URBAN TREE CANOPY
ASSESSMENT

RENTON, WASHINGTON

MARCH | 2025

PlanIT Geo
developers of TreePlotter

CITY OF RENTON

WASHINGTON STATE DEPT OF
NATURAL RESOURCES

RENTON, WA

TREE CANOPY ASSESSMENT

"When one plants a tree they plant themselves. Every root is an anchor, over which one rests with grateful interests, and becomes sufficiently calm to feel the joy of living.

-JOHN MUIR

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PREPARED FOR

The City of Renton

COMPLETED

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4,773
ACRES OF CANOPY

32%
OF RENTON'S LAND AREA
WAS COVERED WITH
CANOPY IN 2023

EXECUTIVE
SUMMARY

PURPOSE AND METHODS

Urban tree canopies are constantly evolving. While new plantings and the growth of existing trees contribute to canopy expansion, factors such as development, natural disasters, disease, and pests lead to canopy loss. These shifts are often difficult to perceive from the ground, but by analyzing past and present aerial imagery, tree canopy changes can be accurately measured. This assessment examines urban tree canopy (UTC), possible planting area (PPA), and canopy change between 2017 and 2023 within the City of Renton, located southeast of Seattle along the southern bay of Lake Washington. Renton's long-standing commitment to its urban forest is evident in its 17-year designation as a Tree City USA and its 13-year recognition with the Growth Award from the Arbor Day Foundation, an achievement that underscores the city's dedication to tree stewardship and sustainability.

The results, based on 2023 imagery from the USDA's National Agriculture Imagery Program (NAIP), provide a near-current look at land cover in Renton. This study utilized modern machine learning techniques to create land cover data that are reproducible and allow for a more uniform comparison in future tree canopy and land cover assessments. **This assessment report will follow the standards established by the US Forest Service and report tree canopy metrics as a percentage of the land area (excluding water bodies) unless stated otherwise.** The key goals of this tree canopy cover assessment include:

▶ Quantify the amount and location of tree canopy and other land cover types

▶ Analyze the change in canopy cover from 2017 to 2023

▶ Measure the ecosystem services provided by the tree canopy to the community

▶ Identify areas where tree canopy can be expanded (Possible Planting Area analysis)

▶ Determine priority areas for tree planting initiatives based on socioeconomic, environmental, and climate-related factors

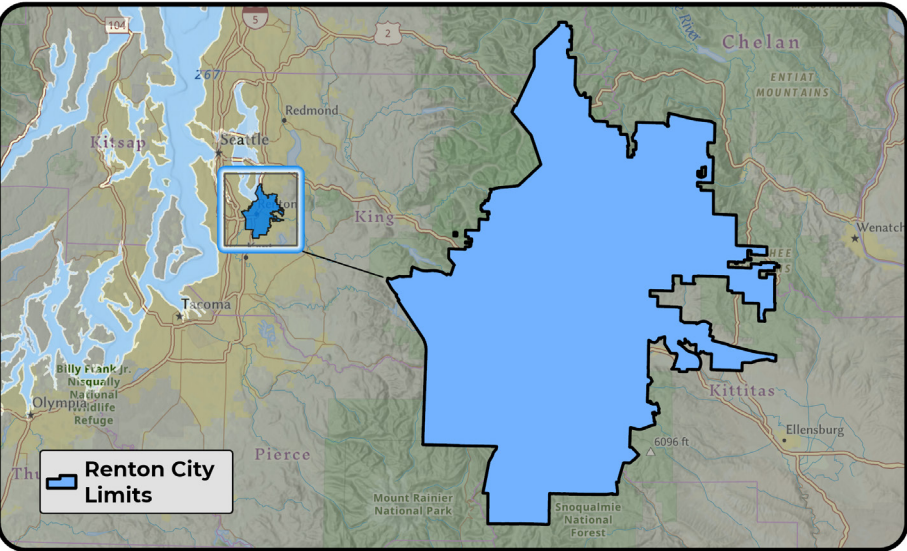▶ Provide data to inform future planning and to establish canopy coverage goals

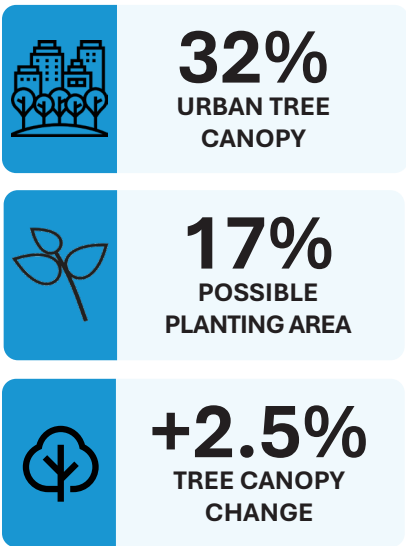Figure 1. The City of Renton occupies approximately 25 square miles on the southern bay of Lake Washington.

32%
URBAN TREE CANOPY

17%
POSSIBLE PLANTING AREA

+2.5%
TREE CANOPY CHANGE

Figure 2. Based on an analysis of 2023 and 2017 high-resolution imagery.

RENTON'S URBAN FOREST

in 2023, Renton's full Area of Interest (AOI), which represents the city limits boundary, excluding bodies of water, had 32% of its land covered with urban tree canopy and 17% available for potential planting. The remaining 51% of the land area was deemed unsuitable for planting without substantial land modification. Renton's total area within city limits, including surface water, comprises 31% tree canopy, 19% other vegetation, 33% impervious surfaces (excluding buildings), 13% buildings, 2% shrubs, and less than 1% each of soil or dry vegetation and water.

Among Renton's community planning areas, Benson—the largest—holds the greatest share of the city's total tree canopy at 21%. In contrast, Cedar River, despite being the third smallest planning area, boasts the highest tree canopy density at 54%. Tree canopy distribution is concentrated within a few key zoning classes. Of the city's 19 zoning categories, three account for 58% of Renton's total canopy: Resource Conservation (23%), Residential-8 (20%), and Residential-4 (14%). At the census block group level, 37 of Renton's 86 block groups have tree canopy percentages at or above the citywide average of 32%. While these areas make up just 37% of Renton's total land area, they contain 58% of the city's urban forest canopy.

RECOMMENDATIONS

This analysis supports the development of a strategy for preserving and enhancing Renton's urban forest. Renton currently boasts 31% canopy cover within its city boundary, equating to 4,773 acres of tree canopy. Rather than striving solely for maximum coverage, the emphasis can be placed on sustaining this canopy and optimizing opportunities for targeted growth where it's most needed.

The city of Renton has a significant opportunity to maintain and expand its green spaces, particularly by focusing on right-of-way (ROW) areas, which encompass 436 acres of existing trees and an additional 264 acres available for new plantings. This initiative would not only beautify urban areas and provide more shade but also promote environmental equity and mitigate the adverse effects of nearly 7,000 acres of impervious surfaces. Beginning with the ROW areas is a crucial step toward expanding and improving the health of the city's urban forest, with the goal of achieving a sustainable and verdant future for all residents.

This report provides urban tree canopy, possible planting area, and urban tree canopy change metrics to help guide management actions, strategic plantings, and protection measures for the existing canopy, ensuring that Renton's urban forest is managed thoughtfully to sustain its benefits for future generations.

PROJECT
METHODOLOGY

Land cover, urban tree canopy, and possible planting areas were mapped using the sources and methods described below. These data sets provide the foundation for the metrics reported at the selected geographic assessment scales.

DATA SOURCES

This assessment utilized high-resolution (60-centimeter) multi-spectral imagery from the U.S. Department of Agriculture's National Agriculture Imagery Program (NAIP) collected in 2023 to derive the land cover data set. The NAIP imagery was used to classify all types of land cover. For canopy change analysis, 2017 high-resolution (1-meter) multispectral NAIP imagery and 2016 LiDAR data from King County, Washington were used to derive the historical tree cover dataset. This dataset was used in a previous tree canopy assessment for Renton in 2018. The NAIP imagery resolution is higher in this iteration of the canopy cover assessment than in the previous assessment (60-centimeter vs. 1-meter).

MAPPING LAND COVER

The land cover data set is the most fundamental component of a tree canopy assessment. Tree canopy and land cover data from the EarthDefine US Tree Map (https://www.earthdefine.com/treemap/) provided a six-class land cover data set. The US Tree Map is produced using a modern machine-learning technique to extract tree canopy cover and other land cover types from the latest available 2023 NAIP imagery. Planimetric building data provided by the City of Renton was updated using 2023 NAIP imagery and incorporated into the dataset as an additional land cover class, making seven total. These seven classes are shown in Figure 3.

TREE CANOPY   **SHRUB**   **OTHER VEGETATION**   **WATER**

BARE SOIL AND DRY VEGETATION   **BUILDINGS**   **IMPERVIOUS SURFACES**

Figure 3. Seven (7) distinct land cover classes were identified in the 2023 assessment imagery: tree canopy, shrubs, other vegetation, bare soil and dry vegetation, buildings, other impervious surfaces, and water.

IDENTIFYING POSSIBLE PLANTING AREAS

IIn addition to quantifying the City of Renton's existing tree canopy cover, areas where trees can be planted (PPA- Possible Planting Area) were also identified. To assess this, all land area in the City of Renton that was not currently tree canopy was classified as either possible planting area (PPA) or unsuitable for planting.

Possible planting areas were derived from the shrubs and other vegetation land cover classes. Unsuitable areas or areas where it was not feasible to plant trees (e.g. recreation fields, utility corridors, stormwater facilities, wetlands, etc.) were manually delineated and overlaid with the existing land cover data set (Figure 4). In addition to these areas, open spaces in parks were also delineated as unsuitable due to recreational land use beyond designated sports fields. The final results were reported as PPA Vegetation, Unsuitable Impervious, Unsuitable Vegetation, Unsuitable Parks, Unsuitable Wetlands, Unsuitable Soil, and Water.

Figure 4. The study identified vegetated areas where it would be feasible for tree plantings but undesirable based on their current usage (left) in the data as "Unsuitable" (right).

IDENTIFYING TREE CANOPY CHANGE

Tree canopy change was identified by comparing imagery captured from multiple years (2017 and 2023). The figures below provide examples of canopy loss and canopy gain.

Figure 5. Maturing trees added canopy in this woodlot east of the Avaya Trail Apartments 2017 (left) to 2023 (right).

Figure 6. The development of Hilltop Heritage Elementary School caused a loss of canopy from 2017 (left) to 2023 (right).

DEFINING ASSESSMENT LEVELS

To best inform the City of Renton and other stakeholders, urban tree canopy and other associated metrics were tabulated across several geographic boundaries. These assessment levels include the Renton city boundary (full AOI), HUC-12 watersheds, community planning areas, zoning, parks, census block groups, rights-of-way by census block group, and parcels.

Renton City Limits

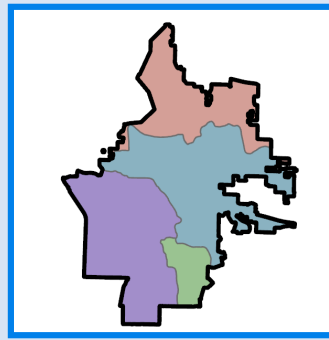The Renton City Limits boundary is the one (1) main area of interest over which all metrics are summarized.

HUC-12 Watersheds

Because trees play an important role in stormwater management, four (4) watersheds were assessed.

Planning Areas

Nine (9) community planning areas were assessed to see how urban forestry metrics differ across familiar community boundaries.

Zoning

Tree canopy was assessed on twenty (20) permitted zoning classes to identify any relationships between the city's zoned areas and tree canopy cover.

Parks

Fourty-eight (48) parks were assessed to better understand tree canopy cover within urban green spaces in Renton.

Census Block Groups

Eighty-six (86) census block groups were assessed to show relationships between canopy and sociodemographic factors, and highlight potential environmental justice issues..

Rights-of-Way Within Census Block Groups

Tree canopy was assessed for rights-of-way within eighty-six (86) census block groups to identify areas where the city has the capacity to manage and improve tree cover along roads and sidewalks.

