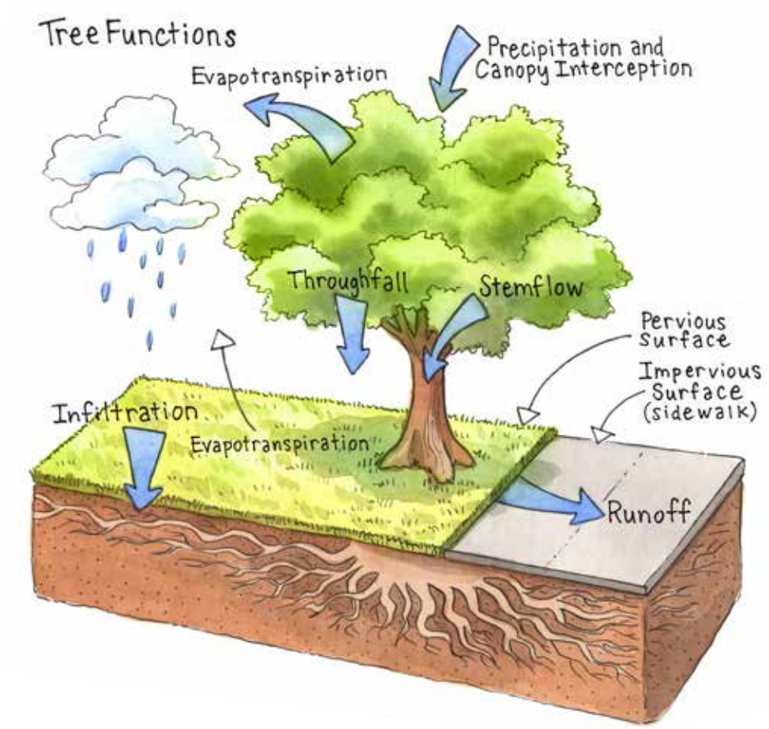
Kickemuit Middle School (*above*) and Hugh Cole Elementary School (*below*) have a potential for 600 new trees to be planted

Calculating Environmental Benefits

Stormwater Uptake

Trees and forests are the best land cover for taking up urban stormwater and are recognized as such by forestry scientists and civil engineers (Kuehler 2017, 2016). Tree canopy stormwater interception varies from 100% at the beginning of a rainfall event to about 3% at maximum rain intensity (Xiao et al. 2000).

Trees help capture and filter stormwater runoff. The Trees and Stormwater (TSW) Tool, developed by the GIC, estimates the stormwater interception, infiltration, and runoff of different land cover types. This methodology uses a modified version of the "curve number" approach, originally developed by the Natural Resources Conservation Service (NRCS), which factors in impacts of hydrologic soil groups, land cover types, hydrologic condition, and design/management practices that impact runoff. The modified TR55 curve numbers (CN) provided by GIC include a factor for canopy interception. This approach allows for more detailed assessments of stormwater uptake based on the landscape conditions of the Town's forests. It distinguishes whether the trees are within a forest, a lawn setting, a forested wetland, or over pavement, such as streets or sidewalks. This is because the conditions and the soils in which the tree is living affect the amount of water the tree can intercept. For more about this methodology, please visit: https://gicinc.org/projects/resiliency/trees-and-stormwater/



Lawn trees in a park soak up more stormwater than trees over pavement.

The GIC used its TSW Tool to model stormwater and pollution reductions by the town's tree canopy. The model shows that, during a 10-year/24-hour rainfall event (5.05 inches), trees take up 11.9 million gallons of runoff, or about 18 Olympic swimming pools of water. Warren's trees capture:

- 8,902 nitrogen lbs. annually
- 675 phosphorus lbs. annually
- 463 sediment tons annually

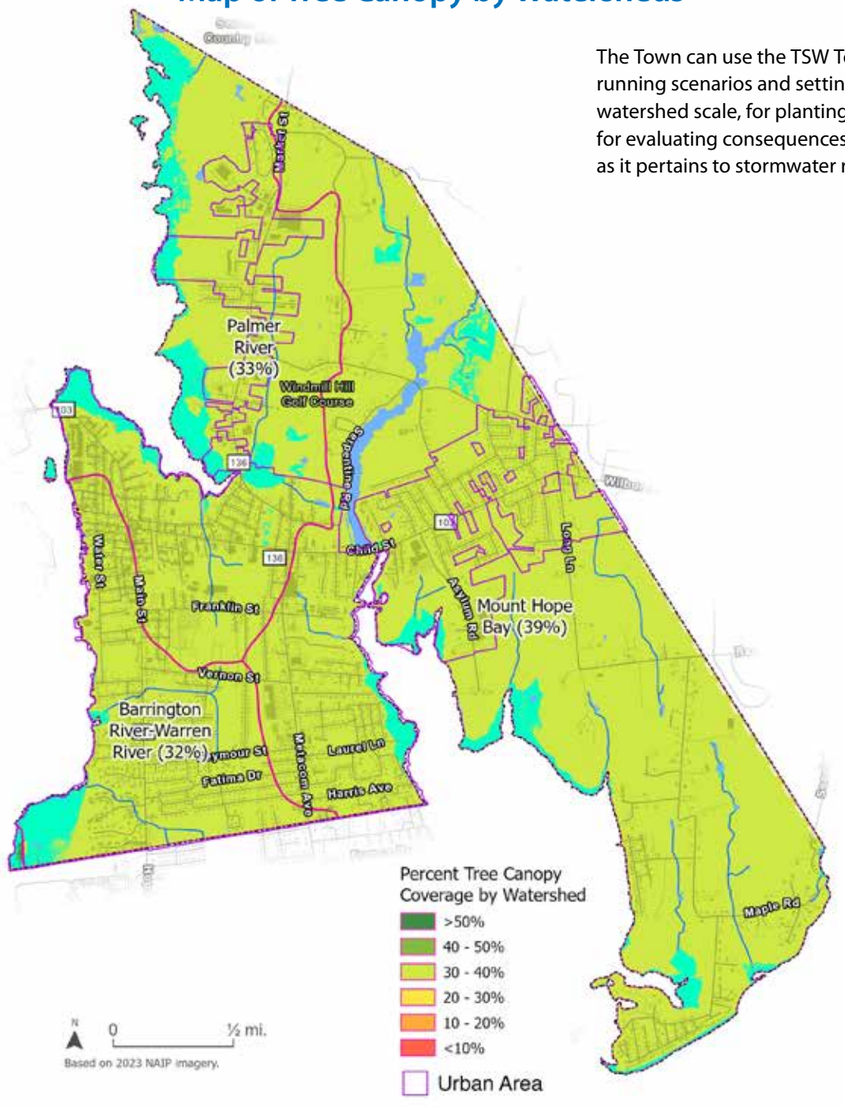
The TSW Tool takes into account the interaction of land cover and hydrologic soil conditions within each watershed. The TSW Tool can also be used to run 'what-if' scenarios, specifically losses of tree canopy from development or storm damage, or increases in tree canopy from additional tree planting.

