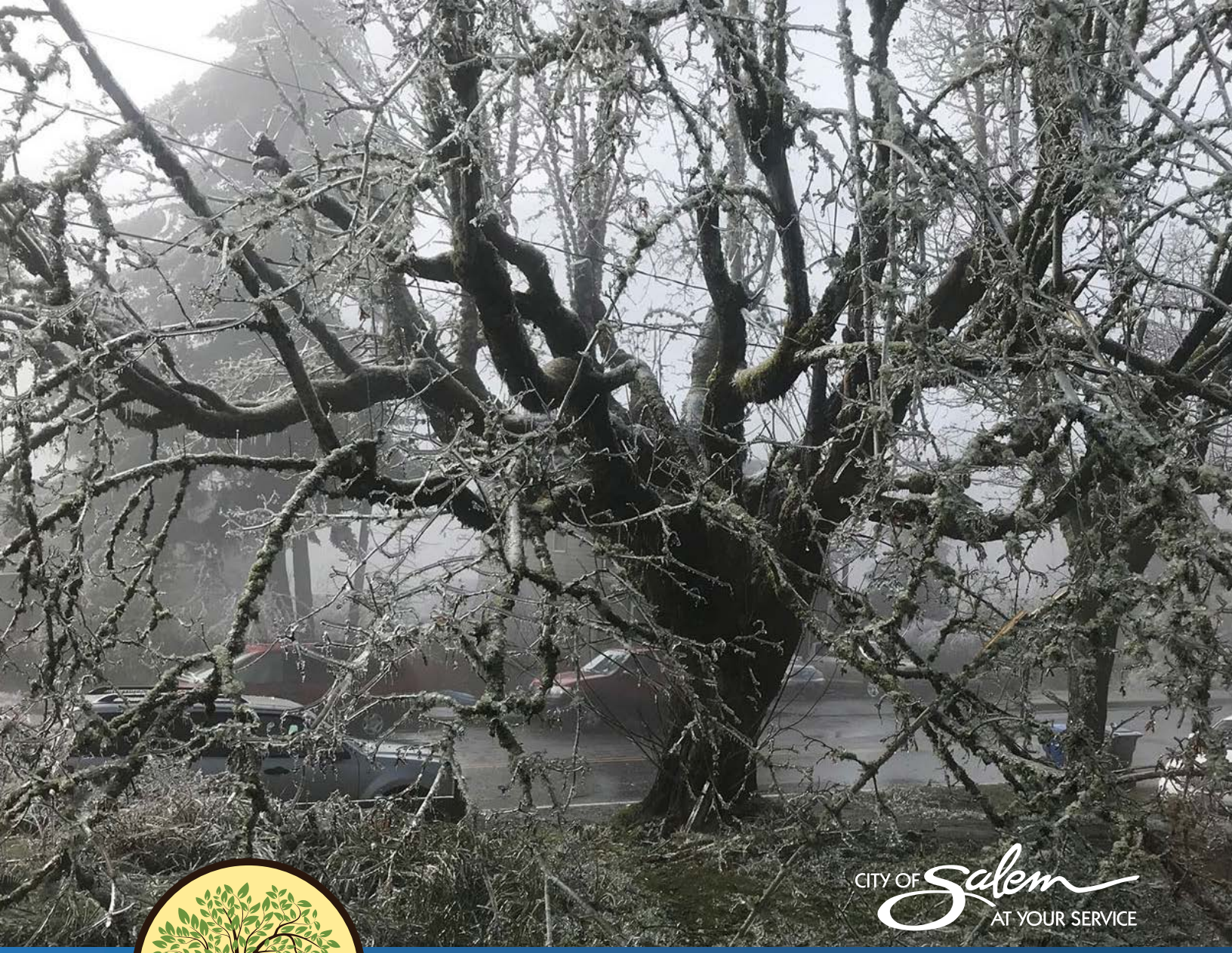

Salem Tree Report January 2022

2021 Summary of Public Works Tree Projects

Salem Tree Report January 2021

2020 Summary of Public Works Tree Projects

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CITY OF Salem AT YOUR SERVICE

Figure 1: Trees reduce urban heat islands.

THE URBAN TREE CANOPY

Introduction

Salem's urban tree canopy experienced a particularly hard year in 2021. In February an ice storm hit the area and damaged thousands of trees, often so extensively the trees had to be removed. Clean-up from the ice damage occupied much of the year and cost millions of dollars. Spring planting by City staff was reduced due to the need for tree pruning and removals due to ice damage. Salem's tree contractors, including Friends of Trees and Treecology, continued to plant trees in Salem; however, the continuation of the COVID-19 pandemic reduced the use of volunteers in the Friends of Trees events. In late June the area experienced several days of intense heat, with temperatures over 100 degrees. Coupled with drought conditions this put particular stress on young trees and conifers. All in all, 2021 was a tough year for our trees.

Benefits of Trees

Extensive research has been done over the last decade on the multiple economic, environmental, and social benefits that trees provide. Some of these benefits can be quantified monetarily, such as in stormwater reduction, air quality improvement, and carbon sequestration that helps reduce greenhouse gases. Trees also help reduce the urban heat island effect by providing shade and reducing temperatures. They provide "green infrastructure" that grows and increases in value over time. The environmental benefits of Salem's tree canopy were calculated in the 2019 tree canopy assessment report. According to the report, Salem's trees provide $80 million in total annual benefits, including air quality, stormwater, and carbon sequestration.

Trees also provide less easily quantified but equally important benefits such as natural beauty, a sense of place and identity, increased social interaction, reduced crime, and habitat and food for birds and other animals. Trees make cities more livable, improve business, and encourage people to walk and get outside. Healthy cities have healthy tree canopies. Healthy tree canopies can improve the health of cities both environmentally and socially.

Significant Trees and Heritage Trees

Oregon white oak (*Quercus garryana*), is a signature tree of Salem and has a special place in Salem's history. Large Oregon white oaks were particularly hard hit by the ice storm as their large diameter branches accumulated heavy loads of ice, resulting in massive limb breakage and whole trees keeling over.

Larger diameter (24-inch or greater diameter at breast height) Oregon white oaks are classified as "Significant Trees" and are given special protection under Salem's Tree and Vegetation Preservation Code, Uniform Development Code (UDC) Chapter 808, which is administered by the Community Development Department. In addition to Oregon white oaks, other trees located along riparian areas (streamside areas) are also protected under this code.

In 2021 Community Development began updates to UDC Chapter 808 and proposed to expand the definition of "significant tree" to include, in addition to 24-inch diameter Oregon white oaks, all trees over 30-inch diameter at breast height (dbh). Invasive non-native trees are excluded from this designation. In addition, new tree root zone protections were proposed. A public hearing was

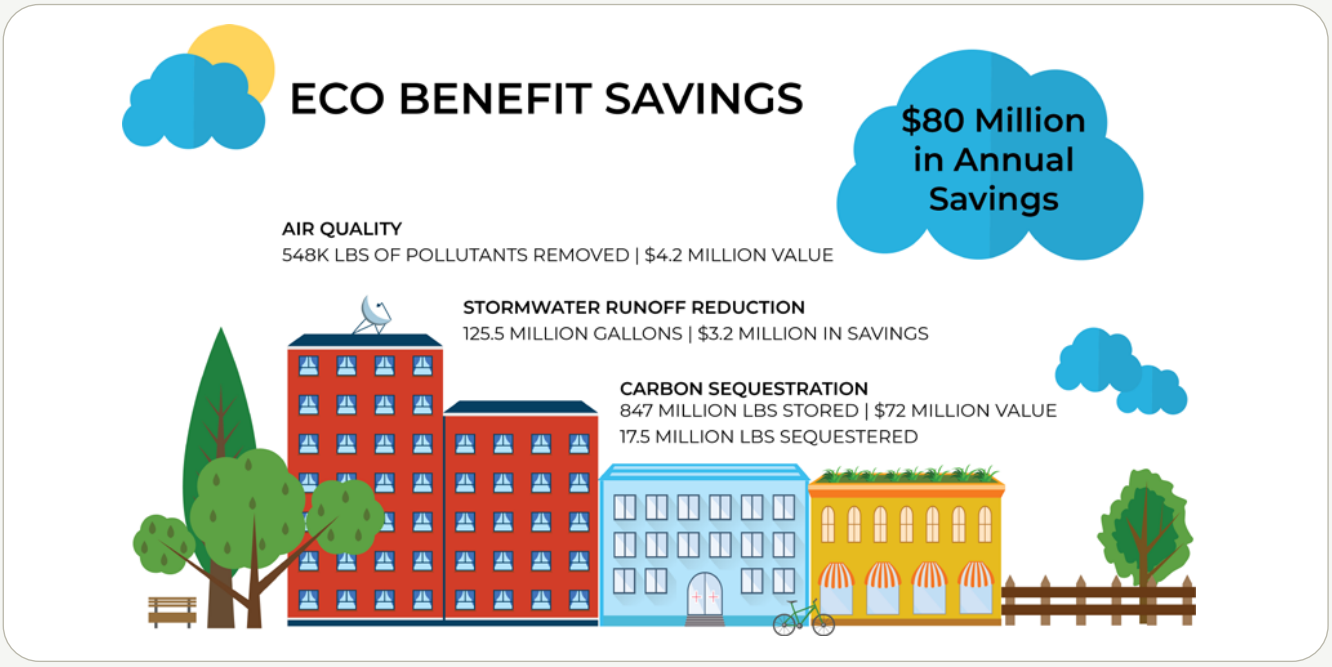


Figure 2. Estimated 2019 Eco Benefits provided by Salem's tree canopy.

held on December 6, 2021, however the hearing was continued until 2022 .

Trees can be designated as "Heritage Trees" under UDC Chapter 808. Heritage trees must be nominated by the property owner and approved by resolution of the City Council. Heritage trees are so recognized due to their location, size, age, botanical interest, commemorative planting, or historic significance. Once designated, heritage trees receive protection under UDC Chapter 808.

Community Forestry Strategic Plan

In 2013, Council adopted the ***Community Forestry Strategic Plan***. This plan provides specific goals and actions to protect and increase Salem's urban tree canopy. See the Community Forestry Strategic Plan for additional information. The six goals of the Strategic Plan are:

Goal 1: Protect, increase, and enhance Salem's tree canopy;

Goal 2: Increase education and outreach about tree benefits, community forestry program, tree regulations, and incentives;

Goal 3: Develop support at political, management, and public levels;

Goal 4: Improve City coordination, communication, and codes related to trees;

Goal 5: Develop and implement a Community Forestry Management Plan; and

Goal 6: Establish a stable funding for the Community Forestry Program.

In March 2021 Council was provided, along with the 2020 Annual Tree Report, a summary of actions taken to-date towards meeting the goals and tasks outlined in the Community Forestry Strategic Plan. A copy of the summary is included in Appendix A. Staff continues to work towards the goals and objectives of the Community Forestry Strategic Plan.

Urban Tree Canopy Assessment/ Tree Canopy Impact Assessment

Typically, the City conducts a full urban tree canopy assessment every 10 years. The last assessment was completed in 2019 and found that Salem had 24 percent tree canopy coverage, exceeding our goal of 23 percent. In 2020 a new canopy goal of 28 percent was set.

Due to the extensive damage and loss to the tree canopy as a result of the February 2021 ice storm, Public Works conducted an interim tree canopy impact assessment. The purpose of the 2021 Tree Canopy Impact Assessment was to attempt to quantify the amount of tree canopy lost and to better understand how the ice storm affected the tree canopy in different areas of interest (AOIs) within the City, including within City council wards, City parks, public rights of way, and stream corridors.