Parcels

For detailed view of tree canopy metrics, tree canopy was assessed for Renton's 27,392 parcels.

Figure 7. Eight (8) distinct geographic boundaries were explored in this analysis: Renton city boundary (full AOI), HUC-12 watersheds, community planning areas, zoning, parks, census block groups, rights-of-way by census block groups, and parcels.
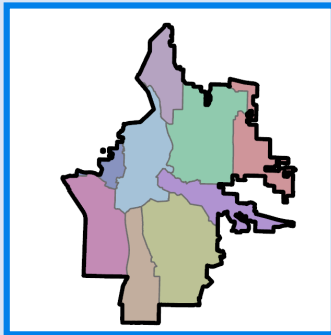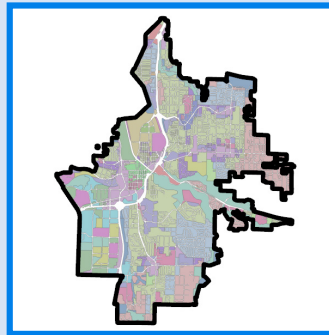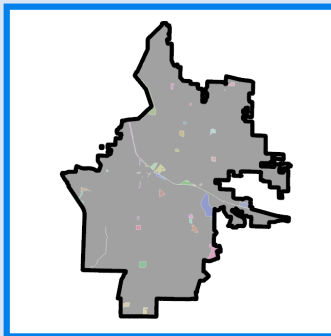
STATE OF THE CANOPY AND
KEY FINDINGS

The results of this study can be used to design a strategic approach to identifying existing canopy and future planting areas. The land cover data presented below depict Renton's current city limits.

Figure 8 illustrates the distribution of land cover in Renton, including water bodies. Tree canopy covers 31% of Renton's boundary. Buildings make up 13% and other impervious surfaces make up 33%, while vegetation like grass and low shrubs account for approximately 19%. Shrubs/scrubs cover 2% of the area, and lastly, bare soil and water areas each represent less than 1% within the city boundary.

Table 1. Land cover classes in acres and percent in Renton.

Land Cover Class	Acres	% of Total
Non-Building Impervious Surfaces	4,968	33%
Tree Canopy Cover	4,773	31%
Non-Canopy Vegetation	2,950	19%
Buildings	1,912	13%
Shrubs	295	2%
Water	142	0.9%
Soil & Dry Vegetation	119	0.8%

Figure 8. Distribution of land cover classes throughout the City of Renton.

Land Cover

- ■ Tree Canopy
- ■ Tree Canopy Over Impervious
- ■ Non-Canopy Vegetation
- ■ Scrub/shrub
- ■ Buildings
- ■ Other Impervious
- ■ Water
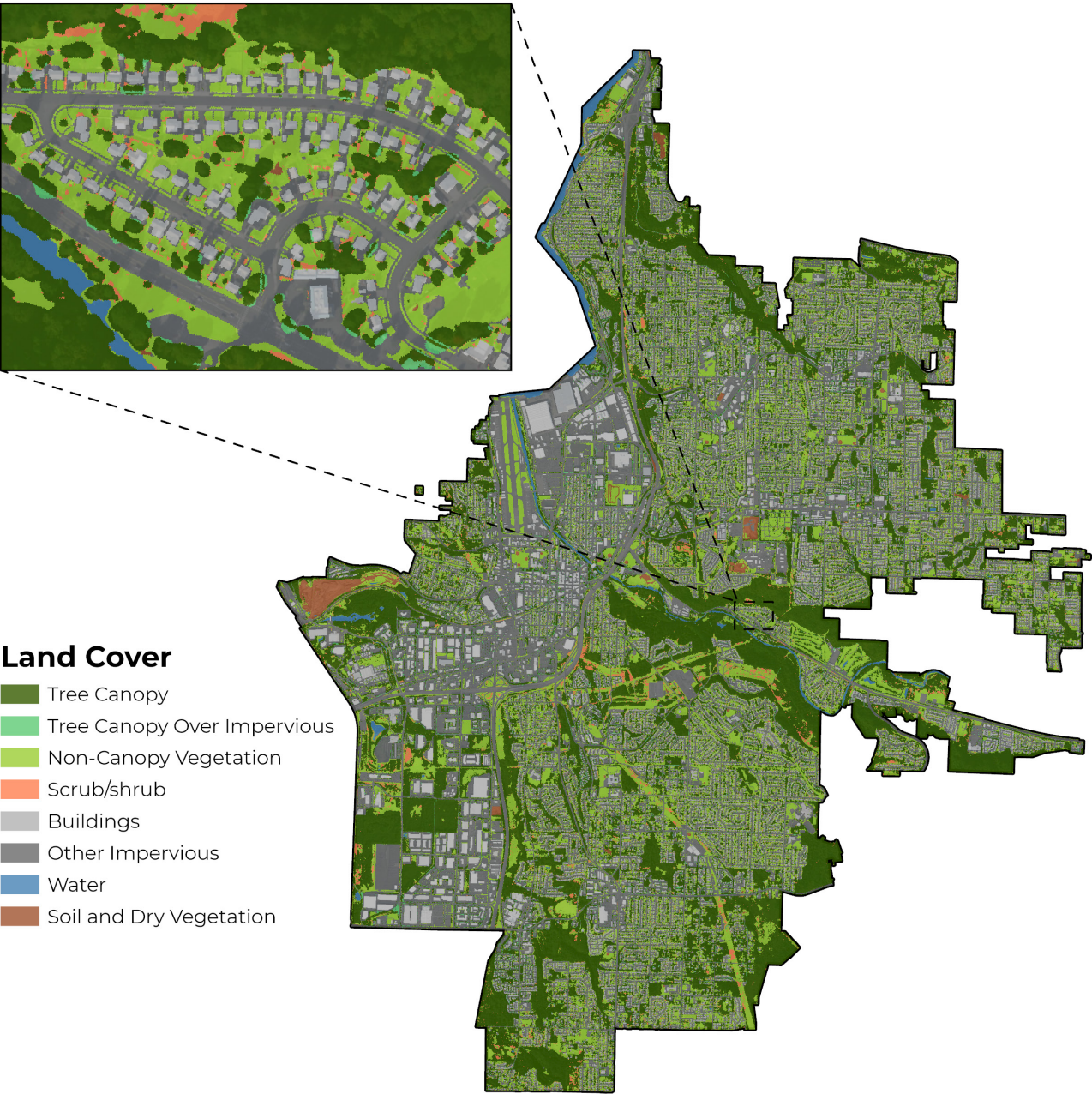- ■ Soil and Dry Vegetation

Figure 9. Land cover classification results (percentages based on total area of Renton's full AOI including water bodies). The inset map shows a detailed view of land cover classes in the Maplewood Glen neighborhood.

CITY-WIDE TREE CANOPY COVER

This urban tree canopy assessment utilized the land cover data as a foundation to determine tree canopy cover and possible planting areas (PPA) throughout the City of Renton. Results of this study indicate that within the city, 4,773 acres are covered with urban tree canopy, making up 32% of the city's 15,017 land acres; 2,620 acres are covered with other vegetation where it would be possible to plant trees, making up 17% of the city; and the other 7,624 acres were considered unsuitable for tree planting, making up over half (51%) of the city. Impervious surfaces made up 90% (or 6,880 acres) of total unsuitable areas. The remaining 744 acres of unsuitable vegetation include areas such as golf course fairways, airports, utility corridors, recreation fields, open spaces in parks, and wetlands.

Table 2. Tree canopy potential in acres and percent in Renton.

UTC Potential Class	Acres	% of Total
Unsuitable	7,625	51%
Existing Tree Canopy	4,773	32%
Potential Planting Area	2,620	17%

Between 2017 and 2023, the City of Renton gained 373 acres (+2.5%) of tree canopy.

CITY-WIDE TREE CANOPY CHANGE

Over the 6-year study period, Renton's tree canopy expanded. Within the city boundaries, canopy coverage increased by 373 acres, representing a +2.5% absolute gain from 2017 to 2023. While canopy coverage likely fluctuated throughout this period, this assessment captures a snapshot of conditions based on the timing of the imagery used. Canopy growth can be attributed to several factors, including the natural expansion of existing trees, new tree plantings, and natural regeneration through seed dispersal. In contrast, most significant canopy losses were linked to land clearing for new developments, particularly on previously vacant lots.

A previous tree canopy assessment in 2018* found that Renton experienced a modest canopy gain of +0.6% between 2010 and 2017. The current findings suggest a continued trend of tree canopy preservation and expansion in the city.

Between the previous and current assessments, Renton's city limits were slightly revised, with the updated boundary now encompassing approximately 65 additional acres.

Figure 10. Tree canopy, possible planting area, and area unsuitable (impervious, soil, vegetation, wetlands) for tree canopy throughout the City of Renton.

CANOPY AND IMPERVIOUS SURFACES

The city's 4,773 acres of urban tree canopy were further divided into subcategories based on whether the canopy was overhanging pervious or impervious surfaces. Tree canopy overhanging an impervious surface offers many ecological advantages such as localized cooling through shading and increased storm-water absorption. Results indicated that Renton's UTC was predominantly overhanging pervious surfaces at 95%, while only 5% was overhanging impervious surfaces. Planting trees in rights-of-ways, along streets and sidewalks, and in other public areas, as well as strengthening ordinances for planting around parking lots in new developments can help to offset the negative effects of impervious surfaces. Heightened vigilance in retaining and protecting existing larger mature trees near rights-of-way will pay dividends.