Tree Canopy Coverage by Watershed

The conditions under and around a tree, such as the size of its planting box, the amount and type of open space, surface soils, drainage, and root spread affect the infiltration of water. The TSW Tool uses plantable open spaces to determine how many more trees could be planted and how much additional nitrogen, phosphorus, and sediment pollutants new trees and their surrounding soils could absorb.

Map of Tree Canopy by Watersheds

The Town can use the TSW Tool for running scenarios and setting goals at the watershed scale, for planting trees, and for evaluating consequences of tree loss, as it pertains to stormwater runoff.



Name: Warren, Rhode Island, USA* | Urban Tree Canopy Stormwater Model | version December 13, 2018

The Green Infrastructure Urban Tree Canopy Stormwater Model estimates stormwater runoff yields for current and potential land cover. The methodology is based upon the NRCS TR-55 method for small urban watersheds. It is used to provide better estimates using GIC's high-resolution land cover and modeling of potential canopy area.

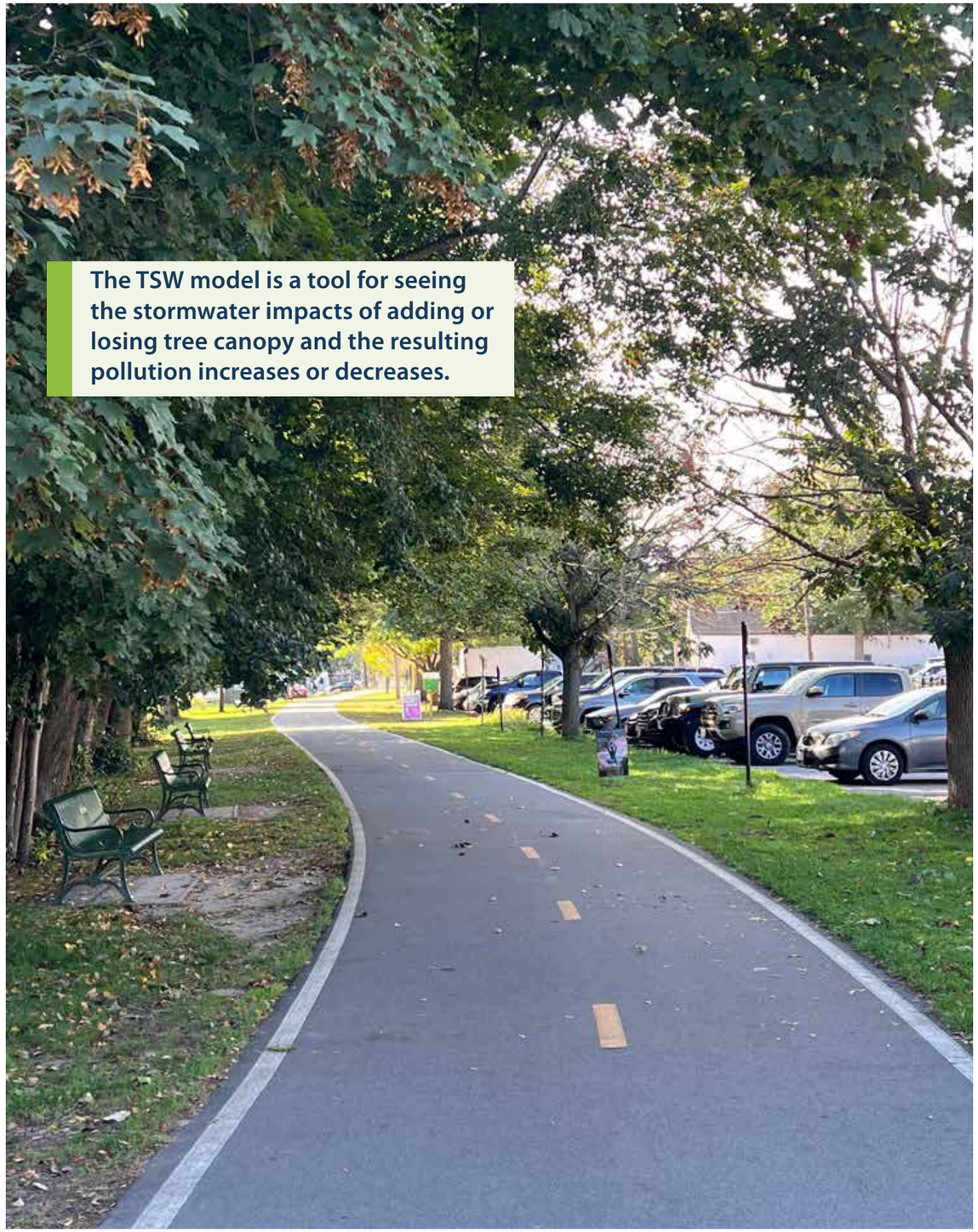
			million gallons												
TOTALS	36%	21%	6.9	-	-	36%									
Statistics by Drainage Basin (current settings)							Variable								Variable
Area	Current Tree Cover	Current Impervious Cover	Tree H2O Capture	Increased H2O w/xx% tree loss	Added H2O Capture w/xx% PCA	Adjusted Tree Cover from loss and gain scenarios	Pick an Event	Pick a loss scenario		Converted Land			Canopy Added	Enter % canopy to add
	%		million gallons			%	Event	% UTC loss	% FOS Loss	% Imperv	Max TC Possible	Maximum Potential Added Canopy Area	% Canopy Added	% of PCA achieved
1 Barrington River-Warren River	32.4%	32.9%	0.7	-	-	32%	1 yr / 24 hour	0%	0%	0%	67.7%	15.3%	0.0%	0%
2 Mount Hope Bay	39.1%	15.3%	6.6	-	-	39%	1 yr / 24 hour	0%	0%	0%	57.8%	18.7%	0.0%	0%
3 Old Mill Creek-Narragansett Bay	100.0%	0.0%	0.1	-	-	100%	1 yr / 24 hour	0%	0%	0%	100.0%	0.0%	0.0%	0%
4 Palmer River	32.6%	27.7%	1.8	-	-	33%	1 yr / 24 hour	0%	0%	0%	63.2%	10.6%	0.0%	0%

The TSW Tool allows the Town to model water uptake by the existing canopy and impacts from changes, whether positive (adding trees) or negative (removing trees).

Removal of mature trees and existing forest results in the greatest increase in stormwater runoff. As more land is developed, the Town should maximize tree conservation and encourage new tree plantings to maintain surface water quality and groundwater recharge. The following maps use soil types and tree cover to show the areas where it is most important to retain trees for stormwater uptake and areas where tree planting will have the most benefits for stormwater uptake.

Burr's Hill Park is a seven and a half acre park that includes the town beach. More than forty trees were recently planted at the park to create an arboretum.