The City-wide statistical analysis showed a 17.6% canopy loss across the City during the time period studied, with approximately 10 acres of canopy lost to development and over 1,000 acres lost due to the ice storm or other factors. Camera angle, seasonal variation in canopy, and pruning or tree removals for other reasons likely account for some portion of this observed change; therefore, it is

Figure 3. Ice covered tree February 2021

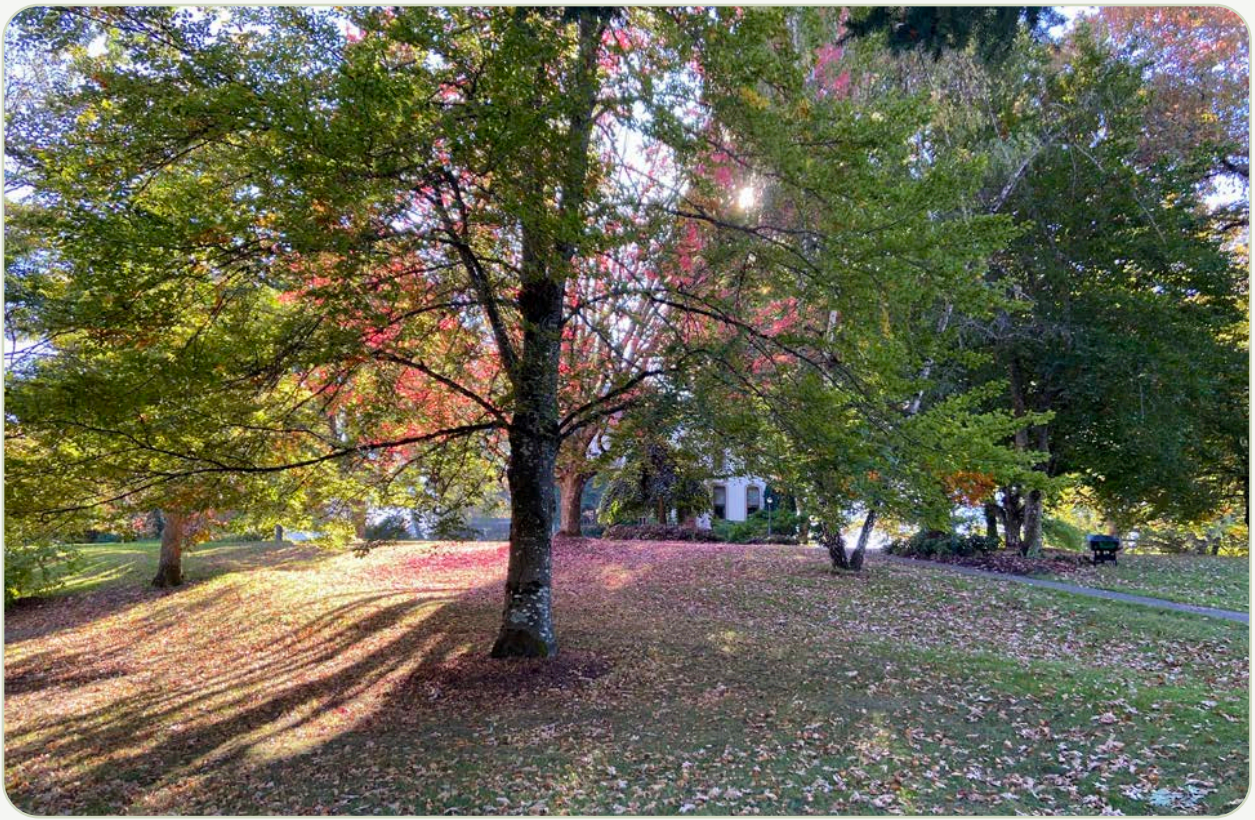


Figure 4. Trees provide aesthetic beauty in urban environment

not possible to quantitatively discern the exact amount of damage incurred as a direct result of the ice storm. It is clear however that a large percentage of the canopy loss is attributable to the ice storm. A copy of the report is included in Appendix B.

2021 Program Participation

Salem participates in a variety of programs and initiatives that promote and enhance our urban tree canopy. Initiatives such as "Tree City USA" and "Cities4Forests" connect Salem with national and international municipalities and experts.

TREE CITY USA

The City of Salem has been a Tree City USA for 45 years. Arbor Day in the U.S. was started in Nebraska in 1872 "to inspire people to plant, nurture, and celebrate trees." Tree City USA is a program from the Arbor Day Foundation that began in 1976.

The City of Salem is proud to be one of only 17 cities in the country to be a charter participant in the Tree City USA program. In 2021 Salem celebrated 45 consecutive years of participation. In 2015 Salem became a "Sterling City," having received 10 Arbor Day Foundation "Growth Awards" in recognition of innovative and/or increased program participation. Salem continues to excel and receive "Sterling City" status.

The Tree City USA program recognizes and guides achievement in four core standards of sound urban forestry management: 1) maintaining a tree advisory board; 2) having a community tree ordinance; 3) spending at least $2 per capita on urban forestry; and 4) celebrating Arbor Day and having an Arbor Day Proclamation.

To meet these requirements the Salem Parks and Recreation Advisory Board (SPRAB) has a tree committee that serves in an advisory capacity, and also hears tree removal permit appeals. The City also has a tree ordinance, spent $7.86 per capita on the urban forest in 2021, and had the annual Arbor Month proclamation at City Council on March 22, 2021. Oregon now celebrates Arbor Month in April, instead of Arbor Day.

Each year as part of the Tree City USA requirements, Salem hosts an Arbor Day tree planting event with community volunteers that improves Salem's urban tree canopy. In recent years, the Arbor Day planting event has been coordinated by Friends of Trees, an Oregon-based nonprofit hired by the City of Salem Public Works Department to organize volunteer tree planting events.

Unfortunately, the 2021 Arbor Day planting at Northgate Park was a small event because of COVID-19 safety precautions. The trees were planted by Friends of Trees staff and Salem tree crew leaders .

As part of the City's celebration of 45 years as a Tree City USA, six new TCUSA signs were ordered and will be placed at key entrances to the City. These signs will be posted on existing posts and conform to Oregon Department of Transportation requirements.

Figure 5. Volunteer crew members and FOT Crew Leader stand by a Tulip Tree planted at Northgate Park, 4/3/21.

In addition, the City initiated three online outreach events about trees, including a tree poster contest, a "poetree" contest, and a tree trivia contest.

CITIES4FORESTS

In 2018, the City of Salem signed on as a founding member of Cities4Forests, a new initiative that focuses on the value and benefits of trees in cities and forests across the globe. It is an international effort spearheaded by the World Resources Institute. It aims to cultivate awareness and stimulate action on the part of urban residents to recognize the importance of trees and forests to human well-being. In urban areas, the "inner forest" is a critical component of a healthy city. City trees improve public health, reduce air pollution, protect water quality, store carbon, and help a city become climate resilient. Cities4Forests has a goal of integrating trees into city growth and development, and of harnessing the value of trees to meet multiple objectives, such as: improving public health; protecting drinking water supplies; and providing benefits for air quality, water quality, and heat island mitigation.

Membership in Cities4Forests complements the City's current urban forestry programs. Cities4Forests is a voluntary coalition involving mayors' offices from around the world. Salem was among the 50 founding cities worldwide. Salem staff attended Cities4Forests-hosted information sharing events such as international webcasts and conference calls to share urban forestry information between cities around the world.

Cities4Forests

Figure 6 ***wri.org/our-work/project/cities4forests***

STREET TREE INVENTORY

Since 2018, the City has been surveying streets in Salem to build an inventory of street trees. The objective of street tree inventory has been to gain a more detailed understanding of Salem's urban forest structure. By knowing the location, species, condition, and size of existing street trees, the City can implement more effective practices for planting and maintaining healthy trees in the future.

General inventory work uses the ArcGIS Collector app connected to the city GIS Salem Maps Online, and forestry staff use iPhones and iPads to update existing tree and proposed tree locations. The inventory collects a species key, an individual GIS ID number/ Object ID, Unit ID, address, tree species, cultivar, dbh, health rating, planting space size, space ownership, utilities present, comments, user ID and last edited date for each tree. With this current data, we can identify dead trees and trees that are in poor condition to monitor for removal. All in all, over 23,000 trees have been inventoried and over 4,000 new locations identified where street trees can be planted. With new Lidar imagery the City of Salem GIS team has found there are over 300,000 trees on City-owned property. The imagery locates 150,000 city park trees and over 150,000 right-of-way trees. The specific number of "street trees" has not been identified yet but will be tallied in 2022.

Having an inventory with better data allows us to manage the Urban Forestry program more effectively and efficiently. The inventory is used along with a GIS asset management system that includes ArcGIS Field Maps, ArcGIS Workforce and Survey 123 to create, track and manage all tree-related work orders including tree plantings, removals, pruning and inspections that are directly tied to the trees. Trees will continue to be surveyed and added to the inventory until it is complete. This database has already proved useful for documenting unpermitted tree removals as well as for health appraisals. Since the tree canopy is constantly changing, the Urban Forestry Division will continue to update the inventory even after

Figure 6. New Street Trees

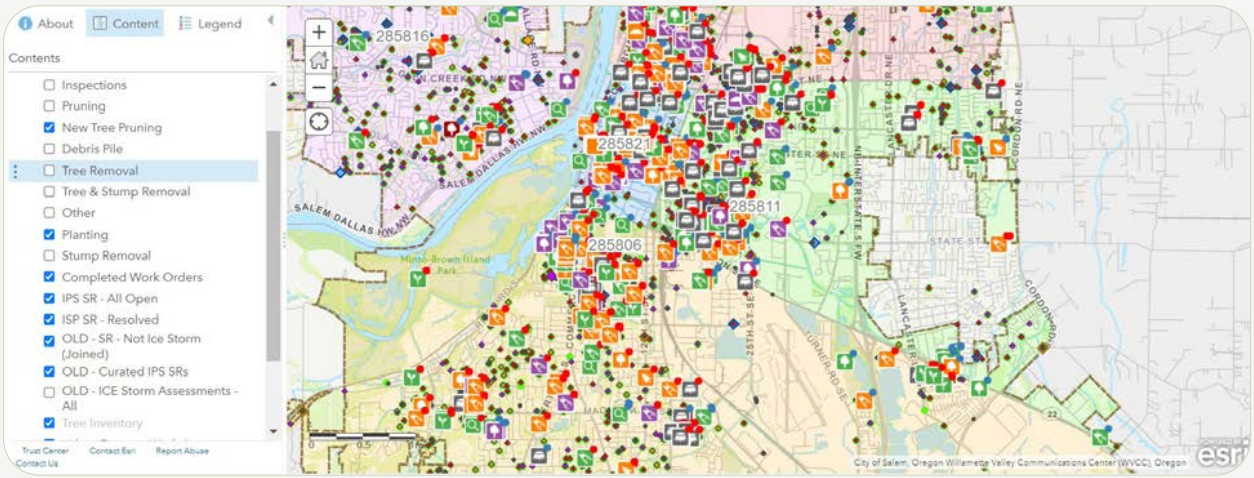


Figure 7. Urban Forestry Work Order Map

completion to help manage and promote the urban tree canopy of Salem.

The inventory data that has already been collected shows that the street tree population in Salem has limited diversity and is dominated by maples, oaks, sweetgums, ornamental pears, and ash. Non-native maples alone compose over 27% of the current inventory. Because of this the City has deferred planting non-native maples for a period of time in order to focus on increasing diversity. Ash, sweetgum, and pears have also been removed from the planting list. Ash were removed because of the potential onset of Emerald Ash Borer to the region, and pears and sweetgums were removed as nuisance trees. The Parks Planning team worked with the Urban Forestry Division to establish a new Recommended Street Tree List and will focus on selecting the right tree for the right place in the coming years. This includes species selection based on heat tolerance, available soil volume, overhead wires, and drought tolerance as well as a focus on regionally and locally native species. This will increase species diversity (of both trees and the wildlife that use them) and reduce our urban forest's vulnerability to pests, disease, and climate change impacts.