Tree Canopy Potential

- Tree Canopy
- PPA Vegetation
- Unsuitable Vegetation
- Unsuitable Impervious
- Unsuitable Parks
- Unsuitable Soil
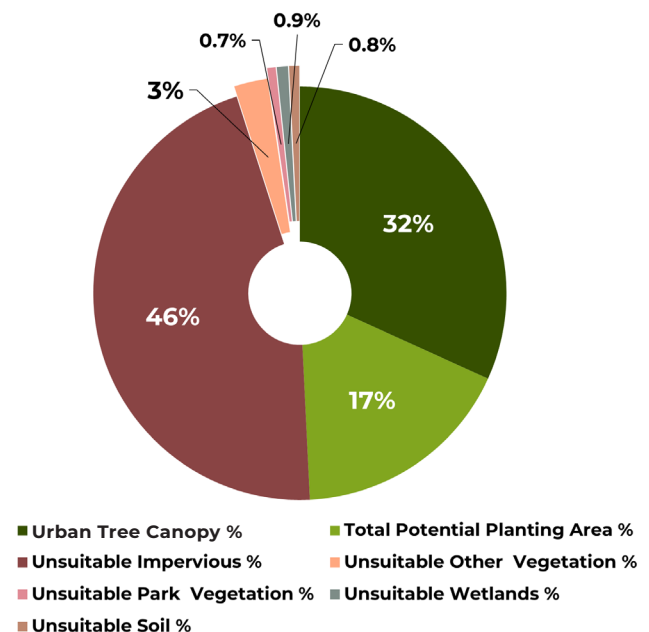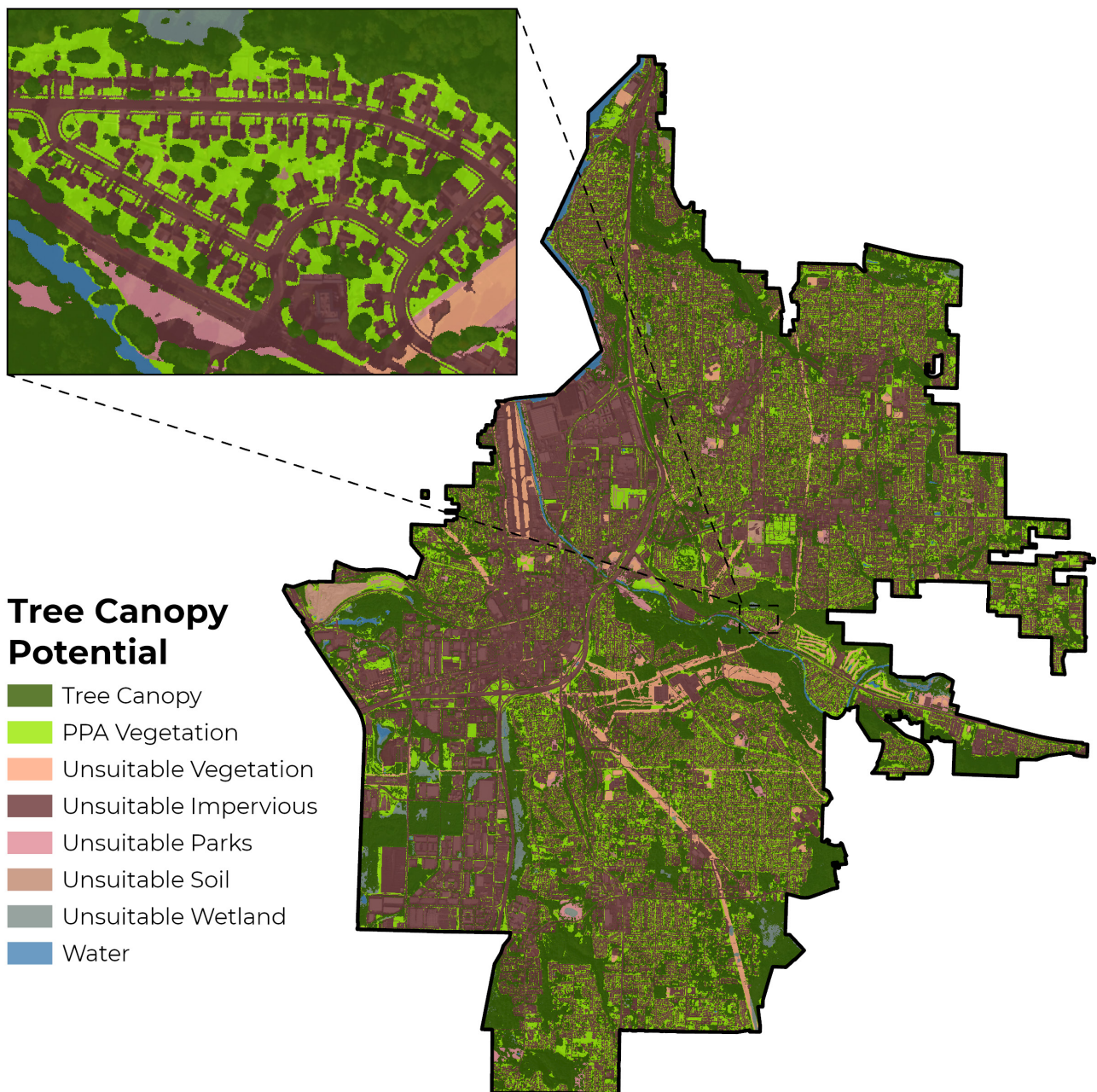- Unsuitable Wetland
- Water

Figure 11. Tree canopy, possible planting area, and area unsuitable (impervious, soil, vegetation, wetlands) for tree canopy throughout the City of Renton. The inset map shows a detailed view of UTC classes in the Maplewood Glen neighborhood.

CITY-WIDE TREE CANOPY AT RISK

The most recent NAIP imagery was captured in October 2023. So as of February 2025, there has been development in Renton that is not reflected in that imagery. Notably, specific parcels surrounding the I-405 corridor currently encompass approximately 300 acres of land within city limits. To assess the amount of canopy that might be at risk for removal, or that has already been removed since the imagery was captured, a 50-foot buffer was created around the I-405 corridor. Within this buffer, there are nearly 70 acres of canopy at risk due to highway expansion.

Additionally, city officials have identified parcels that have been developed since the imagery collection. Some of these parcels are located along Rainier Ave N, where dozens of large mature London Plane trees were removed for road widening and sidewalk replacement. There has also been clearing on multiple parcels along 156th Ave SE, Talbot Road, 116th Ave SE, and Lincoln Ave NE for development purposes, as well as a proposed Water Department project to add new storage and renovate existing tanks. Together, these parcels cover an additional 91 acres of land, with 26 acres of canopy that may have already been removed or may be removed soon.

In summary, there are approximately 100 acres of canopy that may have been removed since the imagery was captured or are planned to be removed in the near future (Figure 12).
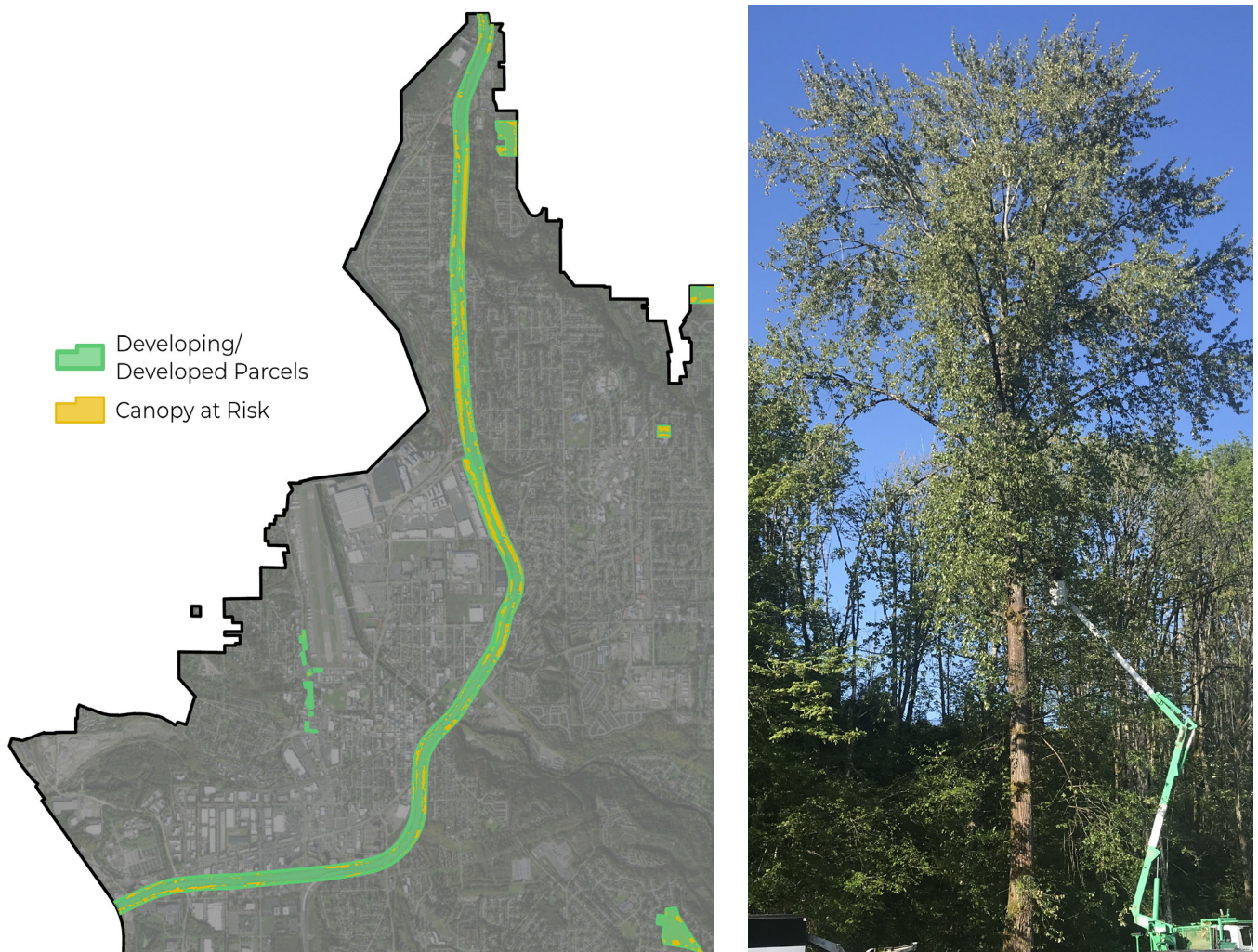

Figure 12. Canopy at risk for removal along the I-405 interstate corridor and within identified parcels.

TREE CANOPY COVER BY WATERSHEDS

Trees mitigate stormwater runoff, filter pollutants, and sediment and as a result, reduce flooding and enhance water quality. Renton's tree canopy is distributed across four HUC-12 watersheds, each presenting unique opportunities for canopy management and planting. The Madsen Creek-Cedar River, Green River, Lake Washington-Sammamish River, and Big Soos Creek watersheds make up 37%, 34%, 23%, and 7% of the land area within the AOI, respectively. The Madsen Creek-Cedar River and Green River watersheds hold the largest share of tree canopy, each contributing 35% of the total canopy distribution, while the Big Soos River watershed has the highest canopy coverage at 40%.

The Lake Washington-Sammamish River Watershed located along the southern border of the lake, contains 1,038 acres (31%) of canopy and 619 acres (18%) of potential planting space. However, this watershed is also impacted by 48% impervious surfaces, so tree canopy conservation efforts could be a great benefit to this area to mitigate flooding. The Madsen Creek-Cedar River Watershed, with 5,542 acres of land area making it the largest watershed, holds 1,684 acres (31%) of tree canopy, and has the largest area of 1,026 acres available for future tree plantings (39% of the PPA distribution). In addition to having the densest tree canopy, the Big Soos River Watershed, holds 208 acres (21%) of planting area, making it the most significant area for potential canopy expansion in proportion to its size.

Table 3. Land area distribution, urban tree canopy, potential planting area, and urban tree canopy change for Renton watersheds.

HUC-12 Watersheds	Land Area Distribution %	UTC %	PPA %	UTC Change %	Impervious Surface %
Big Soos Creek	7%	40%	21%	5.9%	32%
Green River	34%	32%	15%	2.7%	47%
Lake Washington-Sammamish River	23%	31%	18%	1.1%	48%
Madsen Creek-Cedar River	37%	31%	19%	2.6%	45%

WATERSHEDS TREE CANOPY CHANGE

Over the 6-year study period, the four watersheds all experienced a net gain in tree canopy. The Madsen Creek-Cedar River Watershed had the largest acreage increase in tree canopy with 140 acres of tree canopy added (+2.6%). In proportion to its size, the Big Soos River Watershed saw the greatest percentage increase of 5.9%, equating to 58 acres.
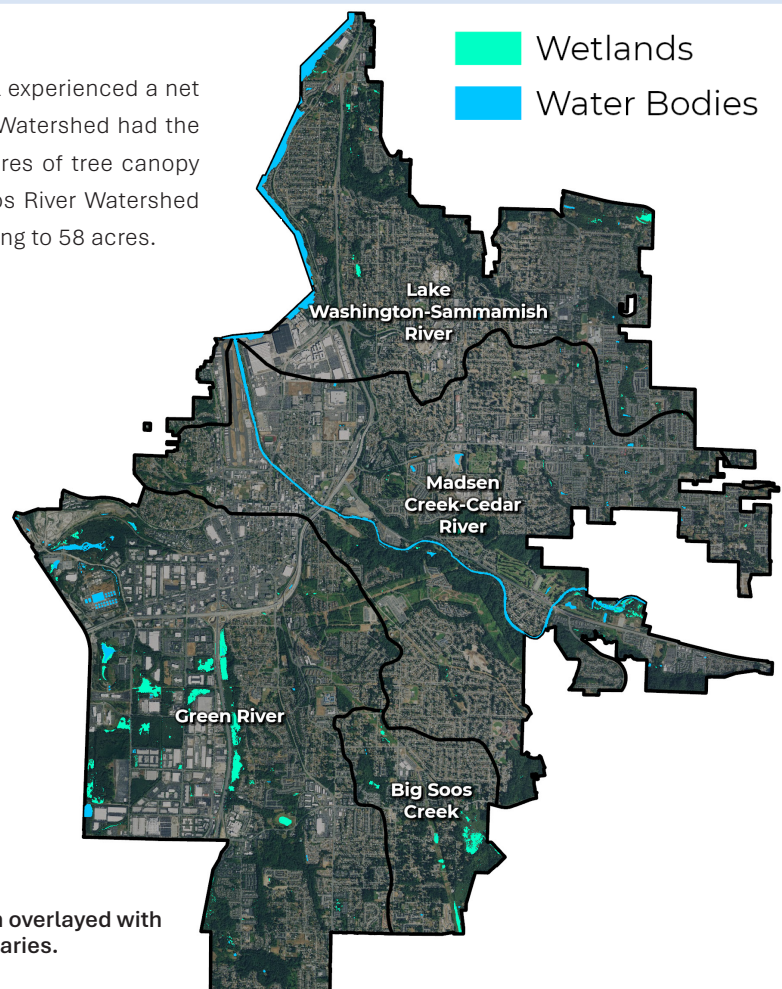

Figure 13. HUC-12 Watersheds in Renton overlayed with wetland and water body boundaries.