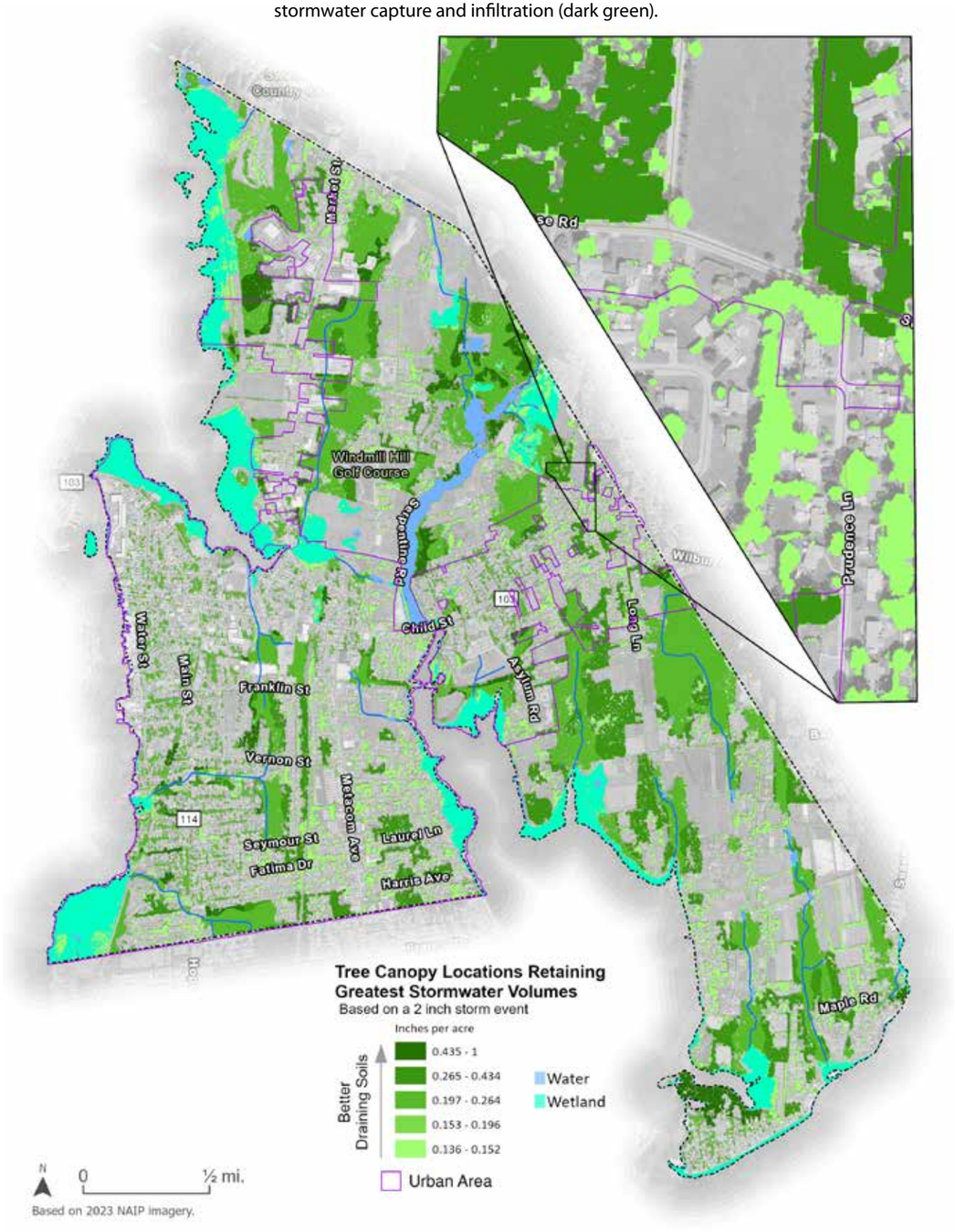
Planting new trees where there is adequate room will ensure the trees have better health and longevity.



The TSW model is a tool for seeing the stormwater impacts of adding or losing tree canopy and the resulting pollution increases or decreases.

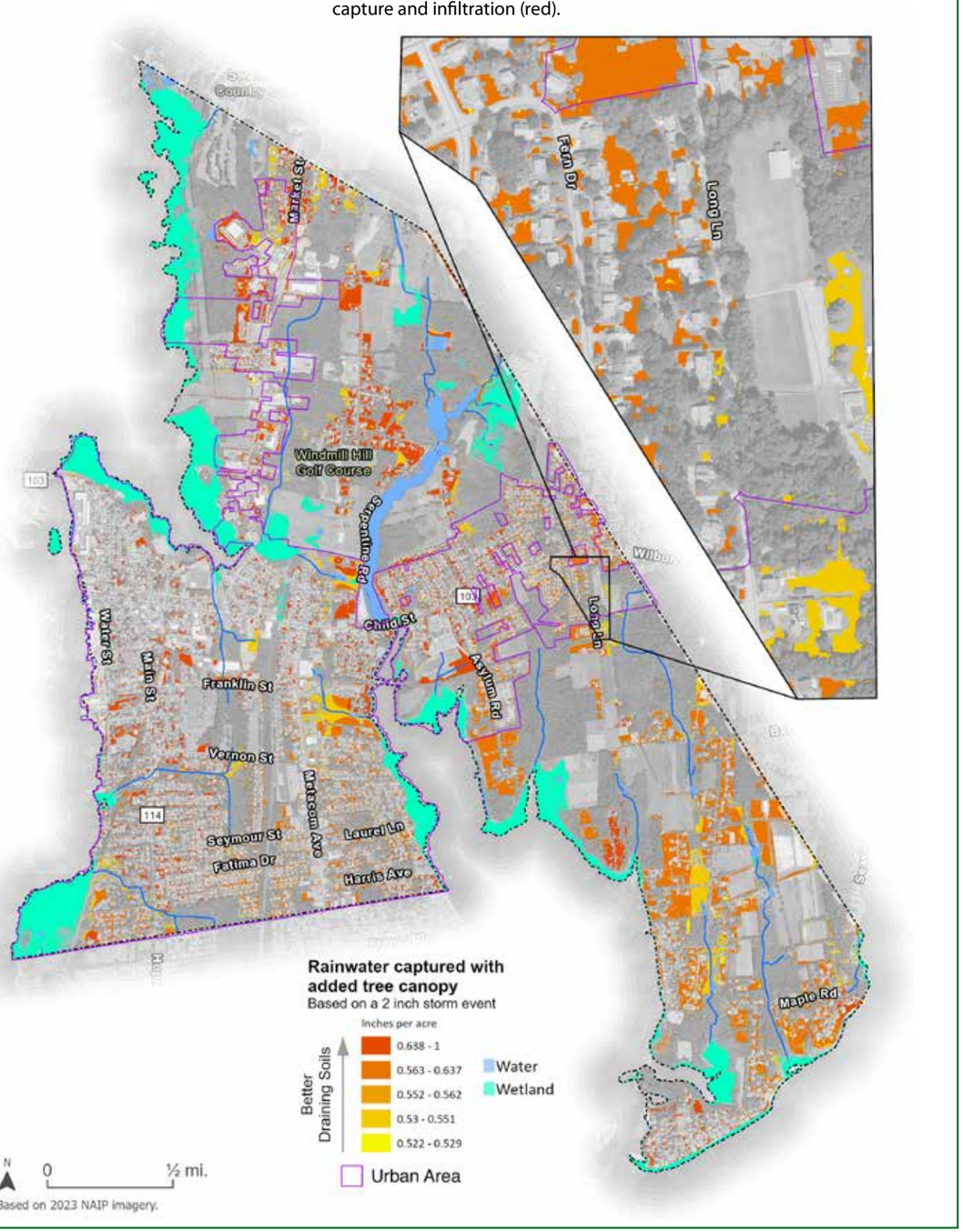
Map of Best Tree Canopy to Save for Stormwater Infiltration