City Tree Protection and Policy

The City of Salem Public Works is responsible for administering SRC 86 Trees on City Owned Property and uses an Administrative Rule of the same name, 109-500-002, to accomplish the goals of that code chapter. Public Works changed how it administers these rules in 2020, coinciding with the hiring of a new Urban Forester. The change became an opportunity to re-establish the protections and guidelines put in place with SRC 86. Monies taken in for City-owned tree violations are placed into a fund dedicated to street tree plantings by Urban Forestry.

The Public Works Department is in the process of revising SRC Chapter 86 to clarify the protections in place for City street trees, how violations are assessed and resolved, and to update the associated administrative rule, including the City's street tree list.

Salem Parks and Recreation Advisory Board (SPRAB), as part of its purview, hears appeals to tree code violations. In 2021 there were no hearings on appeals to tree violations.

In 2021 Parks Planning completed a Cultural Landscape Management Plan for Bush and Deepwood. This management plan focuses extensively on recognizing the cultural significance of the Oregon white oaks and recommends specific management actions to be undertaken to protect and enhance the oak groves, as well as the Pringle Creek riparian area, wildflowers, and historic areas of the two City-owned properties.

TREE PLANTING AND MAINTENANCE

2021 Overview

Trees on City-owned property are managed by the City's Urban Forestry Division, in the Parks Operations of Public Works. Tree planting and maintenance of City-owned trees in 2021 was performed primarily by three groups: Salem Urban Forestry, Friends of Trees, and Treecology. Tree maintenance also includes tree trimming and tree removal. Trees are trimmed for health and structure, vision or access clearance, or because of damage. Tree removals occur due to development, sidewalk repairs, damage, hazard risk, or disease.

To supplement the work of Urban Forestry, Public Works has contracted over the last nine years with Friends of Trees, a nonprofit organization, for community tree planting events, primarily in parks. Friends of Trees' mission is to bring people together to plant, care for, and learn about trees in communities across the Pacific Northwest. This important work engages Salem's residents and local volunteer groups who actively participate in planting trees in low tree canopy neighborhoods and along streams with limited shade. Planting locations are selected each year and focus on low canopy areas of the City and along streams that lack shade. The continued public safety concerns due to COVID-19 put a damper on the ability to have large volunteer events in early 2021, but small volunteer events (~30 volunteers per event) were able to resume in late 2021. Nevertheless, trees were planted in all the locations proposed, most often by Friends of Trees staff, local tree crew leaders, and the City's Urban Forestry staff.

Figure 8. Tree crew work post ice storm.

Recognizing the limitations of working with volunteers and the need to plant more trees along City streets, Public Works began contracting in 2018 with a private arboriculture company, Treecology. Treecology is an experienced tree service and restoration contractor that has been performing similar contract tree planting work for the City of Portland. Through this renewable contract, approximately 150 trees are planted each planting season in City rights-of-way, and three years of watering and tree care is provided. This ensures that new trees get off to a good start. After the initial three-year establishment period, Salem's Urban Forestry will take over maintenance of the trees. The goal of this contract is to increase our street tree planting capability to grow the overall canopy and increase species diversity.

Contracts with nonprofits and contractors such as Friends of Trees and Treecology expand our planting capacity while also providing outreach, education, and volunteer opportunities.

Due to the ice storm, additional contractors were enlisted to assist in the cleanup. Contracts with local arboricultural companies, such as Mountain View Tree Service and Buena Vista Arbor Care, helped with tree removals in the right of way and in city parks. Mountain View assisted the Urban Forestry Division with larger projects, specialized arbor care, and collaboration on some City projects where their expertise was required. These contractors were critical in supplementing City crews with tree removals and cleanup following the February ice storm. A total of 10 contractor crews were utilized for this effort .

Urban Forestry

Street trees, trees in parks, and trees on other City-owned properties in Salem are maintained by the Urban Forestry Division in Public Works. The Urban Forestry Division operates under the direction of the City's Urban Forester, Milan Davis. Currently there are seven full-time employees and one seasonal staff, three of which are ISA (International Society of Arboriculture) Certified Arborists who inspect all tree-related permits and Public Works-generated service requests.

Urban Forestry Division responsibilities include tree removal, pruning, stump grinding, planting and all tree-related work in the City rights-of-way and on City-owned properties. They also provide 24-hour response for removing fallen trees or branches obstructing traffic, and work to keep all streets, sidewalks, paths, and bike lanes clear. Most of their work supports City projects or is in response to requests from other public agencies or Public Works divisions . The Division's staff continues to improve with new training and certifications. Three of the seven full-time staff are now certified by ISA: Milan Davis is an ISA Board Certified Master Arborist and Tom Bradley and Don Gunther have both obtained TRAQ (Tree Risk Assessment Qualification) credentials from the ISA.

The Urban Forestry Division supports other tree projects and programs in the City with their expertise and experience. Staff are tasked with reviewing all plans and construction documents regarding tree-related work that affects City-owned trees to ensure compliance with City standards and current codes. Utilizing the experience and expertise of ISA-certified arborists within Urban Forestry to consult on Public Works tree-related projects ensures that we are planting and preserving a healthy urban canopy and utilizing the most current best management practices. The Urban Forestry Division also supports the Salem Planning Department and Community Development in tree-related inspections and consultation. The Urban Forestry Division reviews all Significant Tree Removal Permit requests for the Planning Department and works with code compliance on tree-related issues.

Much of the work in 2021 focused on cleanup and assessments related to the ice storm. It is estimated that over 10,000 trees were severely damaged. Over 3,000 service requests for trees came in between February 12 and March 30. Due to the large number of tree-related issues a triage

Figure 9. Urban Forestry Division at work.

system was established to conduct work in this order:

- Address emergency situations: trees on houses, trees on cars, uprooted trees causing gas leaks, trees blocking roads and driveways, etc.;
- Clear downed trees and debris for emergency vehicle access to Salem Hospital;
- Judgement calls on priority trees: only cutting enough to make it safe to move on to the next location, and not wasting time doing non-emergency work;
- Map out logistics for contract crews to clear streets of trees and debris using historical snow routes, with a goal of having arterial roads open and cleared of debris and dangerous limbs, followed by collector streets, and finally working through the neighborhoods;
- Work in high-use parks to clear trails and assess damage.

Urban Forestry has worked hard to find efficiency and improvement through cooperation with other workgroups and agencies, such as Marion County. These relationships proved critical during the ice storm response. Due to the ice storm damage vast quantities of wood was generated from tree removals and trimmings. Much of the wood was donated to Marion County Juvenile Department for firewood and crafts. Large wood from tree removals is collected by Marion County Youth Services and is either cut to serve their "firewood for the needy" program or milled into

Figure 10. Firewood at Marion County Juvenile Dept.

saleable lumber. This partnership benefits the youth program with free materials and saves Urban Forestry the burden of dealing with the logs themselves for an additional annual savings of $15,000 .

Smaller pieces of woody debris were chipped. In addition to City-generated debris, property owners were allowed to bring their debris to designated locations and also to pick up free wood chips. This created a huge workload burden on staff to manage the sites and disperse the chips. As usual, the City uses woodchips for landscape mulching and trails in parks, and this saves the City around $15,000 per year in material costs; however, these savings were offset by the large volume of chips and the management of the drop-off and pick-up sites.

The City spent nearly $6,500,000 in ice storm related cleanup and work continued well into the summer. On the positive side, staff made huge advancements in using technology to map and prioritize work, asset management, and tracking of time and expenditures. In June a presentation was given at the Oregon Community Trees conference that highlights the ice storm response. The presentation is included in Appendix C. Table 1 summarizes the work done by Urban Forestry in 2021.

Trees Inventoried	**5,000**
Trees Planted	**147**
Trees Removed	**1,218***
Trees Pruned	**5,132**

**over 1,000 trees removed on City property due to ice storm*

Table 1. Summary of Work by Urban Forestry in 2021.

Friends of Trees

Nine years ago, the City of Salem contracted with Friends of Trees and began working together to enhance the City's urban tree canopy and to restore its streambanks and riparian areas.

In 2021 the City and Friends of Trees organized tree planting events at Bill Riegel Park, McKay School Park, Hammond School Park, Lansing Park and neighborhood, and Northgate Park and neighborhood. Due to the COVID-19 pandemic and restrictions on public gatherings, public participation was cancelled, and Friends of Trees staff and crew leaders and Urban Forestry staff completed the work.

Friends of Trees planted 183 large stock trees in 2021 in Salem parks and street rights of way. Friends of Trees planted an additional 2,014 small stock trees, shrubs, and smaller native plants in Salem riparian and natural areas.

To help facilitate the events, Friends of Trees has trained local crew leaders. These individuals receive additional training on tree planting, tree care, and how to conduct volunteer events. In 2021, these 94 local crew leaders helped fill the gap caused by the pandemic restrictions. With the help of the crew leaders, City staff, and Friends of Trees staff the City was able to complete all planned Friends of Trees planting projects in 2021.

A summary of the 2021 Friends of Trees' events is available in Table 2.

Friends of Trees will continue to work with the City, beginning in early 2022 with plantings in Highland Park and along Columbia Street, McKay School Park, the North Lancaster neighborhood, and an Arbor Day planting at Brown Road Park. The full calendar of planting events is in Appendix D. Planting sites for later in 2022 are being assessed using information from our 2019 canopy study and the street tree inventory. Efforts continue to focus on prioritizing neighborhoods with low tree canopy.

Beginning in the 2021/22 planting season, Public Works is funding a pilot program aimed at getting more trees planted on private property, specifically in front yards in the North Lancaster Neighborhood Association (NOLA) area. The goal is to provide trees, at significant savings and at sliding financial scales, to interested property owners in a low canopy area of the City. Friends of Friends of Trees has run a similar program in

Date	Site	Trees (large stock)	Small stock trees and shrubs
1/9/2021	McKay School Park	35	0
2/13/2021	Lansing Park & Neighborhood	38	0
3/6/2021	McKay School Park	0	700
3/20/2021	Hammond School Park	29	0
4/4/2021	Northgate Park & Neighborhood	37	0
10/30/2021	West Salem (Crew Leader Training)	4	34
11/13/2021*	Orchard Heights Park	0	1280
12/11/2021*	McKay School Park	40	0
2021 Total		**183**	**2,014**

** volunteer planting event.*
***planned volunteer planting event canceled due to severe weather.*

Table 2: Summary of 2021 Friends of Trees Events in Salem

Portland and other cities, so we have been able to utilize many aspects of their system, including outreach postcards, online sign-ups, tree selection information, tree ordering, and watering reminders. Friends of Trees and City staff will assist volunteers in planting and mulching both street trees and yard trees at the February planting event.

Figure 11. Mulching new plants at McKay Park.

Treecology

In 2021, 92 trees were planted by Treecology along streets in Salem. Planting occurred in January through April and then resumed in December.

This contract has identified opportunities where large unused right-of-way spaces are available to plant uncommon and large canopy street tree species. By planting less common tree species, the diversity of our street tree population is increased, which adds interest and increases resilience for future pests and disease.

Plantings by Treecology in 2021 occurred along Campbell Drive SE and Salem Parkway.

EDUCATION AND OUTREACH

In 2021, as part of the effort to increase tree planting on private properties, the City developed a survey to assess incentives and barriers to tree plantings. The survey was first a random sample across the City targeting low canopy areas, followed by a survey for the general public on the City's website. The City will use survey findings to help build programs and policies that are responsive to residents' needs and concerns and help increase the tree canopy in these areas to meet the tree canopy goal of 28 percent by 2030.

The survey results generally showed a positive response to trees, recognizing their importance to neighborhoods and a desire to have more trees. Responses also highlighted that many people are not aware of the City's tree planting programs and canopy goals. This indicates that more education and outreach is needed. A copy of the survey summary report is in Appendix E.

The City continues to work with Willamette University students on individual projects and hired two seasonal positions to assist in tree inventory field work, mapping, and data entry in 2021.