TREE CANOPY COVER BY COMMUNITY PLANNING AREAS

Urban tree canopy metrics were analyzed for nine community planning areas in Renton to understand how canopy coverage varies across familiar community boundaries. Assessing canopy at this scale provides localized insights that support targeted urban forestry efforts aligned with neighborhood identities and public engagement efforts. Additionally, evaluating canopy within these areas helps guide policy decisions and resource allocation for tree planting programs and urban forestry initiatives.

Benson, the largest planning area, contains the highest share of the city's total tree canopy, accounting for 21%. In contrast, Cedar River, despite being the third smallest planning area, has the highest tree canopy density at 54%, which is more than 10 percentage points higher than the second densest area, Talbot, at 42%. City Center has the lowest tree canopy density at just 14%—a significant drop compared to other areas—while contributing only 5% of the city's total tree canopy, despite being the third largest planning area. This area also has a high impervious surface coverage of 70%. Expanding tree canopy within the 182 acres of potential planting area in City Center could help mitigate urban heat island effects and other environmental impacts of impervious surfaces.

Regarding potential planting area, Benson and Highlands each contain over 20% of the city's total available planting space. Meanwhile, East Plateau has the highest proportion of its own land available for planting, with nearly a quarter (24%) of its area suitable for new trees.

COMMUNITY PLANNING AREAS TREE CANOPY CHANGE

Over the 6-year study period, all planning areas except Kennydale experienced tree canopy growth. Although Kennydale lost canopy, the decline was minimal, totaling just 4 acres (-0.4%). Benson, the city's largest planning area, saw the greatest overall canopy gain, adding 104 acres (+3.5%). Cedar River had the highest proportional increase, with a 7.5% rise in canopy coverage, equating to an additional 90 acres.
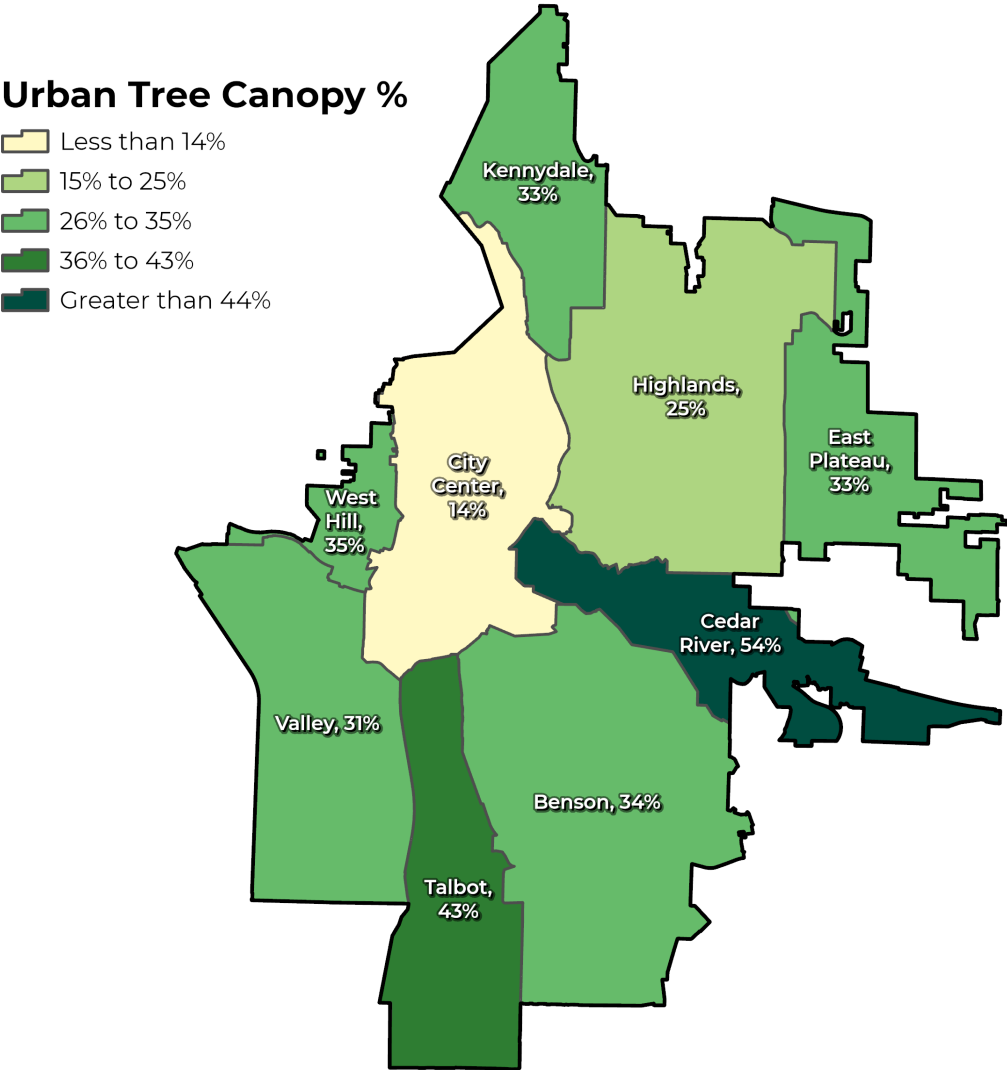
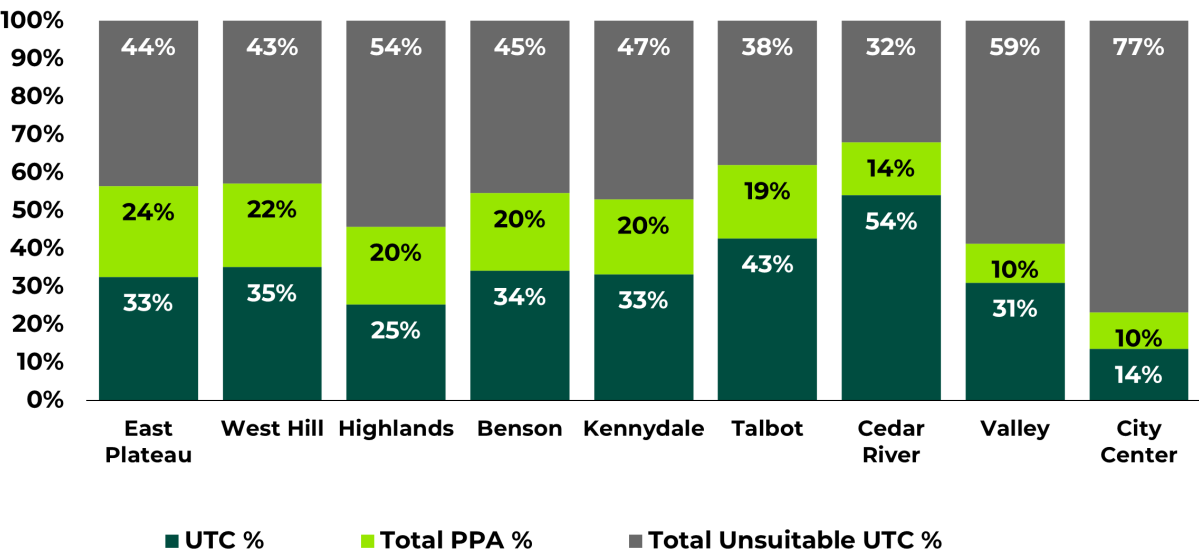**Figure 14. Urban tree canopy by community planning areas.**

Figure 15. Urban tree canopy potential by community planning areas.

TREE CANOPY COVER BY ZONING

Zoning boundaries help local governments designate specific areas for land uses—such as residential, commercial, industrial, and recreational—to guide urban development and uphold community planning standards. Tree canopy cover and potential planting area were analyzed across the city's 20 zoning classes. Three zoning classes comprise 58% of the city-wide tree canopy distribution: Resource Conservation (23%), Residential-8 (20%), and Residential-4 (14%). The Resource Conservation and Residential-1 classes have the densest tree canopy with 81% and 70%, respectively.

All residential zones in Renton have at least 31% tree canopy coverage, except for the two smallest residential zones—Residential-Manufactured Home (23% UTC) and Commercial Office Residential (20% UTC). Despite their lower canopy coverage, these two zones together contain 50 acres of potential planting area, offering opportunities to enhance tree cover in these residential areas. The three largest residential zones (R-8, R-4, and R-6) contain the highest share of potential planting area, accounting for 70% of the city's total available planting space. The four zones with the lowest tree canopy—Center Village, Center Downtown, Urban Center-1, and Urban Center-2—also have some of the highest impervious surface coverage. This limits opportunities for large-scale tree planting. However, by strategically utilizing the small amount of available planting space and prioritizing the preservation of existing trees, the city can help sustain canopy levels and provide shade in high-traffic downtown areas where residents spend significant time.

The three largest residential zones (R-8, R-4, and R-6) hold 70% of the city's potential planting area.

ZONING TREE CANOPY CHANGE

Among Renton's 20 zoning classes, eleven gained canopy, two lost canopy, and the remaining seven classes remained relatively stable (with changes of less than ±1%). Resource Conservation zoned areas saw the greatest increase of 151 acres (+12%).

Table 4. Land area distribution, urban tree canopy, potential planting area, urban tree canopy change, and impervious surface coverage by zoningclasses.

Zoning class	Land Area Distribution %	UTC %	PPA %	UTC Change %	Impervious Surface %
Center Downtown	0.9%	12%	11%	0.3%	71%
Center Village	0.7%	14%	11%	-0.1%	70%
Commercial Arterial	6%	15%	8%	-0.2%	75%
Commercial Neighborhood	0.2%	28%	15%	3%	57%
Commercial Office	4%	33%	14%	2%	49%
Commercial Office Residential	0.9%	20%	26%	3%	38%
Heavy Industrial	3%	19%	13%	2%	52%
Light Industrial	3%	20%	12%	1%	58%
Medium Industrial	5%	15%	6%	-1%	70%
Residential-1	4%	70%	9%	9%	8%
Residential-10	3%	31%	23%	3%	39%
Residential-14	4%	35%	16%	4%	43%
Residential-4	13%	39%	28%	3%	30%
Residential-6	10%	28%	31%	0.3%	39%
Residential-8	24%	30%	27%	2%	38%
Residential-Manufactured Home	1%	23%	16%	1%	58%
Residential-Multi Family	5%	34%	12%	3%	49%
Resource Conservation	10%	81%	6%	12%	4%
Urban Center - 1	0.3%	2%	1%	-3%	97%
Urban Center - 2	2%	5%	4%	-0.3%	91%

TREE CANOPY COVER BY PARKS

Tree canopy metrics were evaluated for 48 parks and open spaces managed by the City of Renton. These properties span 492 acres and contain 236 acres of tree canopy. Assessing tree canopy in city-owned open spaces helps establish realistic canopy goals for greenspaces directly managed by the city. Tenty-eight properties had urban tree canopy percentages higher than the city-wide average of 32%, contributing a total of 262 acres of canopy, or 92% of the tree canopy across the park and open space systems.

The Narco Property at Soos Creek and Renton Park, the first and third largest properties, contain the highest distribtuions of tree canopy, accounting for 28% and 21% of the total park-wide canopy, respectively. These properties are predominantly covered by tree canopy. It's important to note that open vegetation within Renton's parks and open spaces is classified as unsuitable for tree planting due to recreational uses. However, some open spaces may become suitable for planting if land use changes in the future. Even with such changes, it is unlikely that more than 20% of any park's open space would be viable for tree planting.