The TSW Tool was applied to map the locations where tree conservation will result in the greatest amount of stormwater capture and infiltration (dark green).



Map of Best Tree Planting Locations for Stormwater Infiltration

The TSW Tool was applied to map locations where planting trees will result in the greatest amount of stormwater capture and infiltration (red).



Well-treed neighborhoods have cleaner air and lower rates of asthma.

Air Quality

Air pollution removal values were calculated by applying the pollution removal values for each acre of tree cover from the i-Tree model. i-Tree is a peer-reviewed software suite from the USDA Forest Service that provides urban and rural forestry assessment tools.

Trees mitigate climate change by storing carbon in their tissue and sequestering atmospheric carbon from carbon dioxide (CO_2) in new tree growth. Current trees in the town are storing 73,932 metric tons of carbon that will be released back into the atmosphere when these trees die. Trees also capture particulate matter, ground-level ozone (O_3), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) from the air, resulting in better air quality and healthier neighborhoods.

Investments in canopy at the neighborhood level can improve the respiratory health of residents.

Air Quality and Carbon Sequestration Benefits Provided by the Tree Canopy (2023 data)

Air pollution and greenhouse gases removed annually by trees in Warren						
CO (carbon monoxide)	**NO_2** (nitrogen dioxide)	**O_3** (ozone)	**PM_{10}** (particulate matter 10 microns)	**$PM_{2.5}$** (particulate matter 2.5 microns)	**SO_2** (sulphur dioxide)	**C Seq** (carbon sequestered)
303 lbs	**1,514 lbs**	**25,269 lbs**	**3,748 lbs**	**955 lbs**	**2,821 lbs**	**865 metric tons**

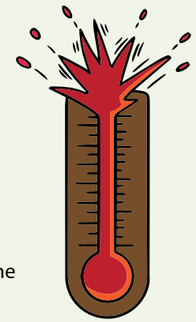
Urban Heat and Equity

Urban heat is a growing concern as extreme heat continues to increase in Rhode Island with the changing climate. In Warren, the number of days above 100°°F is projected to rise from the historic average of 1 day per year to 34 days per year by the year 2070. To reduce temperatures, the Town can plant trees to cool the landscape. Inequities in the distribution of tree canopy and opportunities to correct them can be identified through tree canopy data, surface temperature data, and U.S. Census data that provides race and income statistics.

What is Tree Equity?

Tree equity ensures all communities have access to the benefits that trees provide. Areas that have been under-resourced, having fewer trees and more heat than the rest of the town, are the focus of tree-planting efforts.

How much hotter is your hometown now than when you were born?



This interactive online tool allows a user to put in their hometown and birthdate to see how their hometown has changed since then and how much hotter it may get. The tool provides the average number of days over 90°F.

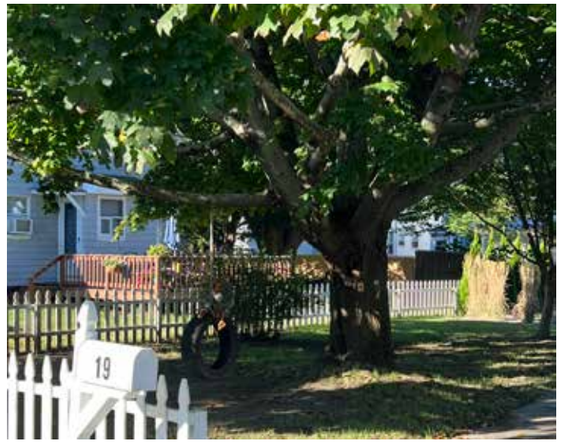
https://www.nytimes.com/interactive/2018/08/30/climate/how-much-hotter-is-your-hometown.html

Extreme Heat

Average days per year temperatures over 100˚F

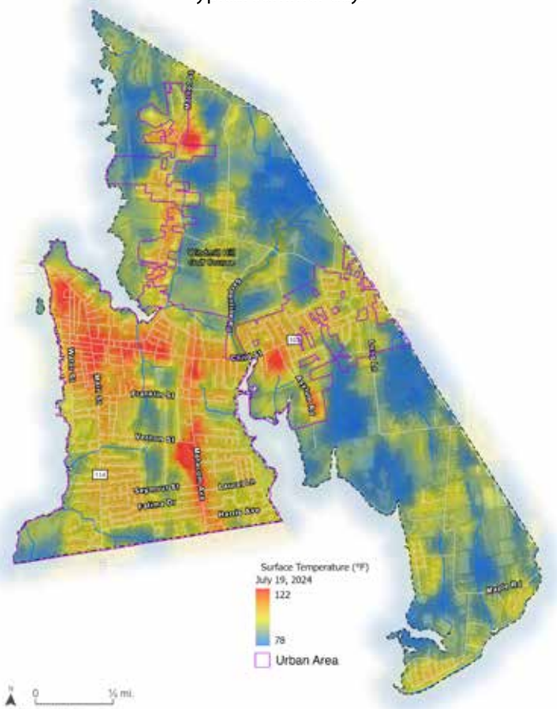
In this table "bold action" refers to reductions in greenhouse gases through energy conservation. It does not consider the effects of planting more trees.
Source: Union of Concerned Scientists.
2019, Killer Heat Interactive Tool.