SUMMARY

Salem is involved in a variety of projects, programs, and initiatives that are working to achieve the goals of the Community Forestry Strategic Plan. Community outreach and planting events, primarily in partnership with Friends of Trees, spread the message of tree benefits and give an opportunity for the community to be involved with growing the urban forest. Programs like Tree City USA and Cities4Forests provide opportunities for Salem to be recognized for our urban canopy work and to keep informed of innovative urban forestry programs around the world.

The Urban Forestry Division works daily to maintain, promote, and increase the tree canopy through high standards in work practices and safety. Staff responds to all weather emergencies and helps keep city streets and the rights-of-way safe 24 hours a day, 365 days a year. With a limited full-time City staff, it is important to have contractors like Mountain View Tree Service for tree removals, and contractors like Treecology and Friends of Trees for expanding our tree planting capabilities.

Despite the unique challenges faced in 2021 due to COVID and the February ice storm, a total of 425 trees were planted. The urban canopy should continue to grow as Urban Forestry Division takes an increasingly active role in managing existing trees and putting money from fines and permits towards new plantings. Table 3 summarizes all tree work done by the City in 2021.

Salem Public Works will continue to promote tree planting efforts to enhance the City's tree canopy, increase education and outreach about the urban forest, and improve the level of expertise in staff. Urban Forestry's 2022 Work Plan calls for developing an Urban Forestry Management Plan and seeking program accreditation through Society of Municipal Arborists.

	City Urban Forestry	Friends of Trees	Treecology
Trees/Locations Inventoried	5,500	-	-
Trees Planted	147	183	92
Trees Removed	1,218*	-	-
Trees Pruned	5,132	-	-
Shrub/Small Container Trees Planted	-	2,014	-

**over 1,000 trees removed on City property due to ice storm. Includes work by contractors.*

Table 3. Summary of Tree Work on City Owned Trees in 2021.

APPENDICES

SALEM COMMUNITY FORESTRY STRATEGIC PLAN-IMPLEMENTATION UPDATE - FEBRUARY 2021

	Actions	Status
GOAL 1	**Protect, Increase, and Enhance Salem's Tree Canopy**	
1.1	**Preserve Existing Wooded Parks and Natural Areas; plant trees in parks, natural areas and other public open spaces to improve overall tree canopy**	
1	Set future canopy goal with Tree Board, Citizens and/or Technical Advisory Committees and public involvement- establish process and framework.	COMPLETED. Canopy Goal set at 23% in 2015. Updated to 28% in 2020.
2	Develop specific canopy goals for parks, natural areas, and public open space at the neighborhood level.	
3	Incorporate existing trees, groves, and canopy goals into parks masterplans.	On-Going
4	Prioritize potential property acquisition, planting opportunities, and outreach using a prioritization methodology and baseline information for all City owned properties.	For Parks Acquisition
5	Develop natural area management plans to maximize tree canopy and ecosystem services.	IPM in process, on-going
6	For new park design projects, include canopy targets on the park master planning process. Encourage incorporation of tree planting as a funded element in first phase park construction.	On-Going
7	Retrofit existing parks and public spaces by planting trees and shrubs, using native vegetation where appropriate, in riparian areas and hard to mow or underutilized grassy areas.	Ongoing: Two- three yearly plantings events with FOT through Clean Streams program
8	Allow for planting of "memorial" trees and tree groves that could be purchased for installation by City with care by donor.	
9	Partner with other public agencies (e.g. State of Oregon DAS, ODOT, DOC) for tree canopy preservation, enhancement, and tree plantings on other publicly owned properties	ODOT IGA for 2020 Salem Parkway tree planting with Treecology
10	Work collaboratively with utility companies to ensure health and safety of public trees in utility right of ways (e.g. PGE, Salem Electric, NW Natural Gas)	

	Actions	Status
11	Upgrade City-owned parking lots by planting trees to maximize shade and minimize runoff.	
1.2	**Promote tree preservation and tree planting to maximize future canopy while recognizing infrastructure and site limitations.**	
1	Establish stakeholder advisory committee to consider setting a canopy goal and to draft a strategic plan.	COMPLETED (2015)
2	Use Urban Tree Canopy analyses and stakeholder advisory committee to assist in framing tree canopy goal discussions.	COMPLETED (2015)
3	Establish a citywide canopy goal, with accompanying targets by land use type and neighborhoods.	City-wide goal set 2015 (23%) and 2020 (28%).
4	Develop a tree planting campaign to reach a goal.	
5	Recruit neighborhood associations for tree planting projects and outreach.	NESCA, Lansing, Morningside, SCAN, SESNA have all done tree planting projects.
6	Do a neighborhood association competition/challenge to meet tree canopy goal.	
7	Enlist a non- profit group to spearhead a tree planting campaign (e.g. Friends of Trees).	Ongoing. FOT contract with Salem beginning 2013. Currently, 7-8 events occur annually in parks and along streams on City property.
8	Use canopy analyses to prioritize low canopy neighborhoods for tree outreach and plantings.	Ongoing. Tree plantings focused on low canopy neighborhoods and streets.
9	Use strategic planting along public Right of Ways to reduce future conflicts (safety, signs, visibility, ice).	Ongoing. Treecology and Urban Forestry.
10	Plant publicly owned vacant lands for canopy benefit, while recognizing potential future site development.	Ongoing. Perimeters of undeveloped parks (e.g. Fisher Road Park) planted with trees prior to park development.
11	Implement a pilot project at a block or neighborhood level. Develop prioritization criteria for selecting project locations.	Ongoing. Using tree inventory and tree plotter maps to prioritize plantable areas.
12	Work with Oregon Department of Transportation and local utility companies for site specific tree planting strategies and locations.	2019 IGA/2020 planting with ODOT for planting along Salem Parkway.

	Actions	Status
13	Encourage planting of conifers in appropriate areas for species diversity and stormwater benefits	Conifers being planted through Treecology contract for ROW.
14	Contact churches and schools for tree planting opportunities as they often have large lots.	Morningside Elementary, Hoover, McKay HS on Hollywood planted with FOT.
15	Prevent unnecessary tree removal on residential lots through property owner education.	Tree benefit brochure 2020 and 2021 tree questionnaire about barriers and incentives for trees on private property.
16	Continue and increase programs to plant trees throughout the City.	Enhanced Street Tree planting begun 2018. Contract with Treecology. $$ from Salem Tree Fund to plant street trees. Watershed Grant program can be used for tree-planting projects. Reinstated Free Tree Program in FY 2019/20.
1.3	**Develop and offer incentives to encourage the preservation and planting of trees and tree groves on private property**	
1	Increase awareness of existing City grant programs that could be used for tree plantings (e.g. Salem Parks Improvement Fund, Watershed Protection Grant, Neighborhood Enhancement Fund)	Ongoing. SPIF grants allowed for tree plantings in parks. Watershed Grant program is promoted annually and is available for tree-planting programs.
2	Bolster the Heritage Tree program for more nominations and recognition of program	Urban Forestry updating this process.
3	Establish another tree category for “Special” or “Trees of Interest” with nominations from the public	
4	Develop a recognition award for tree preservation, tree planting, tree champion. Coordinate award with Arbor Day events.	Several Salem people have received Oregon Community Tree Awards.
5	Continue and expand free tree and street tree programs to meet canopy goals	Treecology contract begun 2018 for 5 years. Riparian free tree program was reinstated in FY 2019/20 after 10 years of absence. Additionally, 20 streamside property owners in low to moderate shaded areas are provided additional outreach each year.
6	Provide coupons or discounts for pruning, not removing trees	

	Actions	Status
7	Provide tax breaks for high percent tree cover	
8	Investigate funding opportunities for tree preservation and planting incentives	
9	Develop opportunities for applying for larger grants at community or neighborhood level	
10	Partner with a non-profit/non governmental organization for tree planting or outreach (e.g. Friends of Trees or Friends group)	Ongoing: FOT contracted by Salem 2013.
11	Set up tree fund that is designated for tree plantings. Fund through grants, donations, etc. Investigate whether donations can be tax deductible.	COMPLETED- Tree Preservation Fund set up in CD. Violation payments going into dedicated Salem Tree Fund.
12	Have approved geographic areas for tree plantings using the tree fund, preferably within same watershed or neighborhood.	UF inventory documenting potential planting locations.
13	Identify barriers to tree canopy expansion on industrial properties. Develop best management practices to mitigate for these barriers. Develop pilot project with industrial partnership.	
1.4	**Promote street tree plantings to maximize future tree canopy coverage while recognizing infrastructure limitations**	
1	Use canopy analysis to identify street tree planting opportunities. Verify locations on ground to ensure appropriate species and minimize future infrastructure conflicts.	Tree Plotter mapping tool being used to prioritize areas. Street tree inventory identifying plantable spots.
2	Update and distribute a street tree selection guide and interactive website.	Street Tree list update in 2020. Administrative Rule update in 2021.
3	Work with neighborhood associations or other groups to conduct volunteer neighborhood tree plantings. Encourage low canopy neighborhoods to participate.	FOT projects target low canopy neighborhoods. Outreach sent to surrounding neighbors.
4	Develop street profiles that create more tree planting opportunities in the right of way.	
5	Work with local tree nurseries to expand street tree selection.	
6	Engage volunteers in care of newly planted street trees.	Urban Forestry working on outreach to adjacent owners of new street trees.

	Actions	Status
GOAL 2	**Increase education and outreach about tree benefits, community forestry program, tree regulations, and incentives.**	
2.1	**Develop outreach and education material for website, articles, events, workshops etc.**	
1	Provide educational materials about tree codes and regulations to reduce ambiguity about tree requirements.	Door hangers developed regarding tree work and where to find information about City trees and regulations. Stream temperature information on city website for TMDL.
2	Develop information about the value and benefits of trees, tree valuation, ecosystem services, value of big trees.	New tree brochure (English and Spanish) in 2020.
3	Increase the public knowledge about: the benefits of trees, the Salem tree canopy studies, the Riparian Action Plan, the Community Forestry Program, and how trees can help the City meet its obligations under the Clean Water Act.	First Annual Tree Report in 2018 provided to Council. Annual report. Council work session about trees October 2020. Conducted a year of Tree City USA events for 40th to increase awareness about the special award and the benefits of trees. 2021=TCUSA 45th year events planned.
4	Develop information about trees and Salem's community forestry program in a "welcome packet" for new property owners and residents in newly annexed areas.	SPRAB tree committee action area
5	Educate about how to manage trees for health and reduced risk (e.g. No Topping, Right Tree/Right Place, watering, proper pruning techniques). Provide information about how to manage and care for trees (pruning, watering, selection etc.).	
6	Educate public and tree grove owners about benefits of groves.	
7	Provide a planting template for different size lots to engage property owners of all size properties to plant trees.	
8	Use a software program such as "Community Viz" as outreach tool to help people to visualize their street/neighborhood/lot with trees and canopy growth over time.	

	Actions	Status
9	Provide a variety of ways for public to access information about trees (e.g. Statesman Journal/Salem Weekly press releases and articles about trees, website, social media, podcasts, U-Tube, utility inserts, events, CCTV, KMUZ 1230).	Treemail and Facebook updates. Tree brochure 2020.
10	Improve and increase website presence – add more links to information, more interactive maps and activities. Develop a visual presentation about what work is being done in City on trees, benefits of trees, "Community Viz" etc. Use on CCTV, You Tube, Facebook.	Draft ArcGIS Online for interactive map being developed 2020.
11	Investigate potential partnership with Oregon Dept. of Forestry and their urban forestry program. Increase exposure of Arbor Day/week/month activities.	Arbor Week Proclamation each April. Arbor Day Booster grant in 2020.
12	Conduct a post-strategic plan online survey to gauge public preferences, knowledge and interest in trees and response to the community forest strategic plan	City survey in FY20/21.
13	Institute a tree photo challenge with online voting for favorites through city website or Statesman Journal ("Special places and special trees").	Tree photo contest as part of TCUSA 40 year celebration 2016.
2.2	**Utilize other programs, events, and festivals for outreach and education about Salem's community forest**	
1	Establish an award event for tree champions to be awarded during volunteer recognition event.	
2	Host an art event that emphasizes trees	40th TCUSA poster contest.
3	Develop "Tree walk" information for downtown or neighborhoods (virtual or real)	Willson Park tree walk with ODF as part of 40th TCUSA events.
4	Have a tree booth at local events with handouts about tree benefits and forestry programs (e.g. Public Works Day, Farmers Market)	FOT at PW Day 2014-2020.
5	Encourage local college programs specializing in horticulture, natural resources, environmental science, or landscape architecture to conduct site assessment and inventories of street trees, natural areas or tree groves.	Willamette U seniors theses on NESCA street trees and determining significance of groves.
6	Encourage continued training of volunteers and public in conjunction with other existing events (e.g. Chamber of Commerce events)	Ongoing: FOT Crew Leader training in Salem each year. 37 as of 2020.