For a detailed breakdown of park and open space properties, see Table 5 on the following page.

Figure 16. Distribution of parks and open spaces within UTC and Impervious Surfaces classes.

PARKS TREE CANOPY CHANGE

Over the six-year assessment period, eight properties experienced tree canopy loss, while the rest either gained canopy or remained relatively stable. The Narco Property at Soos Creek saw the largest canopy increase, adding 21 acres (+23.5%). Jones Park recorded the greatest canopy loss among parks, but the decline was minimal, totaling just 0.1 acres (-5.4%). Overall, park and open space properties experienced a net gain of 49 acres of tree canopy, reflecting a +9.9% increase. It is important to note that these changes reflect tree canopy acres, while the land area of these properties remained unchanged over the assessment period.

Figure 17. Distribution of parks within UTC change classes.

Table 5. Land area distribution, urban tree canopy, tree canopy change, and impervious surface coverage by park properties.

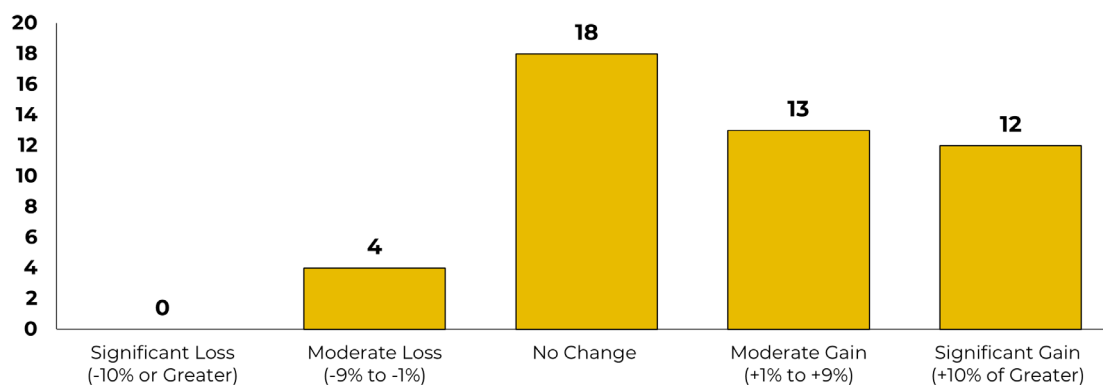| Property Name	Land Acres	Land Area Distribution %	UTC %	UTC Change %	Impervious Surface %
Burnett Linear Park	1.6	0.3%	65.9%	10.3%	16%
Cascade Park	11.5	2.3%	54.6%	4.7%	5%
Cedar River Dog Park	4.1	0.8%	2.1%	1.0%	3%
Cedar River Park	19.1	3.9%	20.2%	2.7%	44%
Cedar River Trail - Logan to Library	2.0	0.4%	71.6%	16.8%	14%
Cedar River Trail - South	8.8	1.8%	33.2%	6.0%	59%
Cedar River Trail Extension	2.4	0.5%	45.5%	8.9%	14%
Cedar River Trail Park Lake to Logan	14.5	2.9%	42.1%	2.1%	21%
Cleveland Richardson Property	17.3	3.5%	56.9%	8.1%	1%
Earlington Park	1.5	0.3%	18.3%	-4.8%	25%
Edlund Property	17.7	3.6%	29.3%	7.4%	1%
Gateway Park	0.7	0.1%	29.9%	9.9%	70%
Gene Coulon Memorial Park	46.1	9.4%	46.1%	6.5%	25%
Glencoe Park	0.5	0.1%	40.8%	2.8%	20%
Heritage Park	7.9	1.6%	32.2%	0.4%	13%
Highlands Park	10.9	2.2%	19.5%	4.6%	22%
Jones Park	1.8	0.4%	55.5%	-5.4%	17%
Kennydale Beach Park	0.8	0.2%	4.9%	-7.7%	37%
Kennydale Lions Park	5.7	1.2%	42.5%	12.7%	25%
Kenyon-Dobson Property	2.2	0.4%	83.7%	7.7%	2%
Kiwanis Park	9.2	1.9%	21.9%	0.9%	27%
Liberty Park	12.3	2.5%	20.3%	2.9%	29%
Maplewood Heights Park	0.0	0.0%	66.0%	43.6%	15%
Maplewood Park	2.1	0.4%	12.9%	-1.1%	12%
Maplewood Roadside Park	1.5	0.3%	22.6%	-3.7%	24%
May Creek Park/McAskill	10.0	2.0%	91.9%	10.2%	2%
Metro Waterwork Gardens Park	8.1	1.6%	75.7%	16.5%	1%
Metro Waterwork Park	6.6	1.3%	74.9%	14.9%	8%
Narco Property - Cedar River	7.7	1.6%	22.6%	9.8%	23%
Narco Property - Soos Creek	89.2	18.1%	88.5%	23.5%	0%
North Highlands Park	2.0	0.4%	20.7%	3.5%	44%
Philip Arnold Park	11.0	2.2%	34.5%	3.6%	24%
Piazza Park	1.1	0.2%	28.7%	8.0%	60%
Renton Park	60.6	12.3%	99.5%	4.4%	0%
Riverview Park	13.9	2.8%	77.2%	9.8%	4%
Ron Regis Park	29.8	6.1%	32.6%	11.3%	15%
Sierra Heights Park	0.0	0.0%	0.0%	0.0%	50%
Sit-in Park	1.0	0.2%	38.4%	-5.7%	42%
Springbrook Trail	3.5	0.7%	67.2%	22.4%	9%
Sunset Neighborhood Park	3.2	0.6%	0.9%	0.9%	41%
Talbot Hill Reservoir Park	2.6	0.5%	6.4%	-1.5%	43%
Thomas Teasdale Park	9.7	2.0%	27.8%	3.2%	12%
Tiffany - Cascade Connector	4.8	1.0%	90.7%	20.6%	0%
Tiffany Park	6.7	1.4%	17.7%	2.3%	14%
Tonkin Park	0.2	0.0%	65.7%	-17.5%	18%
Veterans Memorial Park	0.2	0.0%	0.0%	0.0%	70%
Watershed Park	13.6	2.8%	69.3%	22.8%	0%
Windsor Hills Park	4.7	1.0%	76.7%	13.2%	3%
Totals & Averages	**492.1**	**100%**	**58.0%**	**9.9%**	**12.8%**

TREE CANOPY COVER BY CENSUS BLOCKS GROUPS

UTC and PPA were also assessed at the census block group level, which is valuable for determining the equitable distribution of tree canopy throughout Renton, as the block groups are linked to readily available demographic and socio-economic data. This geographic scale is the second smallest unit of measure at which the U.S. Census publishes statistical data within a state and represents between 600 and 3,000 people.

Of Renton's 86 census block groups, 37 have tree canopy percentages at or above the citywide average of 32%. Collectively, these block groups account for 37% of Renton's total land area but contain 58% of the city's urban forest canopy. In contrast, 19 block groups have 20% or less UTC. These lower-canopy areas are generally concentrated in north-central Renton—including much of downtown—and in southeast Renton, where dense residential development is prevalent. In terms of potential planting area, 21 block groups have at least a quarter of their land available for planting, totaling 813 acres. Meanwhile, 30 block groups in Renton have impervious surfaces covering 50% or more of their land, which significantly limits opportunities for expanding urban tree canopy. On average, these highly impervious block groups have 15% of their land designated as PPA. However, they still collectively offer 900 acres of plantable land—providing important opportunities to mitigate urban heat island effects and manage stormwater to reduce flooding in these areas

CENSUS BLOCK GROUPS TREE CANOPY CHANGE

Between 2017 and 2023, tree canopy increased in 57 block groups, decreased in 11 block groups, and remained relatively stable (with changes of less than ±1%) in the remaining 18 block groups. Block group 53-033-025304-2 experienced the largest canopy loss both in acreage and proportionally, with a decline of 10 acres, representing a -4.7% decrease.

Tree canopy change metrics can help refine strategic tree planting efforts by targeting priority areas experiencing canopy loss along with compounded socioeconomic and climate challenges. For details on tree planting prioritization at the census block
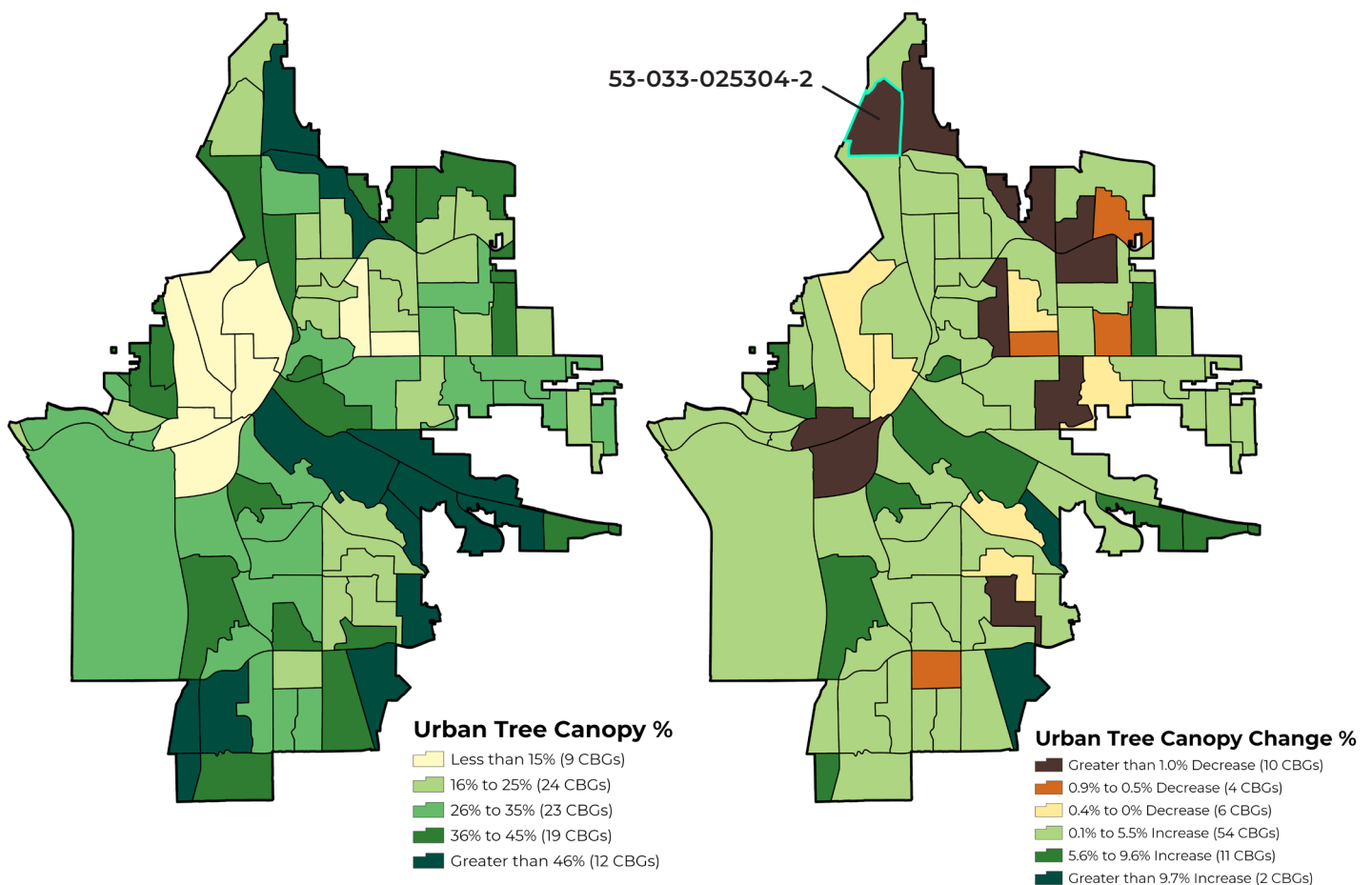

Figure 18. UTC (left) and UTC change (right) percentages by census block groups.