Where we are now	Where we are currently headed		If bold action is taken
Historically 1971-2000	Midcentury 2036-2065	Late Century 2070-2099	Extreme heat limited to
1 days	**15** days	**34** days	**9** days



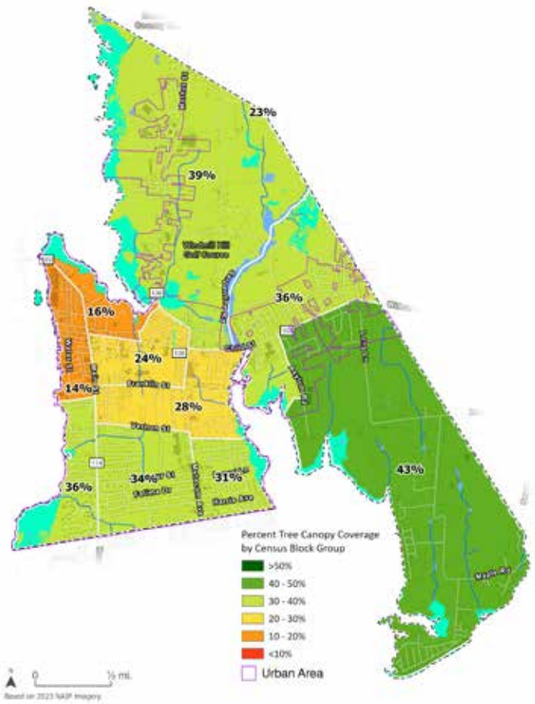
Map of Surface Temperature

The surface temperature map captures the hottest to coolest places in the town on a typical summer day.



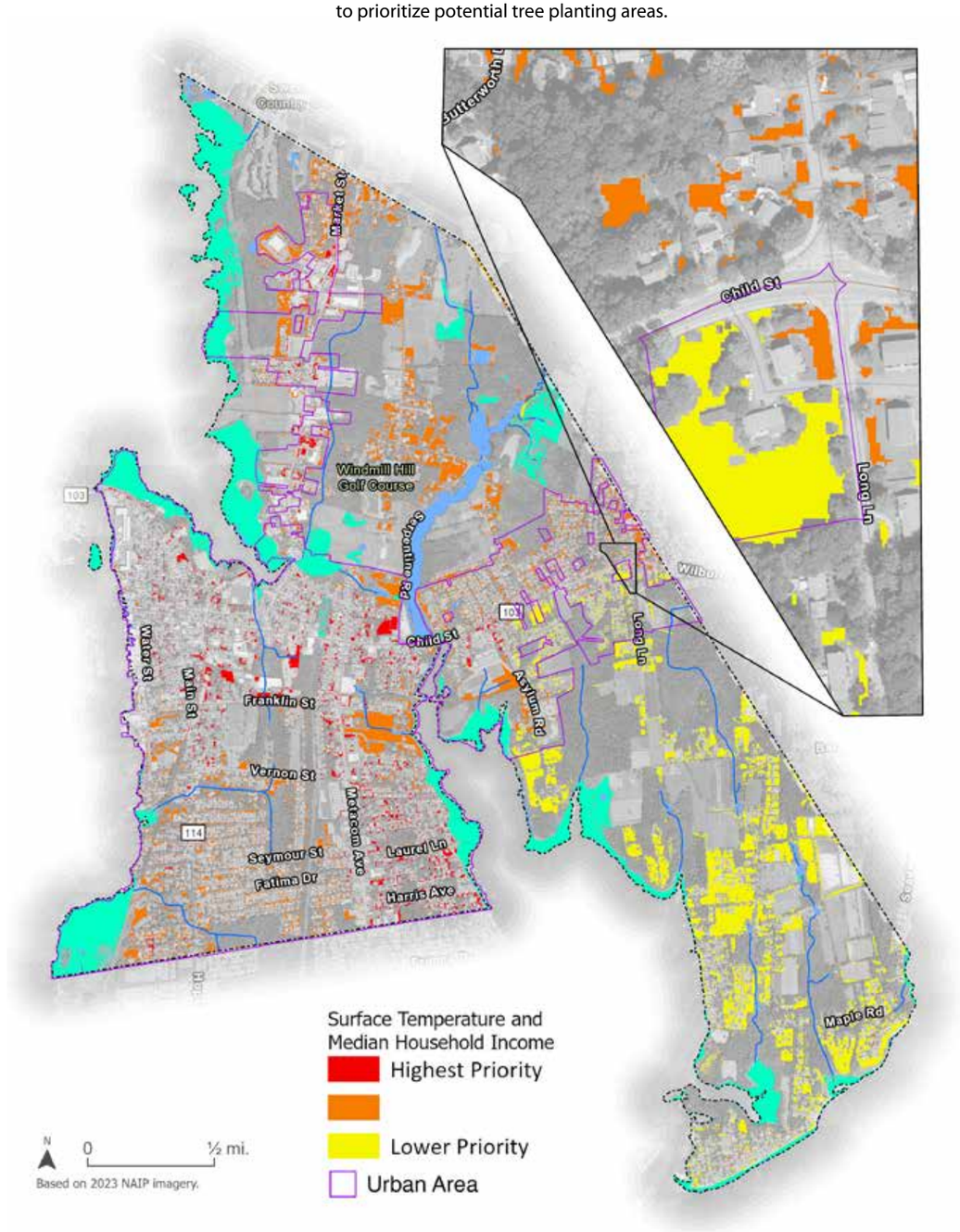
Map of Tree Canopy Coverage by Census Block Group

Tree canopy cover percentages by Census Block Group. By combining U.S. Census and tree canopy data, the Town can identify equity-based tree planting opportunities.



Map of Heat and Income Priority Tree Planting Locations

This map uses surface temperature data and median household income data to prioritize potential tree planting areas.



Planning and Engagement Process

The Town of Warren and the GIC partnered in an eleven-month effort to create this Strategic Tree Canopy Plan. An advisory committee made up of representatives from the Town staff and local community partners met to discuss priorities. They engaged in a series of nine workshops from the summer of 2024 to the summer of 2025 to evaluate tree canopy cover, determine plantable areas, set a canopy goal and evaluate policies and practices that support tree canopy cover. In the spring of 2025, the GIC attended community events and held an open house.

Maps beginning on page 20 show the results of the Tree Canopy Analysis. An assessment of the ecosystem services provided by town trees included:

- A stormwater analysis
- A surface temperature map
- An air quality analysis

Results of these analyses are found on pages 18-37. They were then used to identify opportunities to maximize benefits from future tree planting and retention. In addition, GIC staff conducted a code and ordinances audit to evaluate the impact of Town policies and ordinances on trees, tree care, and tree protection. The audit, developed by GIC and used across the U.S., shows which policies contribute to a healthy tree cover and which lead to excessive imperviousness and less green space. Results of the audit were used to inform the final tree canopy cover strategies.

Advisory Committee

During the planning process, Town staff and local community partners came together to create an ad hoc Tree Canopy Advisory Committee. This committee consisted of the Town Manager, Tree Warden, and representatives from Warren's Public Works Department, Parks & Recreation, and the Planning & Community Development Department. Local partners included members from East Bay Community Action Program's Warren Health Equity Zone (HEZ), Blithewold Gardens & Arboretum, and the following boards and commissions: Planning Board, Tree Commission, and Conservation Commission.

Committee members attended workshops and check-in meetings throughout the planning process and assisted with event organization, information gathering, and a public open house event. The Committee was also responsible for reviewing maps, data, and community input to develop the *Strategic Tree Canopy Plan* goals and strategies for Warren.