	Actions	Status
2.3	**Provide opportunities for volunteer involvement**	
1	Provide opportunities for tree planting, tree care, and neighborhood tree planting through combination of city programs, non profits, and other community organizations.	Ongoing: In progress with FOT since 2013.
2	Enlist and train neighborhood volunteers do a street level inventory with consistent and basic information, assist in research, outreach and public involvement.	Straub Environmental Learning Center street tree inventory citizen science class Summer 2014.
3	Use school science classes to monitor, inventory, plant, maintain, photo-document and identify trees.	
4	Create a tree maintenance program involving Americorps, students, and property owners for summer watering and tree care (i.e. “Adopt a Tree”).	
2.4	**Promote Professional development opportunities**	
1	Coordinate specific workshops for targeted stakeholders related to tree management, health, site design (e.g. landscapers, developers, engineers).	
2	Develop a tree steward program and provide training/education as a prerequisite (e.g. Neighborwoods, Friends of Trees programs).	Ongoing: FOT Crew Leader training in Salem each year. 37 as of 2020.
3	Host or support workshops/webinars for Continuing Education Credits for professionals.	Silva Cell workshop for City Engineers 2016.

	Actions	Status
GOAL 3	**Develop Support at political, management, and public levels**	
3.1	**Engage City Council and Community leaders in support of Community Forest Strategic Plan**	
1	Adopt citywide tree canopy goal through adoption of a strategic plan by City Council.	23% Adopted in 2012. New goal set in 2020 for 28% by 2030.
2	Inform City Council and other decision makers of the Community Forestry Strategic Plan, benefits of trees, and state of the City's community forest.	Annual tree report begun in 2018. Council Work Session October 2020.
3	Provide updates to department heads and City Council at key milestones and regular intervals.	First Annual Tree Report to Council in 2018.
4	Expand participation and recognition of Tree City USA activities.	Documented in annual tree reports. Received 2020 Arbor Day Booster grant from Oregon Community Trees.
5	Provide opportunities for community leaders and decision makers to be involved in tree events (e.g. Arbor Day event or neighborhood planting.)	Councilors Hoy and Andersen have participated in tree planting events. Annual Mayor's Proclamation.
6	Recognize work of individuals and groups towards preserving, increasing and enhancing the city tree canopy.	
7	Work with Polk and Marion Counties to manage for tree preservation in future annexations into city limits.	
8	Use Neighborhood Associations as means to communicate with decision makers.	
9	Invite decision makers to meetings about trees (e.g. neighborhood association, tree advisory committee meetings)	
10	Utilize industry print publications and presentations to increase awareness of Salem's urban trees (e.g. HBA, Chamber of Commerce, Business Weekly, SEDCOR, Realtors, Nurseries, tree services, landscapers, Rotary, other service organizations, Salem/Keizer School District, Habitat for Humanity, Health Care professionals).	

	Actions	Status
3.2	**Continue as Tree City USA**	
1	Continue meeting the Arbor Day Foundation Tree City USA requirements.	Ongoing. 2021 is 45 years as TCUSA.
2	Work towards "Sterling City" designation by achieving 10 Growth Awards.	**Achieved and ongoing:** Salem is a "Sterling" TCUSA. 2020 will be 13th award.
3	Provide and encourage professional training opportunities for forestry staff and volunteers to meet Tree City USA criteria.	Ongoing. Now 4 ISA certified arborists on staff.
3.3	**Develop a Community Forestry Outreach Plan**	
1	Develop specific outreach presentations, methods, and materials for a variety of audiences (e.g. Neighborhood Associations, schools, Chamber of Commerce, Spanish speakers, and other interest organizations).	
2	Develop specific outreach for neighborhoods and schools. Assess each neighborhood and school's plantable area.	
3	Develop "branding" of tree planting campaign for program recognition.	Completed: Benefits of trees logo developed. Stickers, pint glasses, and tote bags printed with logo.
4	Establish potential partnerships with other stakeholder organizations or groups.	SELC, Boys and Girls Club.
5	Support a K-12 tree curriculum.	

	Actions	Status
GOAL 4	**Improve city coordination, communication, and codes related to trees**	
4.1	**Promote tree friendly development and land use practices**	
1	Develop a Community Forestry Strategic Plan.	Completed first version in 2015.
2	Evaluate tree and vegetation codes to reduce ambiguity and streamline review and application process. (e.g. tree planting requirements are unclear to developers, responsibility for replacement trees, etc.)	SRC 86 Revised.
3	Assess if further revisions to Salem Revised Code are warranted to increase urban canopy (e.g. more protection for tree groves, reduce ambiguity about street tree requirements, equitable tree replacement formula, fee in lieu fund). Propose revisions to code if warranted after Unified Development Code adopted.	SRC 86 Revisions pending in 2021 related to violations, assessments of fees, and mitigation plans.
4	Increase protection for significant tree groves. Look to acquire significant groves.	Parks acquired Fisher Road Park addition with grove in 2020.
5	Explore the use of alternative sidewalk materials, structural soil cells, root paths and structural soils where appropriate to reduce conflicts between trees and sidewalks.	
6	In partnership with Public Works, develop street profiles that create more opportunities for tree planting in the public right of way. Evaluate and adopt design standards and specifications for best practices regarding tree protection, tree pit and soil volumes, plant and planting specs etc., according to ANSI standards. Include innovative standards to provide adequate soil volumes to enable successful tree planting and long term tree health while minimizing interference with utilities/infrastructure.	Administrative Rule adopted in 2016. To be revised in 2021 for new references to ANSI standards.
7	Assess new utility line placement to minimize impacts to trees. Encourage root tunneling in lieu of utility trenching in areas of existing tree plantings unless impacts to tree roots are minimal, does not result in an increase in public safety hazard, and appropriate post construction mitigation is provided.	Incorporated into Administrative Rules.

	Actions	Status
8	Ensure earliest review of proposed development plans to promote tree preservation in site development. Increase thoroughness of tree plan review.	Staff trained to review Bluebeam applications for impacts to city trees.
9	Encourage the development community to design for tree preservation, as opposed to on site or off site mitigation, as the preferred alternative. Explore the use of development credits or transferable right to facilitate tree preservation. Allow for payment into Tree Fund for mitigation (to be used to preserve/acquire existing groves or enhancing canopy) inside the Urban Growth Boundary. Have a payment in lieu process for tree replacements.	Payment in lieu program allowed. Money goes to Salem Tree Fund.
10	Review tree planting plans for species selection, biological diversity, and largest species appropriate for the planting location to maximize tree benefits.	Street tree plans now being reviewed as part of Development Services review process.
11	Train City inspectors in tree protection and tree installation reviews.	
4.2	**Incorporate Tree Canopy Goals into City Projects, Initiatives, Plans, and Policies**	
1	Continue City Tree Team and include members of Public Works, Community Development, Urban Development, and others as needed.	Ongoing. Natural Resource Work Group meeting quarterly.
2	Use the Tree Team to promote tree programs and reach other City goals (e.g. City's Environmental Action Plan, Riparian Action Plan, MS4 permit).	On going. Natural Resource Work Group meeting quarterly.
3	Consider revisions to roles and responsibilities of the Shade Tree Advisory Committee to allow for sub-committees when needed.	STAC discontinued. SPRAB-initiated tree subcommittee in 2019.
4	Incorporate tree canopy goal, tree preservation, and tree planting into other city master plans, Capital Improvement and urban development projects, and Low Impact Development guidelines. Include tree goals in next Comprehensive Plan and neighborhood plan updates. Encourage substantial tree planting as a funded element in first phase park construction.	Canopy goal included in Comprehensive Plan update 20/21.

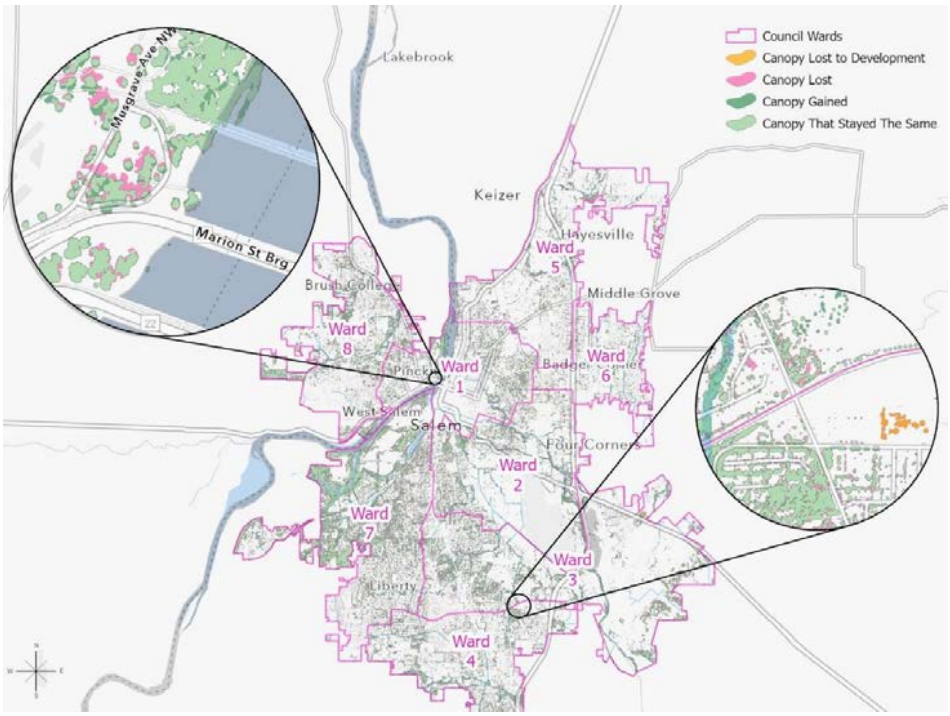
	Actions	Status
5	Assess park properties and other city lands to prioritize tree planting sites in terms of greatest demand for additional vegetation and lowest existing canopy coverage. Increase tree and shrub planting on city-owned properties as appropriate within the context of current/intended use of each site.	On going. Trees added to parks through master plans and FOT work.
6	Assess and retrofit existing parks and public spaces by planting trees and shrubs in hard to mow or under-utilized grassy areas as a means to reduce long term maintenance cost while expanding canopy coverage. Encourage the use of native plants in these areas.	Mayors Monarch pledge and pollinator habitat program.
7	Use Community Forestry program actions as means of meeting existing regulatory requirements. Consider how it may address future requirements (e.g. air quality). Integrate tree canopy goals into City's National Pollution Discharge Elimination System and Total Maximum Daily Load permit compliance strategies	In next MS4 permit renewal. To be included in Climate Action Plan.
8	Protect trees in street Right of Ways to maximum extent feasible (e.g. "bumpouts", meandering sidewalk, etc).	Alternatives analysis required under Administrative Rules
9	Review plans to ensure new tree plantings are appropriate location and species ("right plant, right place") to minimize future infrastructure conflicts and maximize canopy coverage.	Plan review now done at Development Services & Urban Forestry.
10	Coordinate with Public Works and Community Development to identify and address tree related infrastructure conflicts through code and/or design standards and specifications.	Part of Administrative Rules. Alternatives analysis.
11	Establish a system and database to improve tracking of tree removal and tree planting for City projects and tree planting by volunteers.	UF inventory input into GIS Salem Maps online system 2020.
12	Identify approved geographic areas for tree plantings to be used to mitigate for tree loss within same watershed or neighborhood.	
13	Establish permanent easements to protect tree plantings where feasible.	
14	Promote inter and intra-departmental staff training and education for common understanding of tree issues and management practices	
15	Include City trees in asset management database for potential Capital Improvement Project funding.	UF inventory input into GIS Salem Maps online system 2020.