Urban Tree Canopy %
- Less than 15% (9 CBGs)
- 16% to 25% (24 CBGs)
- 26% to 35% (23 CBGs)
- 36% to 45% (19 CBGs)
- Greater than 46% (12 CBGs)

Urban Tree Canopy Change %
- Greater than 1.0% Decrease (10 CBGs)
- 0.9% to 0.5% Decrease (4 CBGs)
- 0.4% to 0% Decrease (6 CBGs)
- 0.1% to 5.5% Increase (54 CBGs)
- 5.6% to 9.6% Increase (11 CBGs)
- Greater than 9.7% Increase (2 CBGs)

TREE CANOPY COVER BY RIGHTS-OF-WAY

Urban tree canopy data was evaluated within rights-of-way (ROW) and summarized by census blocks to better understand tree cover along streets and roadways. This analysis highlights the extent of trees in areas managed and maintained by the City of Renton. The city's rights-of-way cover 17% of the total land area, or 2,515 acres, with an average urban tree canopy of 18%. **Despite making up nearly a fifth of the city's land, the ROW accounts for only 9% of the city's total tree canopy, highlighting limited tree cover in these areas, but room to expand tree canopy with 436 acres of total PPA.**

The rights-of-way within census block group 53-033-026003-3 have the highest tree canopy coverage at 48%, followed by 53-033-025402-2 and 53-033-026101-1, with 45% and 44% UTC, respectively. Notably, block group 53-033-026200-1 contains the largest share of ROW tree canopy, with 50 acres, representing 11% of the total distribution. This block group also represents the highest distribution of possible planting area, with 30 acres of land available to help raise the current canopy, which sits at 20%. Thirty-eight block groups have less than 15% UTC within their ROW. Despite an average impervious surface cover of 72%, rights-of-way account for 10% of the city's available potential planting area, offering 264 acres of space for new trees to help shade the most canopy-deficient streets and sidewalks in Renton.

RIGHTS-OF-WAY TREE CANOPY CHANGE

Between 2017 and 2023, rights-of-way tree canopy increased in 26 block groups, decreased in 40 block groups, and remained relatively stable (with changes of less than ±1%) in the remaining 20 block groups. **Rights-of-way in Renton had a net loss of 7 acres of tree canopy.** It's worth noting that even in census block groups that had an overall net gain in tree canopy, loss was still prevalent in nearly half of all block groups.
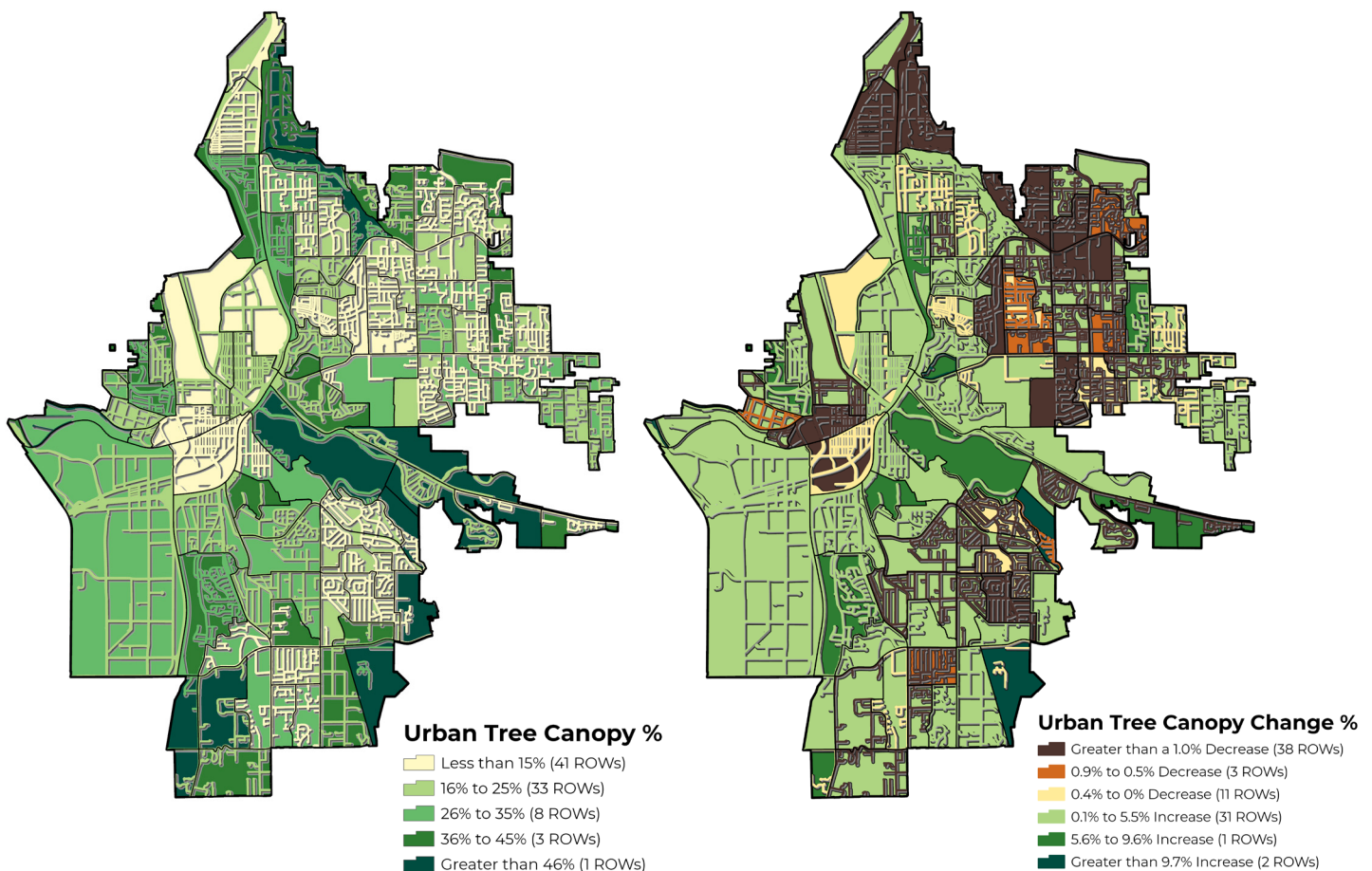

Urban Tree Canopy %
Less than 15% (41 ROWs)
16% to 25% (33 ROWs)
26% to 35% (8 ROWs)
36% to 45% (3 ROWs)
Greater than 46% (1 ROWs)

Urban Tree Canopy Change %
Greater than a 1.0% Decrease (38 ROWs)
0.9% to 0.5% Decrease (3 ROWs)
0.4% to 0% Decrease (11 ROWs)
0.1% to 5.5% Increase (31 ROWs)
5.6% to 9.6% Increase (1 ROWs)
Greater than 9.7% Increase (2 ROWs)

Figure 19. UTC (left) and UTC change (right) percentages by rights-of-ways within census block groups.

TREE CANOPY COVER BY PARCELS

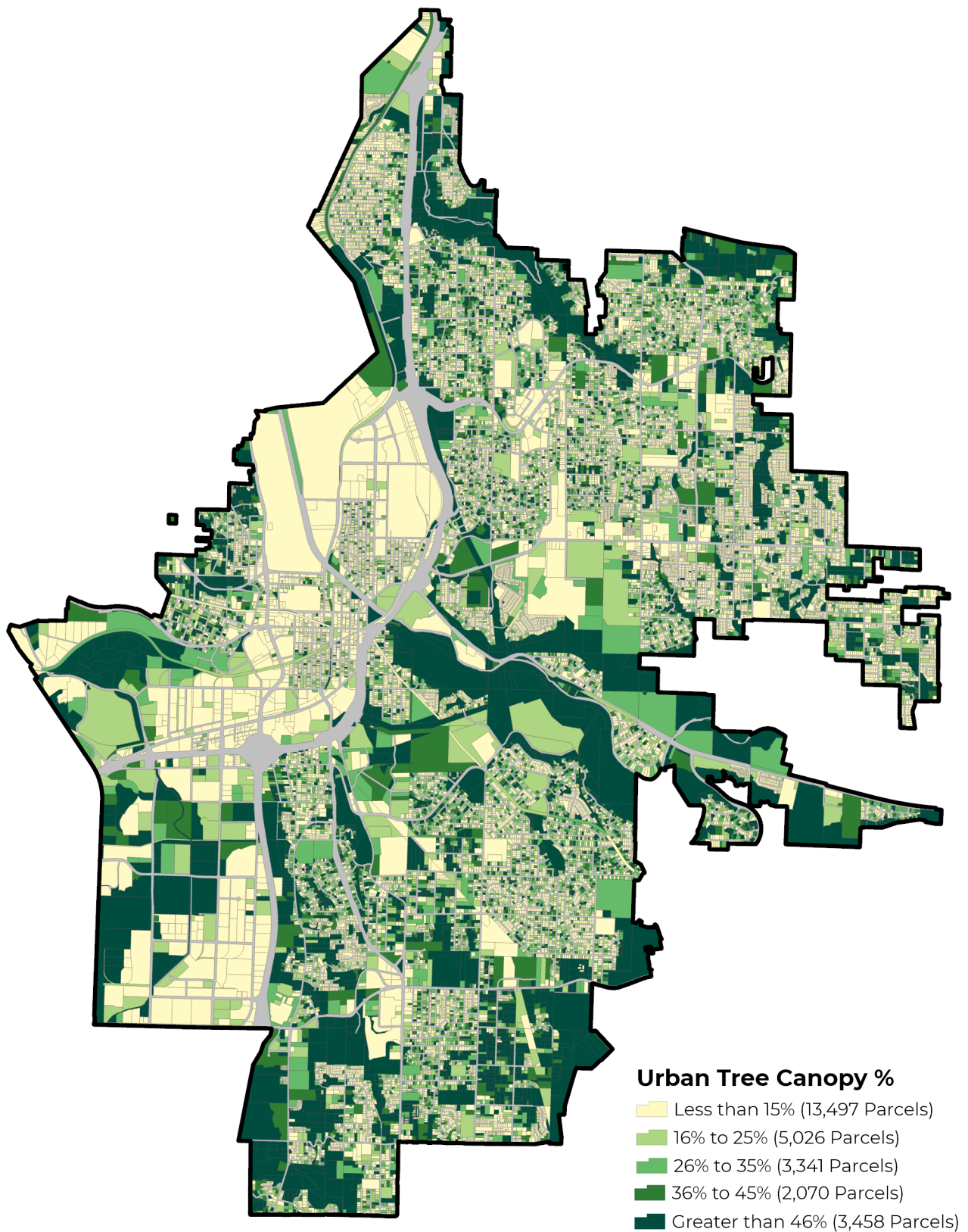

Urban Tree Canopy %

- Less than 15% (13,497 Parcels)
- 16% to 25% (5,026 Parcels)
- 26% to 35% (3,341 Parcels)
- 36% to 45% (2,070 Parcels)
- Greater than 46% (3,458 Parcels)

Figure 20. Urban tree canopy by parcels.

POTENTIAL PLANTING AREA BY PARCELS

Total Plantable Space %

- Less than 15% (6,682 Parcels)
- 16% to 25% (5,918 Parcels)
- 26% to 35% (6,163 Parcels)
- 36% to 45% (4,758 Parcels)
- Greater than 46% (3,871 Parcels)

Figure 21. Potential planting area by parcels.