Community Partners

Throughout the planning process, the Town and the GIC staff met with key community partners to discuss current initiatives and opportunities to work together for a healthier, greener community. Community partners provided support with stewardship, plantings, funding, and outreach. Community partner organizations included:

- Warren Safety & Community Resilience Working Group (Warren HEZ)
- Staton's Landscaping Inc.
- Warren Tree Commission
- Warren Conservation Commission
- University of Rhode Island
- Brown University/Where Warren Meets the Water

Committee members and residents review GIC maps at an event.

Public Engagement

Community input and feedback are foundational to the Strategic Tree Canopy Plan. In addition to the planning work undertaken by the advisory committee, this planning process included opportunities for public learning, engagement, and feedback.

In June 2025, GIC co-hosted an open house event with the Warren HEZ and the Town of Warren at Cutler Mills. The evening event included a brief presentation by the GIC introducing the project and featuring engagement stations where members provided feedback on tree canopy maps, ecosystem services, and potential planting areas. The Warren HEZ helped promote the event and provided funds for food and space rental.

The public open house included a mix of information sharing, discussion, and opportunities for feedback.

Summary of Community Findings

During the eleven-month planning process, GIC staff participated in several public outreach events: Warren Folks Fest, Warren HEZ supported Safety and Community Resilience Working Group meetings, Warren Farmers' Market at Hope & Main, and a Summer Kickoff Party at Burr's Hill Park. The GIC also promoted an online survey to receive feedback from community members. A total of 66 were recorded.

Below is a summary of online votes. A full copy of the online survey questions can be found in Appendix C.

Community Participation — Top 5 Favorite Strategies

Question 1 : Are you interested in participating in future tree events in Warren?

Survey respondents are likely to participate in future tree-related events, with the majority saying they were interested in getting involved in the neighborhood tree committee, the tree stewards' course, and/or community tree-planting events.

Question 2 : Pick your 5 favorite strategies for Warren's Tree Canopy.

This question referred to the proposed strategies identified by the Tree Advisory Committee and shared at the public open house. The top five most voted strategies were:

1. Develop and adopt a Stormwater Master Plan. Include an impervious surface ordinance that requires minimum canopy coverage, combined with maximum imperviousness limits, and update zoning and the subdivision and land development regulations to reflect this. (22 votes)
2. Apply for grant funds to support removing pavement and planting trees in the business district. (22 votes)
3. Update the existing Tree Administrative Guidelines to include best practices for tree care and maintenance, including guidance that encourages species diversity at both the project and town level. (20 votes)
4. Establish a tree bank to fund public tree planting and support mitigation efforts. (18 votes)
5. Establish a free back-of-sidewalk tree planting program that incorporates education and outreach in neighborhoods with the lowest tree canopy cover and most severe heat. (18 votes)

Canopy Goal and Implementation Strategies

Recent national data show urban and suburban tree canopy cover is trending downwards at a rate of **175,000 acres lost per year** – approximately 36 million trees lost annually (Nowack and Greenfield 2012). Trees are lost due to development, disease, storms, and old age. The Town is dedicated to managing loss and increasing tree canopy by 1% in the Urban Area, and this plan outlines strategies to do so.

Canopy Goal

The Town's goal not only works toward increasing the tree canopy by 1% in the Urban Area, but also accounts for preserving existing overall town canopy coverage by replacing trees that are lost. Achieving this goal requires a coordinated effort by both the Town and private property owners. Since Town-owned land in the Urban Area makes up about 32% of the total land area, the Town is committed to replanting 32% of annual tree loss, while the remaining 68% will be replanted on private property by residents, businesses, and developers. Estimating annual tree loss at 75 trees, the Town will plant 67 trees per year on town-owned land. Given that private property represents 68% of the land area, the Town will engage with local partners, private landowners and businesses through programming, outreach, education, fundraising, back-of-sidewalk planting, and tree giveaways to facilitate and encourage the planting of 143 trees per year on private property.

The tree canopy goal and objectives for Warren's urban forest are on the following pages. These, and other practices, will provide long-term care, protection, and best planting practices for the urban forest, and will ensure that investments in town trees pay dividends by reducing stormwater runoff, cleaning the air and water, lowering energy bills, raising property values, and providing natural beauty long into the future.

Town of Warren Goal—
Expand tree canopy coverage in the Urban Area from 29% to 30% over the next 10 years

Newly planted trees in Burr's Hill Park help meet the goal of planting 67 trees annually on Town-owned land.

Many streets and public properties, such as this sidewalk and private residence, have room for more trees to add shade, beauty, and improve air quality.

Strategies

Goal: Increase tree canopy from 29% to 30% in the urban area over the next 10 years.

1 Objective 1: Develop and adopt a Stormwater Master Plan.

The Town does not currently have a stormwater master plan. A stormwater master plan includes an analysis and actions to improve the Town's overall resilience and reduce the impacts of stormwater. This plan should also coincide with developing an impervious surface ordinance that requires minimum canopy coverage and maximum imperviousness limits. Zoning and the Town's subdivision and land development regulations should reflect these changes.

Responsible Parties: Department of Planning & Community Development

Timeline: 2 years

Street flooding like this highlights the need for a comprehensive Stormwater Master Plan, to guide communities toward smarter and greener solutions that reduce runoff, improve resilience, and protect against future impacts.

2 Objective 2: Apply for grant funds to support the removal of impervious surfaces and expand tree planting efforts in the business district.

Warren's Business District has 8% tree canopy cover and a whopping 78% impervious surface. According to GIC's analysis, only 4% of the land in this district represents turf/grass that can easily be planted today. To increase tree canopy cover on commercial corridors, such as Main Street, it will be necessary to remove pavement to create more opportunities for tree planting. Establishing tree cover in the business districts will attract customers and encourage economic development. Studies show that people shop longer and pay more per item in tree-lined retail areas, spending about 12% more money (Wolf, 2007).

Responsible parties: Department of Planning & Community Development, Public Works, and Rhode Island Department of Transportation

Potential Partners: Warren Tree Commission, and Warren Health Equity Zone

Timeline: 1 year

Dominated by pavement and minimal tree cover, streets like this highlight the need to replace impervious surfaces with greenery, which would create cooler, more inviting business districts, and encourage people to spend more time there.