	Actions	Status
16	Investigate funding opportunities for tree preservation and planting incentives.	Survey on tree planting incentives in FY 20/21.
17	Improve public notification of proposed street tree removals, tree advisory board meetings and results of board decisions (similar to traffic change notification process).	On going. Posting of street tree removals part of Administrative Rules and SRC 86.
18	Determine process for establishing viable Tree Canopy Preservation Fund or other donation fund specifically for trees. (Tree Mitigation Fund)	Tree Preservation Fund established in CD for donations.
19	Use tree planting for neighborhood enhancement. Focus limited street tree planting resources toward low and moderate income neighborhood, accessing Community Development Block Grants if available/appropriate.	On going. Tree plantings focused on low canopy neighborhoods and streets.
20	Conduct a demonstration/pilot project, implementing a variety of green infrastructure practices and provide public education opportunities	

	Actions	Status
GOAL 5	**Develop and implement a Community Forestry Management Plan**	
5.1	**Develop a Community Forestry Management Plan to promote long term enhancement of canopy, tree maintenance, and hazard reduction.**	
1	Establish a sub-committee under the Shade Tree Advisory Committee to assist in developing and vetting a comprehensive Community Forestry Management Plan with the Urban Forester.	Staff to begin UF Management Plan in 2021.
2	Use the Management Plan to establish industry appropriate best management practices, standards, and protocols for tree care, risk and hazard reduction, and storm/hazard tree response, removal and replanting.	
3	Develop criteria and definition of “significant grove”.	
4	Update the Community Forestry Management Plan on a regular periodic basis or as needed to adjust to changing circumstances.	

5.2	**Implement data management and data analysis to better understand the composition, character and health of the urban forest.**	
1	Develop GIS tools for tracking canopy over time. Conduct a GIS canopy analysis at least every census year using comparable method to previous studies.	Tree Plotter software 2020. New canopy study 2019. UF staff inventory data into GIS Salem Maps Online.
2	Reevaluate canopy goals after each canopy analysis to reflect changes in canopy coverage. Consider conducting analysis on a 5-year basis.	2019 canopy assessment completed. New canopy goal of 28% by 2030 set.
3	Assess tree inventory software applications and develop data collection protocol to maximize efficiency and accuracy (e.g. "TreeWorks" software)	
4	Establish data needs, gaps, and updates for use in program development (e.g. street tree inventory, canopy updates, underground utilities GIS layers).	Street tree inventory begun in 2018 and 2019 (sample) and continued by UF 2020.
5	Enhance species and age diversity of urban forest. Encourage the planting of broad canopy deciduous and coniferous trees where possible to maximize diversity, shade, and stormwater interception benefits.	On going. Part of Treecology's contract. Draft update to Street Tree list in 2020. Changes to Admin. Rule in 2021.
6	Adopt and utilize a tracking system to evaluate number of trees approved for removal and planting through development process.	IPS system being implemented to include tree assets 2021.
7	Review and revise current approved list of street trees, incorporating, where appropriate, additional large canopy, evergreen, and native trees.	Draft update to Street Tree list in 2020. Changes to Admin. Rule in 2021.
8	Update GIS layers to include Heritage trees, significant trees, groves etc.	

2021 TREE CANOPY IMPACT ASSESSMENT



Nov 2021

A Comparison of Salem's Tree Canopy Before & After the February 2021 Ice Storm

CITY OF Salem AT YOUR SERVICE
Public Works Department

PURPOSE

The City of Salem experienced an ice storm in February 2021 that resulted in extensive damage to our urban forest. Throughout the City, trees fell and branches buckled under the weight of the ice, leaving thousands of residents without power for days, blocking streets, and causing severe damage to many buildings and vehicles. Based on the magnitude of the clean-up efforts alone, which is still ongoing, it was clear that the City had lost tree canopy, but the full extent and distribution of canopy loss was not understood. The purpose of the 2021 Tree Canopy Impact Assessment was to attempt to quantify the amount of tree canopy lost and to better understand how the ice storm affected the tree canopy in different areas of interest (AOIs) within the City, including within City council wards, City parks, public rights of way, and stream corridors.

Figure 1. One of many trees lost to the February 2021 ice storm.

METHODOLOGY

This study utilized remote sensing technology and artificial intelligence (AI) derived tree canopy layers (AI feature extraction) to compare tree canopy using pre-ice storm, August 18, 2020, satellite imagery and post ice-storm, May 13, 2021, satellite imagery. Each aerial acquisition was gathered at 7.5cm resolution

and 15cm horizontal accuracy in Red Green Blue (RGP) natural color. Both nadir and oblique angles were collected to produce a 3D reconstruction using photogrammetric processes. Next, a segment of artificial intelligence technology called computer vision (trained in detecting tree canopy) "looked" at the imagery and 3D models (pre and post) and created GIS polygon features where tree canopy was "seen" (Figure 2). This process is called instance segmentation. These two resulting GIS polygon layers were intersected, analyzed, and compared for different areas of interest, including all city owned property, riparian corridors, council wards, and rights of way.

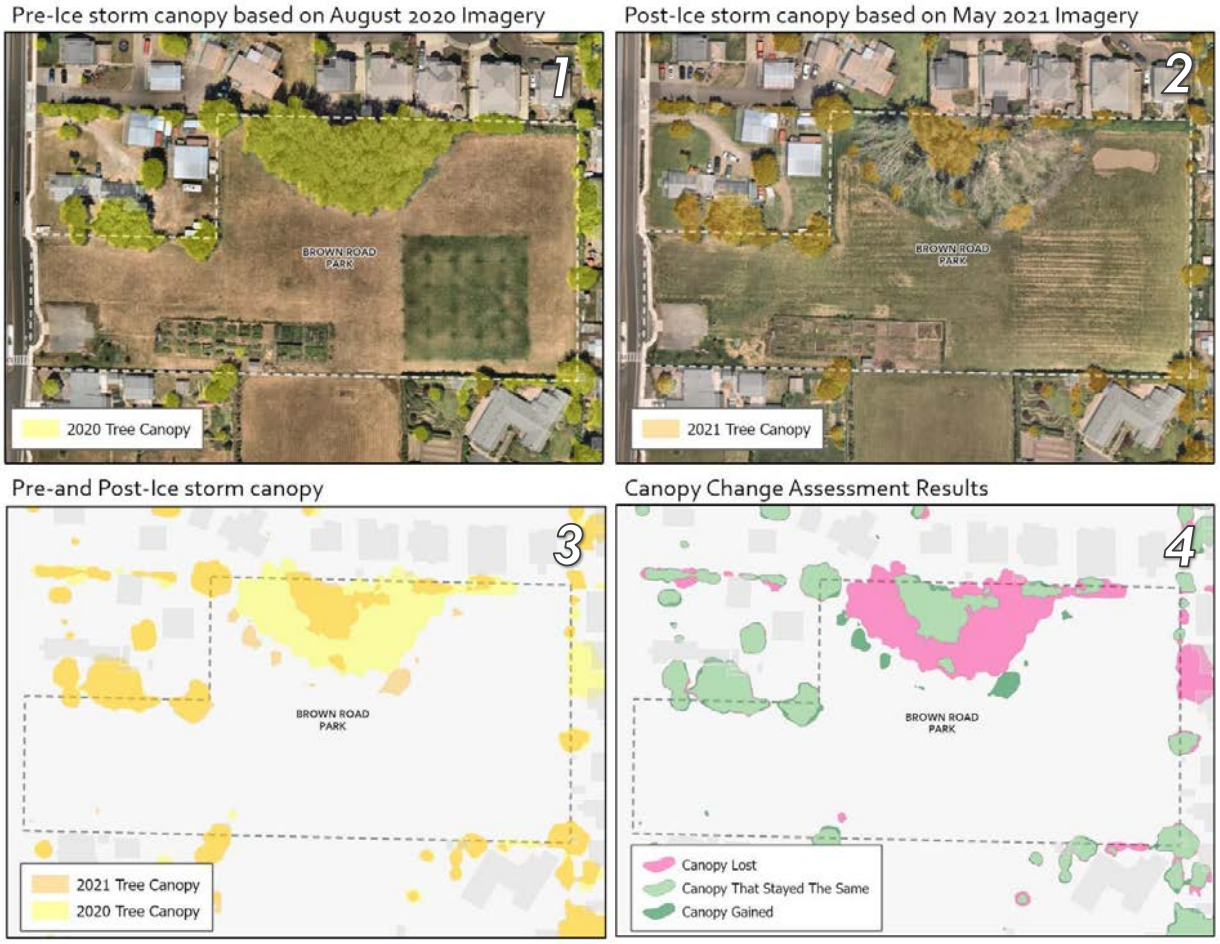


Figure 2. Tree canopy polygons (panels 1 & 2) were derived from high resolution imagery and 3D models using artificial intelligence technology, which then were intersected, analyzed, and compared (panel 3) to identify where canopy was lost, gained, and remained the same (panel 4).

Overlapping polygon features between the two datasets indicated common tree canopy (or no change). Canopy polygon features which were only observed in the pre-ice storm imagery could be inferred as "lost" or not present after the ice storm. And finally, polygon features that were only observed in the

post-ice storm imagery could be understood as "gained" or new canopy. In addition, areas of known development were included and categorized separately as "canopy lost to development" as these are areas of canopy loss, but not due to the ice storm. Statistics were calculated for each AOI, including percent of canopy lost, acres of canopy lost, acres of canopy lost to development, acres of canopy gained, and acres of unchanged canopy.

RESULTS

The product of this assessment is a publicly accessible online interactive dashboard that allows users to display and interact with the results of the analysis at different scales, on different basemaps, and for different areas of interest. An AOI selector at the top of the dashboard allows users to easily select a desired council ward or park (Figure 3), but the user also has the option to zoom and pan to a desired location. Upon opening the dashboard, summary statistics (acres of canopy lost, lost to development, gained, and unchanged) for the whole city are displayed as a bar chart to the right of the map and as a table beneath that if the "Statistics" tab at the bottom of the page is selected. These statistics are updated automatically as the AOI changes, and they can be filtered to display changes within a specific council ward or park, as well as within the ROW or Stream Corridor of a selected AOI (Figure 4).

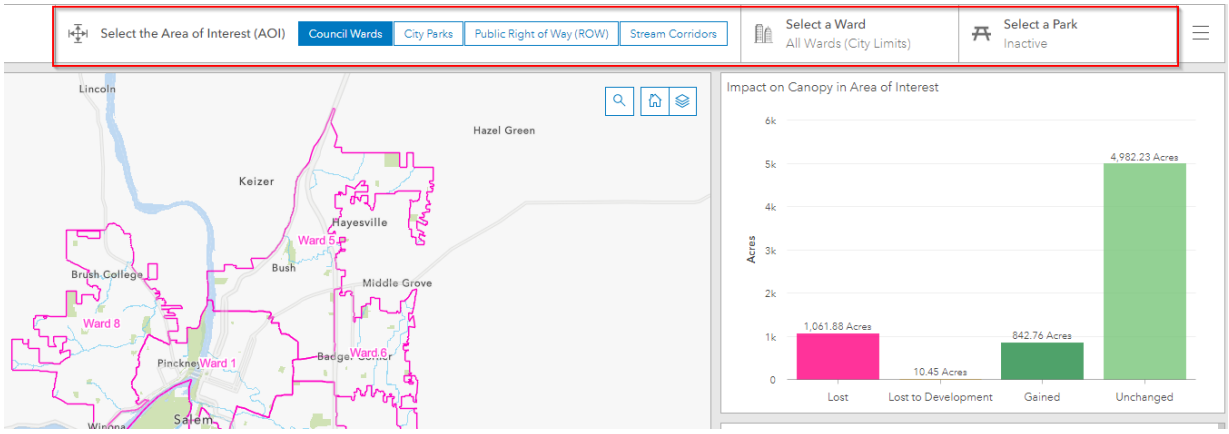


Figure 3. The interactive dashboard allows users to select an AOI, such as Council Wards or Parks. With the "Council Wards" button selected, the chart shows the statistics for all Council Wards and the "Select a Ward" drop down list is activated. If the "City Parks" button is selected, the chart will change to show the statistics for all City Parks and the drop down list of City Parks will be activated.