TREE CANOPY CHANGE BY PARCELS

Urban Tree Canopy Change %

- ▮ > 15.0% Dec (2,036 Parcels)
- ▮ 14.9% to 5.0% Dec (5,896 Parcels)
- ▮ 4.9% to 0.0% Dec (6,871 Parcels)
- ▮ 0.1% to 5.0% Inc (5,387 Parcels)
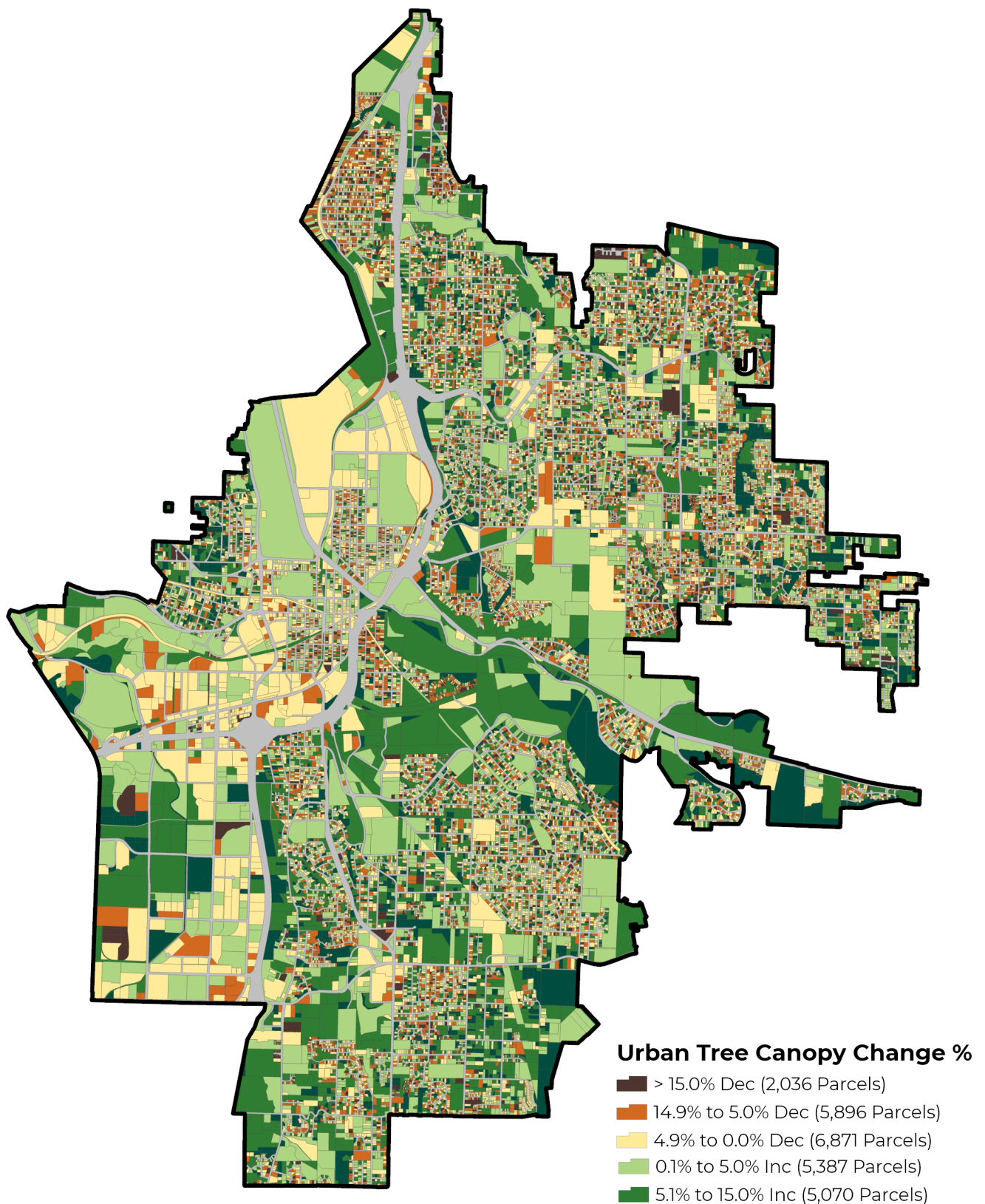- ▮ 5.1% to 15.0% Inc (5,070 Parcels)

Figure 22. Urban tree canopy change by parcels.

TREE PLANTING

PRIORITIZATION

Increased tree canopy cover can provide a wide array of benefits to a local community and its residents and visitors. To locate specific areas in need, several socioeconomic, demographic, and accessibility data sources were analyzed at the census block group scale, and each was ranked. Rankings are sorted from high (dark blue) to low (light yellow) and calculated for each criterion and overall to show where multiple needs overlap. Disadvantaged Areas designated by the Climate and Environmental Justice Screening Tool (CEJST) are highlighted in blue and are weighted into the overall prioritization score as the tenth variable.
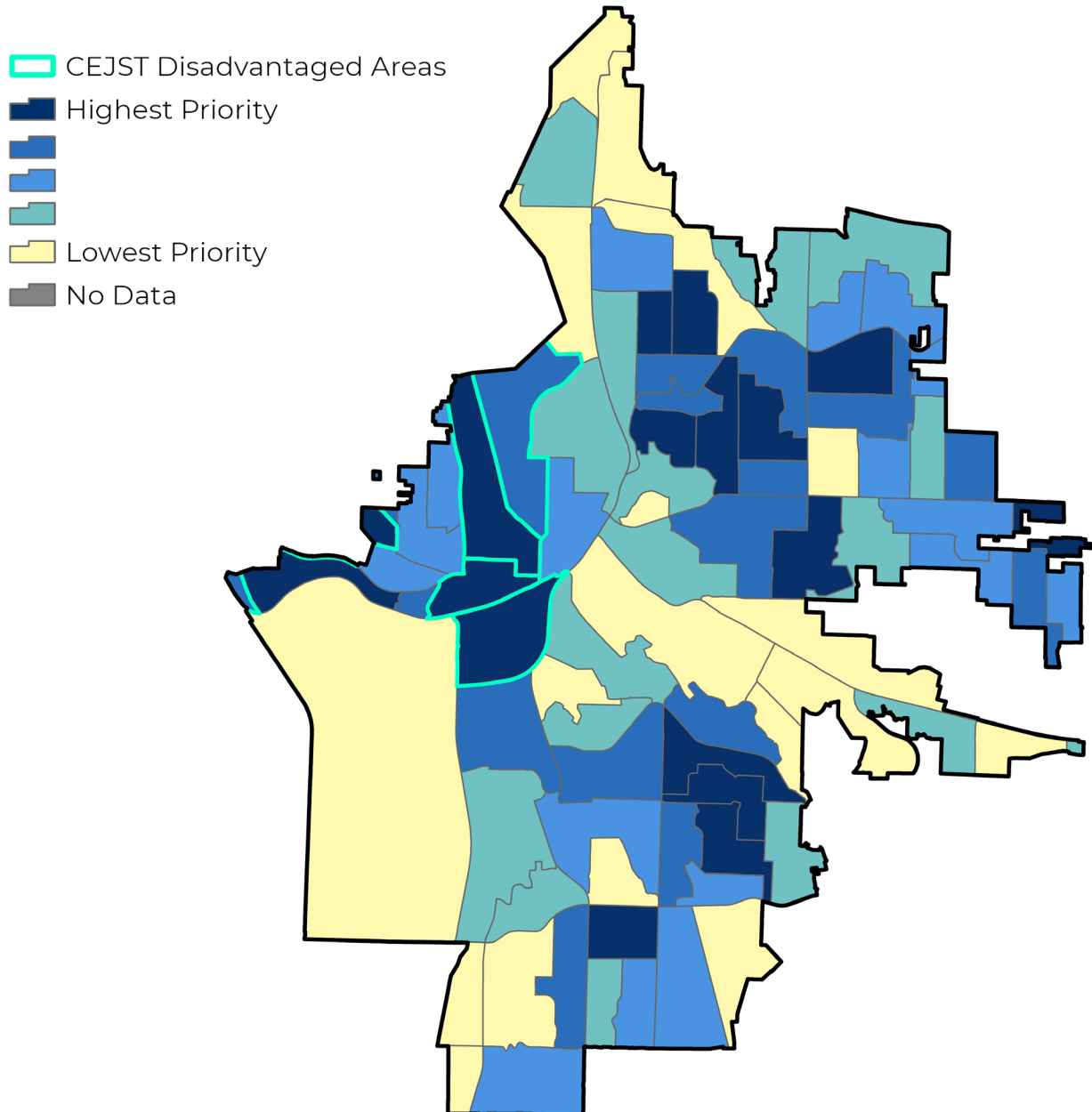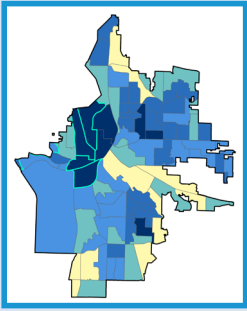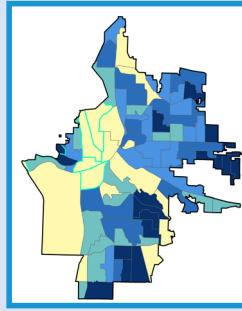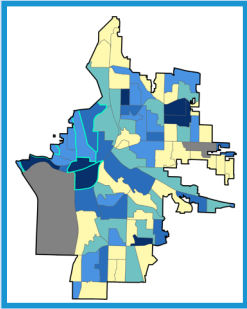

Figure 23. Overall prioritization rankings for Renton's census block groups. Lower rankings (darker blue) indicate higher priority for tree plantings.
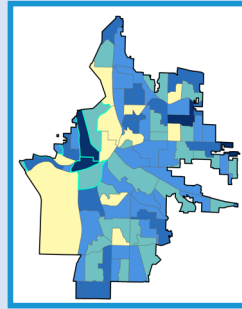
Low Existing Tree Canopy:
This indicator highlights census block groups with low percentages of existing tree canopy cover. This criterion prioritizes census block groups with higher percentages of non-canopy-covered land.
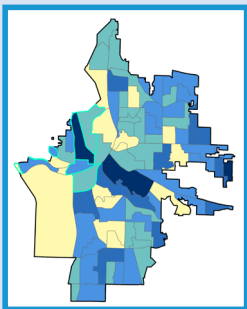
Possible Urban Tree Canopy: Identifying census block groups that can support tree plantings is the first step in expanding future urban tree canopy cover. This indicator shows the percentage of each census block group that is available for planting, prioritizing those with a greater proportion of plantable area.
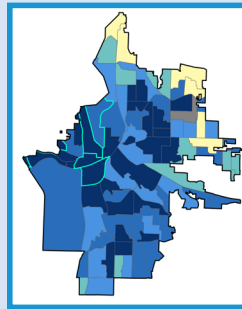
Poverty Rate: This indicator shows the percentage of residents living below the federally designated poverty level, as reported by the U.S. Census American Community Survey 5-year summaries, highlighting census block groups where trees could enhance environmental and health benefits for residents.
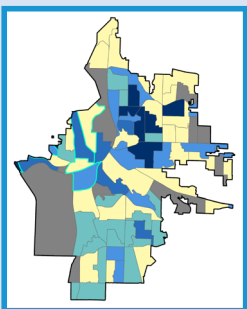
Unemployment Rate: This indicator shows the percentage of the labor force without employment, available to work, and actively seeking employment, as reported by the U.S. Census American Community Survey 5-year summaries. Census block groups with higher unemployment rates are prioritized for planting.
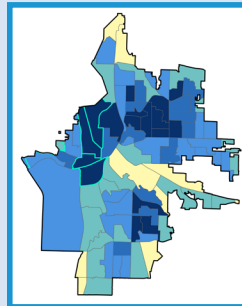
Vulnerable Population: Trees provide essential environmental and health benefits to vulnerable populations. This indicator shows the ratio of residents under the age of 18 or over the age of 65 compared to the working-age population, as reported by the U.S. Census American Community Survey 5-year summaries. Census block groups with larger vulnerable population ratios are prioritized.
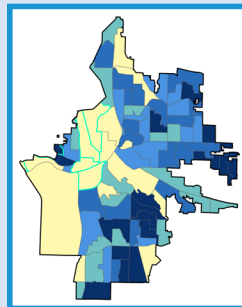
Median Household Income: Income inequality often overlaps with environmental inequality, where lower-income residents may reside in areas with more impervious surfaces and fewer trees, parks, and greenspaces. This criterion prioritizes census block groups with lower median household incomes, as reported by the U.S. Census American Community Survey 5-year summaries.