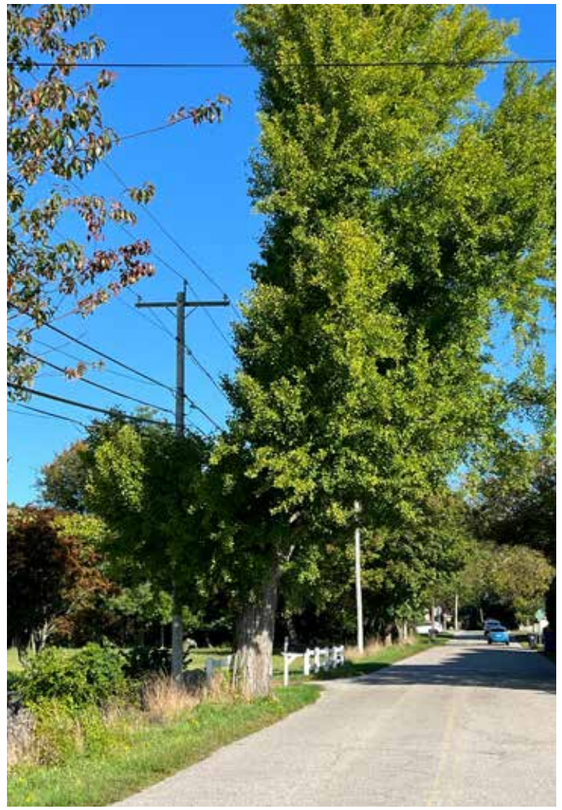
3 Objective 3: Update the Warren Tree Administrative Guidelines to include best practices for tree care and maintenance.

This strategy would charge Warren's Tree Commission and the Tree Warden with updating the 2021 Tree Administrative Guidelines to meet industry standards for tree protection, planting, and care requirements. The Guidelines should also include an updated tree species list informed by the 2024 Tree Inventory Report, which encourages species diversity at the project and town level. The Manual is already referenced in the Town's tree ordinance.

Responsible party: Warren Tree Commission, and Tree Warden

Potential Partners: Public Works

Timeline: 6-12 months



An updated Tree Administrative Guideline could include tree species recommendations for sites under or near overhead wires to minimize utility conflicts.

4 Objective 4: Establish a tree bank to fund public tree planting and support mitigation efforts

The Town can maintain a tree fund in partnership with the Warren Tree Commission to provide a mechanism to donate dollars or trees to be planted off-site when there is no appropriate space on a development site. Some communities use the mitigation funds for tree maintenance on public property and in the public right-of-way. This strategy could potentially fund the back-of-sidewalk program (*see Objective 5*).

Responsible party: Warren Tree Commission, Department of Planning, and Community Development

Potential Partners: Public Works, Town Clerk, Warren Conservation Commission, and Warren Health Equity Zone

Timeline: 16 months

Dedicated tree funding can provide a mechanism to support planting, maintenance, and long-term canopy growth, even when space is limited on individual sites.

5 Objective 5: Establish a free back-of-sidewalk tree planting program that incorporates education and outreach in neighborhoods with the lowest tree canopy cover and most severe heat.

The Town lacks an organized tree-planting program and risks losing its tree cover over time. Over 17 miles of Warren's roadways contain 10% tree canopy or less (nearly 1/3 of the roadways in all of Warren). Fewer trees mean hotter temperatures, leading to heat-related illness and worsening existing health issues such as asthma.

Not all streets have room for trees. A back-of-sidewalk program will allow the Town to incorporate tree plantings in front yards, which have more space for trees to grow and thrive, while providing public benefits. Further priority should be given to parcels with the lowest canopy and highest heat (See maps on page 36 and 37).

Responsible party: Department of Planning & Community Development, Public Works, and Warren Tree Commission

Potential Partners: Conservation Commission, and Warren Health Equity Zone

Timeline: 18 months

Planting trees in front or side yards can make a big difference, expanding canopy where it's needed most, cooling neighborhoods, and improving community health through targeted, accessible planting programs.

6 Objective 6: Adopt a town-wide Green and Complete Streets Policy.

A town-wide green and complete streets ordinance would ensure that new roadway construction projects are designed to support all road users and the environment, including considerations for Low Impact Development such as street trees and swales for capturing stormwater. Providence and Central Falls both have policies adopted.

Responsible party: Department of Planning & Community Development

Potential Partners: Planning Board, Town Council, and Public Works

Timeline: 1-2 years

Identifying opportunities to convert street infrastructure into complete green streets cools our cities, improves air quality, and creates safer, more inviting spaces for everyone.

7 Objective 7: Update the zoning ordinance to reduce parking minimums for certain land uses.

Excessive parking minimums create more impervious surface, which worsens flooding and heat. Below is a table of the current parking minimums vs. GIC's recommendations. These recommendations should also apply to any existing property applying for retrofits.

Responsible party: Department of Planning & Community Development

Potential Partners: Planning Board, and Zoning Board

Timeline: 2-3 years

Building type	Current Parking Minimum	Suggested Parking Minimum
Professional office building or shopping center	5 spaces, plus one space for every 250 ft of floor space	Less than or equal to one parking space for 200 square feet of gross floor area
Motel or hotel	5 spaces, plus one space for each unit, room, or suite.	Less than or equal to one parking space per one and a half hotel rooms

Parking areas like this show how rethinking parking design can reduce excess pavement, using trees and vegetation to limit heat, manage stormwater, and create more resilient spaces.

8 Objective 8: Explore zoning and subdivision changes that require tree planting and maintenance; incorporate these updates in the review process for the comprehensive permit law for affordable housing.

Title 45, Chapter 53, of the Rhode Island General Law gives the planning board power to issue a comprehensive permit that allows development projects with at least 25% low- or moderate-income housing to be fast-tracked. These project applications require approval from one local review board (the Planning Board), rather than multiple local boards. This strategy encourages the Town to review and update the current zoning and subdivision requirements to include tree-planting and maintenance requirements. These changes would then be incorporated into the Planning Board's review process for any comprehensive permit applications.

Responsible party: Zoning Board, and Permitting Board (Warren Planning Board)

Potential Partners: Warren Tree Commission

Timeline: 1-2 years

Affordable housing communities like this present an opportunity to align development with green standards, integrating tree planting and long-term care into zoning to create healthier, more livable neighborhoods.

9 Objective 9: Apply for grant funds to support tree plantings on school properties.

Kickemuit Middle School and Mary V. Quirk School have tree canopy cover of 7% and 23%, respectively. GIC determined that both schools have enough potential planting area to add nearly 300 trees (290 at Kickemuit and 9 at Mary V. Quirk).