Because of the number of polygon features within the derived tree canopy layers, the map must be zoomed in to a scale of 600 feet or lower in order for the tree canopy layers to display; however, statistics are displayed and updated at any scale.

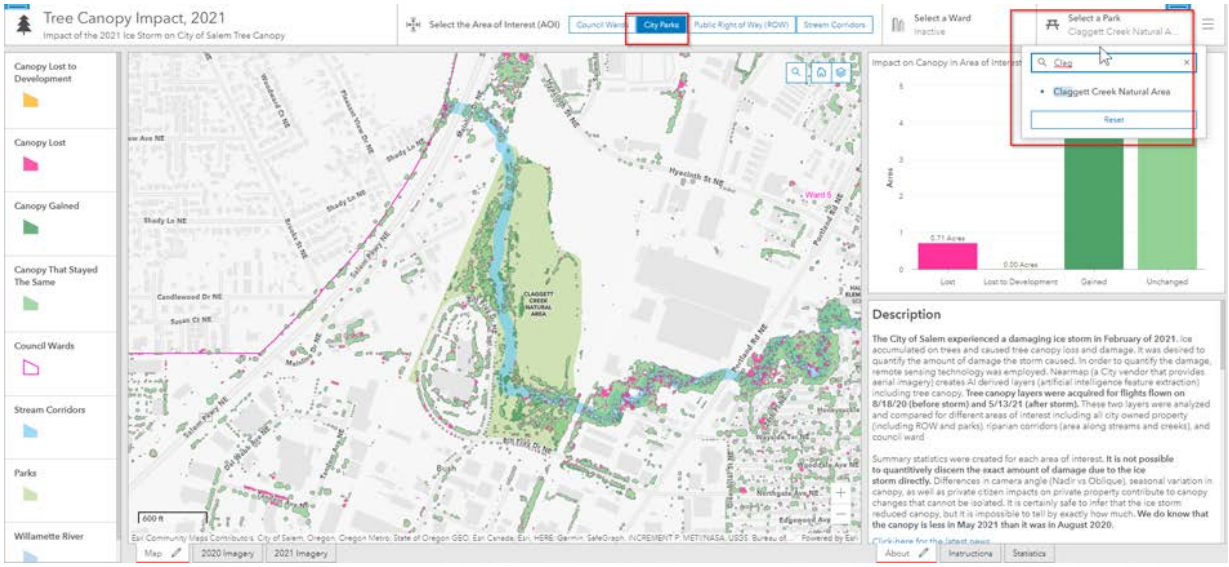


Figure 4. When a City Park or Council Ward is selected from the drop-down list, the map automatically zooms to that location and statistics displayed are updated to reflect only the change in the selected AOI.

Additional guidance for using the interactive dashboard is available by clicking on the "Instructions" tab at the bottom of the dashboard.

CONCULSION

The City-wide statistical analysis showed a 17.6% canopy loss across the City during the time period studied, with approximately 10 acres of canopy lost to development and over 1,000 acres lost due to the ice storm or other factors. Camera angle, seasonal variation in canopy, and pruning or tree removals for other reasons likely account for some portion of this observed change; therefore, it is not possible to quantitatively discern the exact amount of damage incurred as a direct result of the ice storm. It is clear however that a large percentage of the 1,000+ acres of canopy loss is attributable to the ice storm. Comparing the AI derived canopy loss data with the Urban Forest Work Order Map, which tracks tree related ice-storm clean-up efforts overseen by the City's Urban Forester, as well as a review of the City's Tree Inventory pre- and post-storm, could assist in refining the statistics. Regardless, the canopy loss assessment and interactive dashboard are useful tools that will assist the City in identifying areas to focus replanting efforts in order to rebuild canopy along streams and across the City.

INTERACTIVE DASHBOARD URL

The interactive dashboard can be accessed using the URL below or by going to DataSalem and exploring the City's Environment WebApps (Figure 5). The application is completely open to the public. No registration or account creation is required to use the application.

https://salem.maps.arcgis.com/apps/dashboards/92066fd3c39a431c86ff5a55755fbdd0

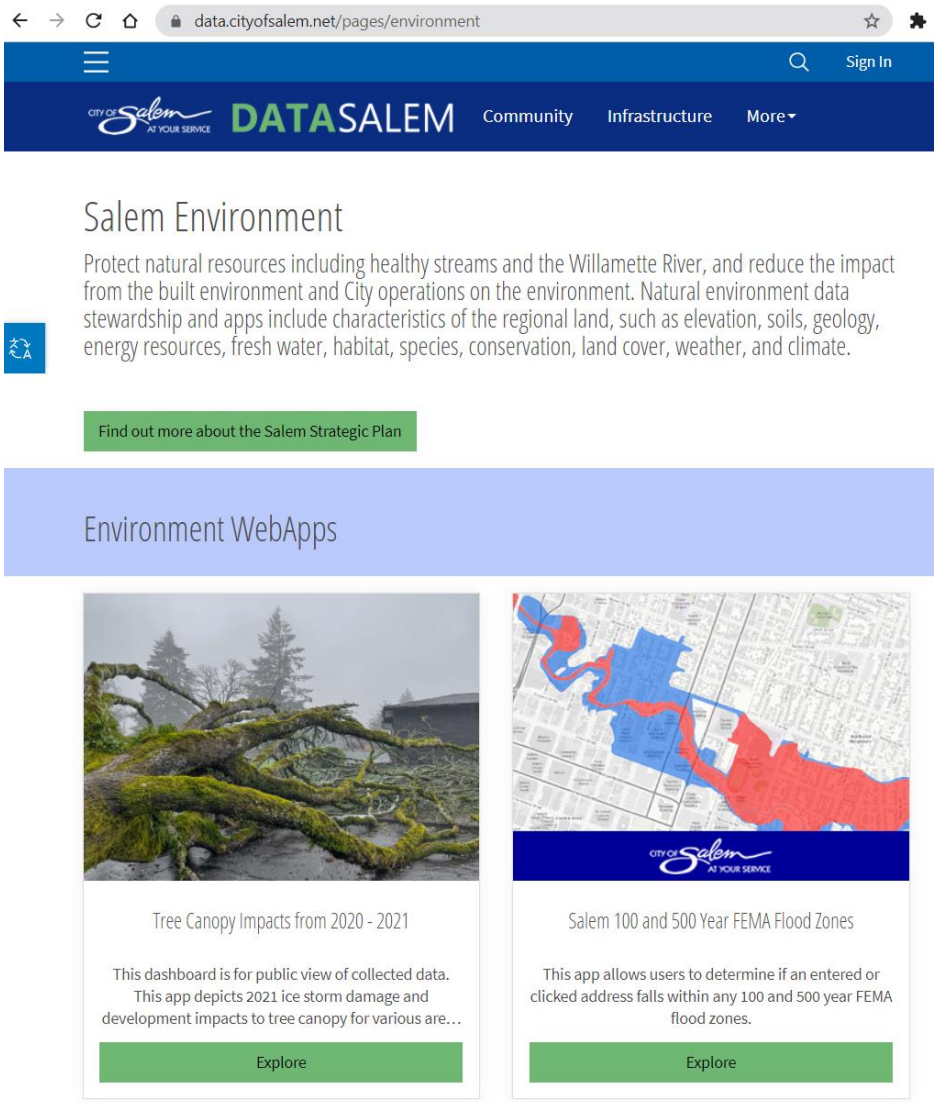


Figure 5. The Tree Canopy Impacts dashboard is available on DataSalem under the Environment WebApps.

Ice Storm Response

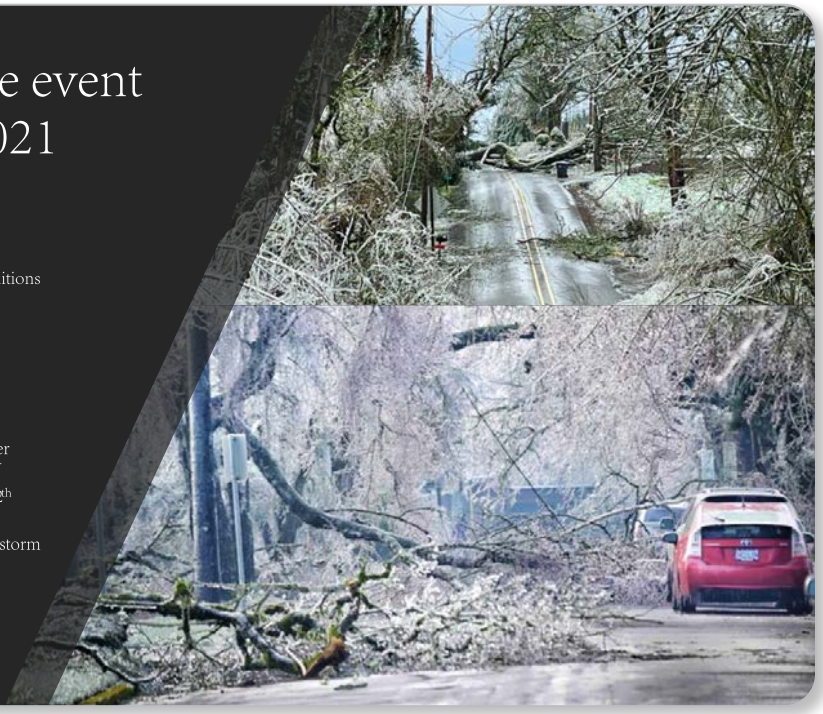
Ice Storm Emergency Management

City of Salem Urban Forestry Division

February 12, 2021, Ice Storm Response

CITY OF Salem AT YOUR SERVICE

Salem 40-year ice event February 12th, 2021



WORKING THE STORM

- Crews worked 18hr shift expecting to work through the night if necessary
- Freezing rain and nighttime hazardous conditions were a cause for concern
- Managing calls from Dispatch center

UNEXPECTED SEVERE CONDITIONS

- Multiple storms overlapping
- Ice accumulation over 1"
- Estimated 10,000 trees severely damaged over 1000 trees removed on city owned property
- Over 3000 service requests from February 12th thru March 30th
- City of Salem spent nearly $6,500,000 in ice storm related clean up
- 90,000+ total power outages in Salem