Educational Attainment: This indicator shows the percentage of the population without a high school diploma or GED, as reported by the U.S. Census American Community Survey 5-year summaries. Census block groups with lower educational attainment levels are prioritized, aligning with the observed benefits of trees on educational and social outcomes.

Urban Heat Island: Using LANDSAT surface temperature data collected on August 20, 2024, this indicator shows the average surface temperature in Fahrenheit for each census block group. Census block groups with higher average temperatures are prioritized for planting.

Stormwater Mitigation: This indicator assesses plantable space within 100 feet of surface water bodies and impervious surfaces, identifying census block groups with significant planting opportunities to reduce stormwater runoff. Census block groups with higher percentages of potential planting areas near water bodies and impervious surfaces are prioritized.

High Priority
Lower Priority
No Data
CEJST Disadvantaged Areas

QUANTIFYING

ECOSYSTEM BENEFITS

ECOSYSTEM BENEFITS

i-Tree tools were used to calculate the benefits and functions of canopy throughout Renton, using the latest available research. Trees produce oxygen, indirectly reduce pollution by lowering air temperature, and improve public health by reducing air pollutants that can cause death and illness. Likewise, canopy coverage has been demonstrated to mitigate storm-water runoff, which minimizes flood risk, stabilizes soil, reduces sedimentation in streams and riparian land, and absorbs pollutants, thus improving water quality and habitats. **Renton's existing canopy provides over $5.5 million annually in avoided infrastructure costs and ecosystem benefits.**

THE VALUE OF RENTON'S URBAN FOREST

MENTAL HEALTH
People without views of nature from their desks claimed 23% more sick days than workers with views of nature.

TOTAL ANNUAL BENEFITS
Renton's trees annually provide **$5,545,224** in ecosystem benefits.

That equates to approximately $1,162 per acre of canopy.

CLEANER AIR
$1,454,410
Each year, Renton's trees remove 146.1 tons of particulate matter from the air.

CARBON STORAGE
$31,206,238
Renton's urban forest stores 182,973 tons of carbon.

STORMWATER MANAGEMENT
$3,515,451
Renton's trees intercept about 393.4 million gallons of runoff annually.

CARBON SEQUESTRATION
$575,363
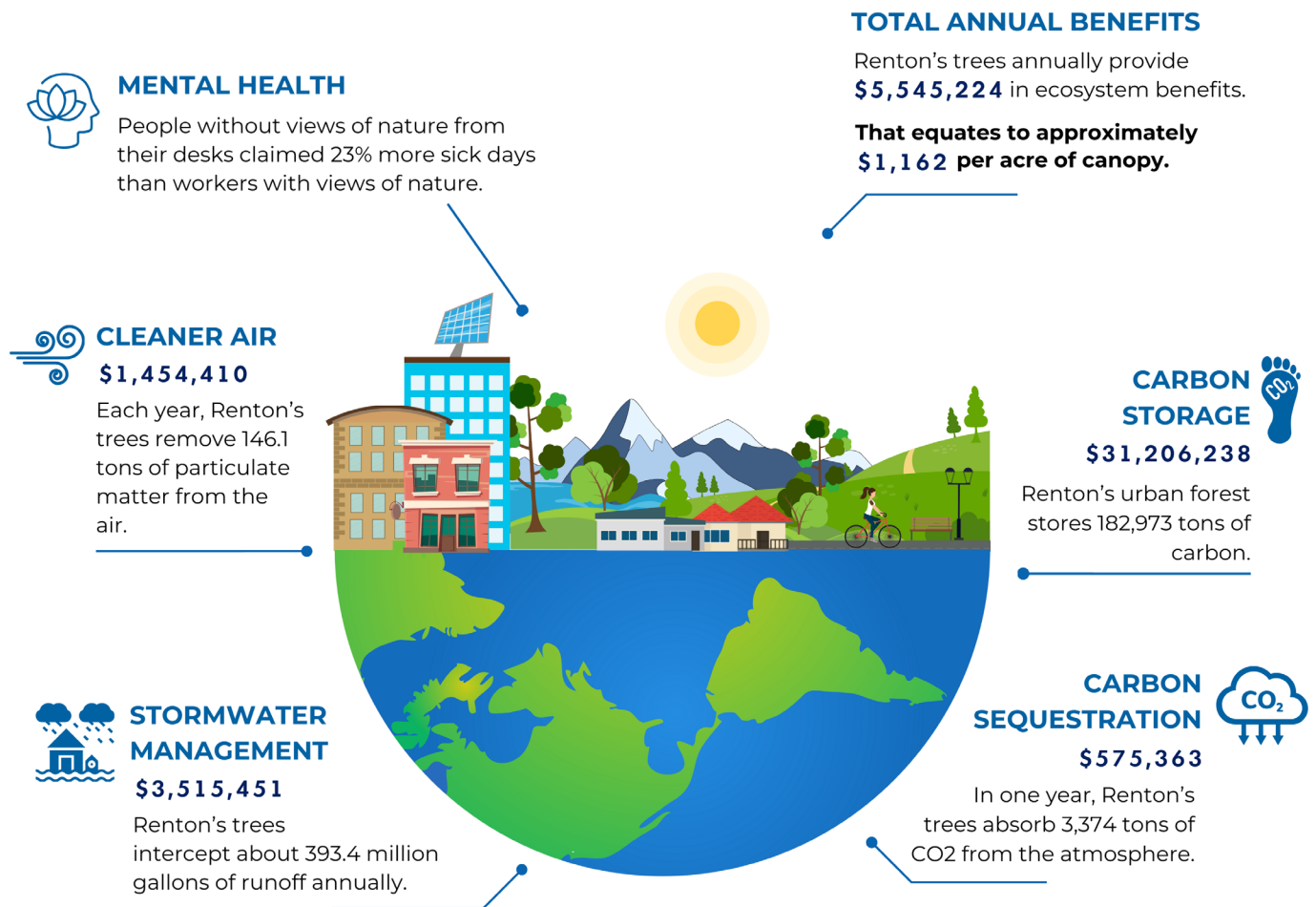In one year, Renton's trees absorb 3,374 tons of CO_2 from the atmosphere.

Figure 24. Ecosystem service benefits of Renton's canopy cover. Data sourced from i-Tree, the US Forest Service, the Arbor Day Foundation, and the U.S. Environmental Protection Agency.

CONCLUSIONS AND
RECOMMENDATIONS

The City of Renton values its natural resources and is committed to maintaining a healthy, sustainable urban environment. Regular assessments of the city's tree canopy are key to ensuring the long-term health of its urban forest. Maintaining and expanding canopy cover can be achieved through careful planning, investment, and the ongoing care of existing trees.

To preserve and enhance Renton's tree canopy, the city should continue conducting tree canopy assessments at regular intervals, either through a TreePlotter CANOPY subscription or ongoing projects. As the city grows, this data will inform urban forest policies and management practices, prioritizing canopy health and growth. The urban forest provides a range of environmental, social, and economic benefits, fostering greater neighborhood health, community pride and engagement with citywide initiatives. Continuing assessments will help identify areas where canopy cover should be preserved, opportunities to expand it, and where targeted investments can yield the greatest benefits.

RECOMMENDATIONS

1. **Promote a Resilient Community Forest**
    The findings from this assessment provide valuable data to support the development of a more resilient community forest in Renton, Washington. This information can strengthen state, county, and local budget requests, as well as bolster grant applications aimed at enhancing the city's resilience. Urban forests are critical for addressing regional challenges, such as mitigating heat and managing stormwater to reduce strain on infrastructure during heavy rains. Strategically placed trees improve air quality by filtering pollutants and providing shade to help lower urban heat island effects. Additionally, trees help protect buildings and infrastructure by buffering against high winds and contributing to a more sustainable and livable community.

    To maximize these benefits, forest health assessments should be conducted to evaluate the condition of Renton's forested parcels. Many of these areas would benefit from active management strategies to promote healthier, more resilient forests that enhance ecosystem services. Integrating forest health management practices into park management and development plans will help ensure the long-term sustainability of Renton's community forest. By prioritizing proactive management and incorporating these strategies into broader city planning efforts, Renton can enhance the functionality of its urban forests while supporting broader environmental and community goals.

2. **Expand Canopy in Underserved Areas**

    Focus tree-planting efforts on neighborhoods identified in the prioritization analysis, particularly those with high impervious surfaces, low canopy cover, or high concentrations of residents in poverty. Planting in these areas can reduce urban heat islands, lower energy costs, and create calming spaces that reduce stress and encourage community engagement. Prioritizing these underserved areas maximizes the impact of forest management resources, ensuring an equitable distribution of the benefits of green infrastructure.

3. **Integrate Tree Canopy Goals into City Planning**

    As Renton grows and urbanizes, it's crucial to preserve and expand the existing canopy. Use this assessment to establish short- and long-term goals, such as:

    ► Annual tree planting targets.

    ► Increasing diversity by planting a wider variety of large, maturing trees.

    ► Setting specific canopy coverage goals for future years.

    ► Review long-term land-use and development plans (such as the Parks, Recreation and Open Space Plan), to include policies to protect mature trees and enforce tree ordinances and canopy requirements for new developments.

4. **Engage the Community and Partner with Private Landowners**

    Since much of Renton's plantable space is on private residential land, community involvement is key to increasing canopy and mitigating losses. Outreach programs should engage residents, schools, and businesses in tree planting and care through initiatives like Arbor Day celebrations, workshops, and volunteer events. Pairing these efforts with tree giveaways, private property planting programs, and stewardship training will help expand and sustain tree canopy on private land.

    A key opportunity to enhance these efforts is integrating the Green City Partnership into Renton's broader tree canopy conservation and enhancement strategy. This volunteer-driven program supports urban forestry efforts in the Puget Sound region and has been successfully implemented in nearby communities like Tukwila, Burien, Des Moines, Kent, and SeaTac. Additionally, King Conservation District provides direct support to some of these programs and may be a valuable partner for expanding community engagement in Renton. Leveraging these partnerships can strengthen long-term stewardship and maximize the city's urban forestry impact.

5. **Continue to Monitor Progress and Adapt Strategies**

    Regular canopy assessments using updated imagery (available every 2-3 years) are essential to tracking progress and revising strategies as needed. Recurring assessments allow community forest stakeholders to stay informed about areas of canopy growth and loss, ensuring that management efforts remain effective and aligned with Renton's goals. This continuous monitoring will provide the feedback needed to maintain a thriving, resilient urban forest.

REPORT ━━━━━━━

APPENDIX

GLOSSARY/KEY TERMS

Land Acres: Total land area, in acres, of the assessment boundary (excludes water).

Non-Canopy Vegetation: Areas of grass and open space where tree canopy does not exist.

Possible Planting Area - Vegetation: Areas of grass and open space where tree canopy does not exist, and it is biophysically possible to plant trees.

Shrub: Areas of shrub or other leafy and woody vegetation (smaller than 6ft tall) that are not classified as tree canopy.

Soil/Dry Vegetation: Areas of bare soil and/or dried, dead vegetation.

Total Acres: Total area, in acres, of the assessment boundary (includes water).

Unsuitable Impervious: Areas of impervious surfaces that are not suitable for tree planting. These include buildings and roads and all other types of impervious surfaces.

Unsuitable Planting Area: Areas where it is not feasible to plant trees. Airports, ball fields, golf courses, etc. were manually defined as unsuitable planting areas.

Unsuitable Soil: Areas of soil/dry vegetation considered unsuitable for tree planting. Irrigation and other modifiers may be required to keep a tree alive in these areas.

Unsuitable Vegetation: Areas of non-canopy vegetation that are not suitable for tree planting due to their land use.

Urban Tree Canopy (UTC): The "layer of leaves, branches and stems that cover the ground" (Raciti et al., 2006) when viewed from above; the metric used to quantify the extent, function, and value of the urban forest. Tree canopy was generally taller than 10-15 feet tall.

Water: Areas of open, surface water not including swimming pools.

MARCH | 2025

URBAN TREE CANOPY

ASSESSMENT

RENTON, WASHINGTON