Responsible party: Warren School District

Potential Partners: Warren Tree Commission, and Warren Health Equity Zone

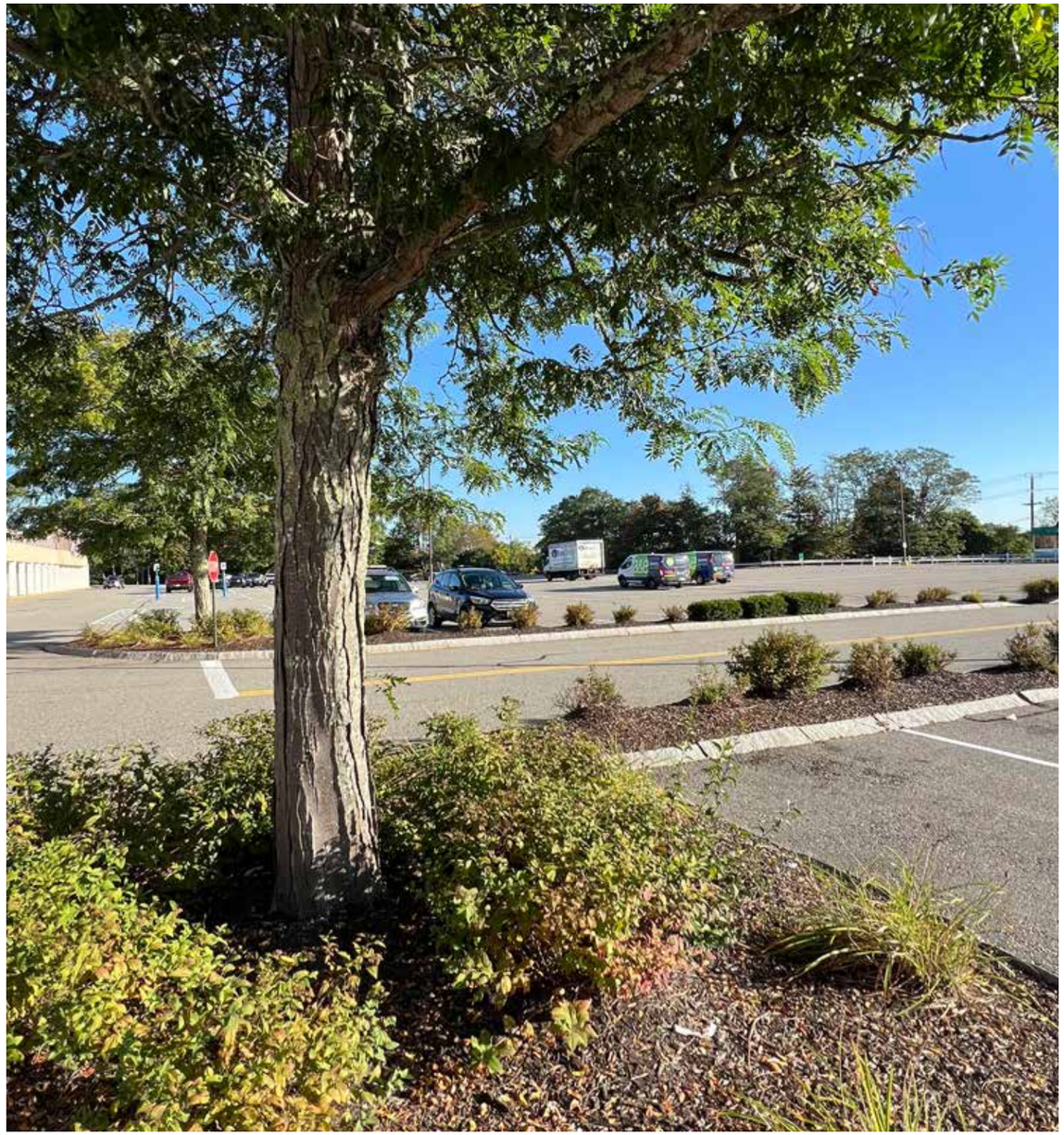
Timeline: 2 years

Properties like Kickemuit Middle School have large areas of plantable area that could contribute to the Town's canopy goal.

Conclusion

Warren has new data and strategies in this plan to guide the management of its urban forest. Implementing these tree strategies will ensure that current and future residents enjoy the continued benefits of trees and a healthy, resilient, and beautiful town for all.

This *Strategic Tree Canopy Plan* is a living document that is intended to be integrated into ongoing staff work plans, annual budgets, grant proposals, and partnerships with outside agencies. It is recommended that the Warren Tree Commission meet at least quarterly to document the plan's progress and adapt its strategies as needed.



Appendixes

Appendix A: Funding Opportunities

For tree campaigns to be successful, there must be dedicated funds. These funds can come from a variety of sources, including federal, state, local, and private resources. Examples of these opportunities are listed below.

Rhode Island Division of Agriculture and Forest Environment

https://dem.ri.gov/urban-forestry-program

- Tree Equity RI Grant Program
- Urban and Community Forestry Grant Program
- Community Design Assistance

Rhode Island Infrastructure Bank

https://www.riib.org/solutions/programs/climate-resilience

- Municipal Resilience Program
- Stormwater Project Accelerator

Rhode Island Foundation

https://rifoundation.org

- Donations to a public entity must be held in a trust or endowment

Rhode Island Commerce

https://commerceri.com/main-street-ri-streetscape-improvement-fund

- Main Street Rhode Island Streetscape Improvement Fund

Arbor Day Foundation

https://www.arborday.org

- Distributes various tree planting grants aimed to increase tree canopy in communities or aid communities recovering from natural disasters in restoring their urban forest.

Appendix B: References

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Appendix C: Community Feedback

The following questions were posed to the community at Warren Folks Fest, Warren HEZ supported Safety and Community Resilience Working Group meetings, Warren Farmers' Market at Hope & Main, and a Summer Kickoff Party at Burr's Hill Park. The GIC also promoted an online survey to receive feedback from community members.

Below is a compilation of all questions and public input from the online survey and outreach events.

Q1. Are you interested in getting involved in the neighborhood tree committee, tree stewards course or future tree planting events in Warren?

Response	Votes
Yes	11
No	N/A

Q2. Pick your 5 favorite strategies for Warren's Tree Canopy.

Strategies	Votes
Develop and adopt a Stormwater Master Plan include impervious surface ordinance that includes minimum canopy coverage requirements, combined with maximum imperviousness limits, and update zoning and the subdivision and land development regulations to reflect this.	22
Apply for grant funds to support depaving and tree planting efforts in the business district.	22
Update the existing Tree Administrative Guidelines to include best practices for tree care and maintenance, including guidance that encourages species diversity at both the project and town level.	20
Establish a tree bank to fund public tree planting and support mitigation efforts.	18
Establish a free back of sidewalk tree planting program that incorporates education and outreach in neighborhoods with the lowest tree canopy cover and most severe heat	18
Adopt a town-wide Green and Complete Streets Policy.	13
Update the zoning ordinance to reduce parking minimums for certain land uses (e.g., office buildings, hotels/ motels, and shopping centers).	12
Explore zoning and subdivision changes that align with the new comprehensive permit law for affordable housing and encourage tree-planting and maintenance	12
Apply for grant funds to support tree plantings on school properties	11

Q4. Is there anything else you would like to share?

Additional Comments
"I'm very concerned about cutting down trees along Main Street as we fix the sidewalks. How can we do both?"
"How is tree cover included in development projects like Penny Lane?"
"As a health care professional, I'm very concerned about excessive heat and impact on health. My priority is to increase tree canopy in urban areas, particularly along Main Street, Water Street and Metacom and Market Streets."
"Do we also integrate street cleaning prior to storms to mitigate pollution into the system?"
"So many parking lots that are underutilized!"
"I've seen several very old and beautiful trees chopped down in the last 10 years, only to be replaced by tiny, very young trees….or none at all. It's saddening and frustrating."
"Plant more evergreens."