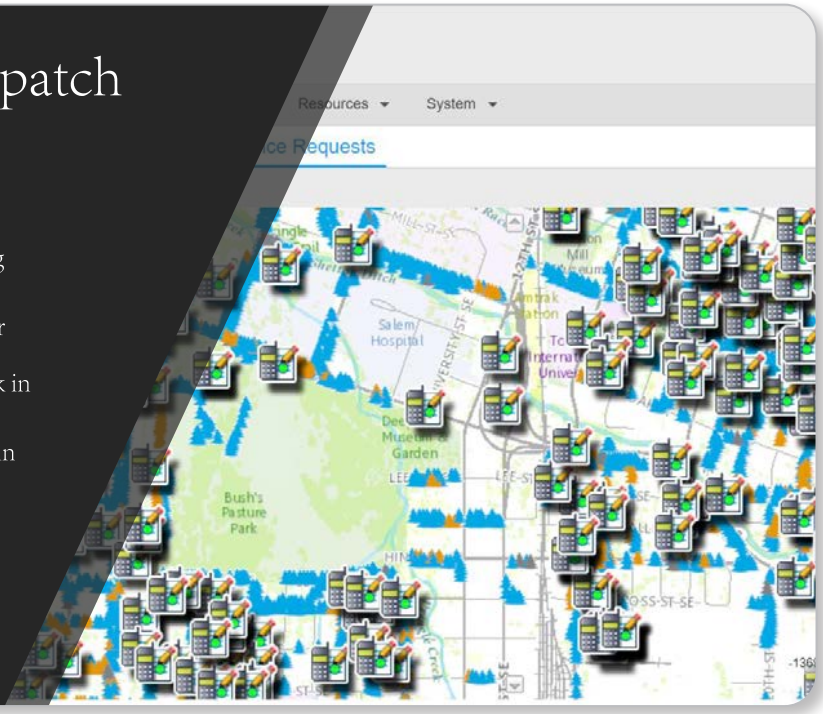
Ice Storm Response

Ice Storm Preparation & Expectations
URBAN FORESTRY DIVISION

- Staying up to date on weather predictions
- Crews assigned on-call for standby
- Expecting the worse and being ready for extreme conditions
- Having a management plan in place
- Understanding Emergency protocols and EOC function and limitations
- Workforce delegation, logistics, communication and documentation
- Using technology to be more efficient in planning and developing strategies to complete the work
- Knowing your crew limitations and staying true to standard SOPs
- Working safely during severe weather events

Emergency Dispatch 24hr Response

- Infor Public Secorv11.1 service request management system along with Hansen/311 call center
- Direct calls to the urban forester who distributed work to crews via radios & cell phones, closing work in the system as it was completed
- Closed 78 service requests within the first night and had a plan for Saturday morning



Ice Storm Response

Post 24hr Response and Plan
2/13/21

- City of Salem PW EOC mobilization and delegation of responsibilities
- Parks Operations power outage for 7 days
- Started morning and afternoon EOC meetings with Incident Commander, Asst PW Director Mark Becktel
- Staffing and equipment needs, used city Radios & cell phones to communicate with crews
- Governor declares State of Emergency
- Tree Service Contractor of record, agree to terms of service and compensation during State of Emergency
- IPS inform system overload and collapsed due to volume of incoming requests, use the city 311 system to track and manage high priority work
- Implement push and go method with heavy equipment to open streets blocked by downed trees & debris with PW operations

Public Works Departmental Operating Center (DOC) Assignments by Incident Type and Shift
January 17, 2021

Participation Required | Participation if Requested | Participation Not Anticipated

Shift B
Second 12 Hours of an Incident

Assignment	Name	Full Activation	Flood	Windstorm	Water Quality/Supply	Traffic/Civil Unrest
DOC Incident Commander	Dwayne Barnes					
Deputy DOC Incident Commander	Vacant					
Stormwater Watch & Warning	Anita Panko					
Stormwater Operations	Brandon DeVries					
Wastewater Collections	Jerry Smith					
Water Quality & Distribution	Doug Priest					
Pumps & Controls/SCADA	Gerald Arredondo					
Street Maintenance	Rick Mercier					
Signs & Sweeping	Cody Weidman					
Traffic Engineering/Operations	Tony Martin					
Traffic Signal Operations	Eric Destival					
Parks Operations	Jacob Snell					
Urban Forestry – Tree Response	Milan Davis					
Technical/GIS/Wastewater Flow Support	Audrey Kilbrain					
Additional Technical/GIS Support	Michael Medina					
Administrative Support	Allan Mikelles					
Customer Service/Dispatch	Cody King					
Public Information Officer	Deborah Topp					
311 Log Operator	Vanessa Strode					
DOC Scribe	Helena Najar					

Winter Snow and Ice Response
Response shifts are 12-hour shifts beginning/ending at 1200 hours and 2400 hours and primarily involve Streets Maintenance, Signs & Sweeping, Public Information Officer, Administrative Support, and Customer Service/Dispatch staff. Operations Division Manager takes overall leadership role.

Full DOC Activation Incidents
The types of incidents that would automatically result in a full activation of the Public Works DOC would include Earthquake, Volcanic Eruption, Major In-town Conflagration/Wildfire, Solar Eclipse, or other natural or manmade event that would impact all infrastructure systems.

DOC Location
Public Works Shops, Building #2, Training Room – COVID-19 Restrictions may result in full or partial virtual DOC – situation dependent

Photo by Jacob Rybloom

State of Emergency

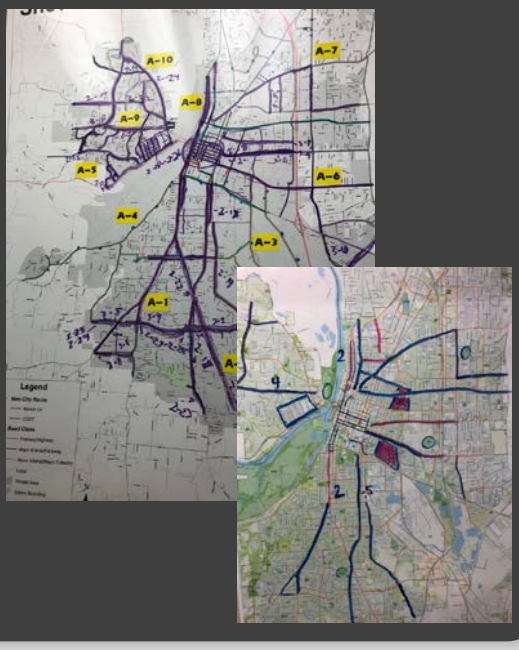
SATURDAY MORNING FEBRUARY 13th

- Respond to emergency situations; trees on houses, trees on cars, uprooted trees causing gas leaks, etc. trees blocking roads & driveways
- Clear downed trees and debris for emergency vehicle access to Salem Hospital, had calls from Ambulance drivers to Dispatch that they could not reach the ER
- Judgement calls on priority trees only cutting enough to make safe to move on to the next location, not wasting time doing non-emergency work
- Manage crew assignments and understand limitations based on experience and workload
- Work with Police, Fire, Public Works Operations and contract tree crews to have all the necessary equipment available to assist
- Work safety SOPs for downed power lines and hazardous situations

Ice Storm Response

Week One- Week Four: Strategic Planning, Introducing new Technology and Managing Risk

- Work with senior staff to map out logistics for contract crews to clear streets of trees and debris using historical snow routes, with a goal of having arterial roads open and cleared of debris and dangerous limbs, followed by collector streets and finally working through the neighborhoods
- All hands-on deck for Public Work crews and 10 contract tree crews and city tree crews with oversight by city crew leaders; documenting work, establishing traffic control plans and traffic setup with assistance from PW traffic crews on Arterial roads
- Categorize work in the 311 system that is high risk so we can prioritize work
- Meet with City of Salem GIS and IT staff with goal to develop an asset management system to track and document work more effectively and provide work that could be documented for insurance and FEMA records
- Train staff on using GIS asset management cell phone technology
- Work with PGE and Salem electric to restore power
- Three emergency response tree crews available for high priority work, including experienced climbers, rigging specialists, high lift and heavy equipment operators
- Establish wood waste, log and debris management and agreements with Marion Co



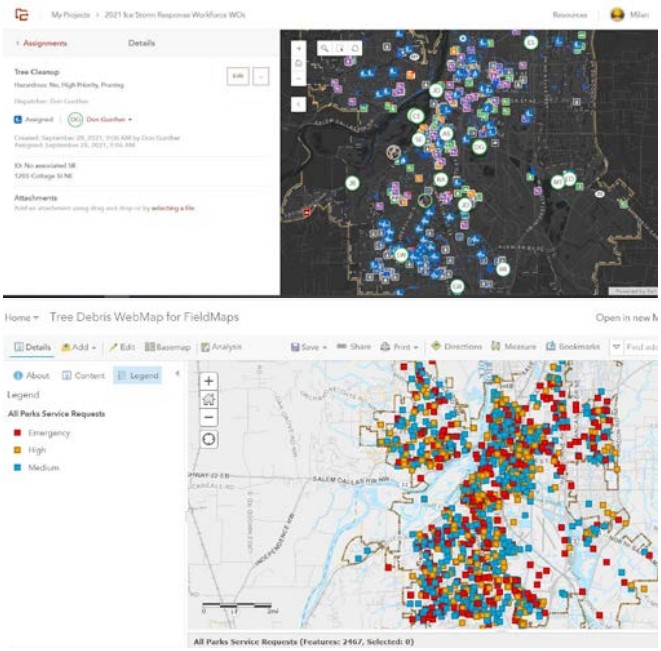
Long-Term Planning Storm Work

- Use of 10 contract tree crews and Urban Forestry city crews to shift focus from groundwork to Aerial bucket work to mitigate hazards on arterial streets then eventually work block by block in neighborhoods using Survey 123 to document damage and Workforce to identify hazard locations
- Continue using Urban Forestry crew and two experienced contract tree crews to focus on high priority trees
- Once streets are cleared shift contract tree crews to assist Parks operations cleanup efforts in high use park areas

Ice Storm Response

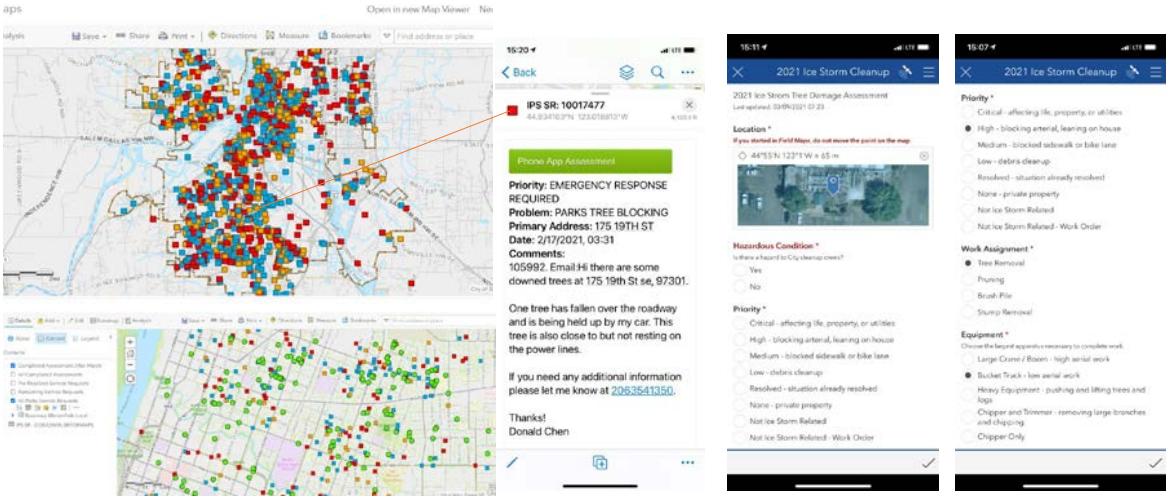
GIS FieldMaps, Survey 123 &Workforce

- By week two over 2000 Ice Storm related Urban Forestry service requests were in the 311 system, and without the use of the IPS system, we were in desperate need of assistance in tracking, documenting and understanding where ice storm damage remained after the initial cleanup.
- Working with the City of Salem GIS & IT Departments along with city management staff, a GIS based asset management
- By using cell phone/tablets in ArcGIS Survey 123 App and Workforce App as well as web-based version to manage this work remotely through the City of Salem Maps homepage.
- Using this technology, we were able to start documenting for FEMA and insurance providers the level of damage that existed at each location and could attach that work to Service Requests with Subsequent work orders that could be managed by the urban forester.
- Photo documentation of work before and after as well as documenting equipment used while work was ongoing was essential in recording for FEMA



Service Requests on web-based GIS FieldMaps

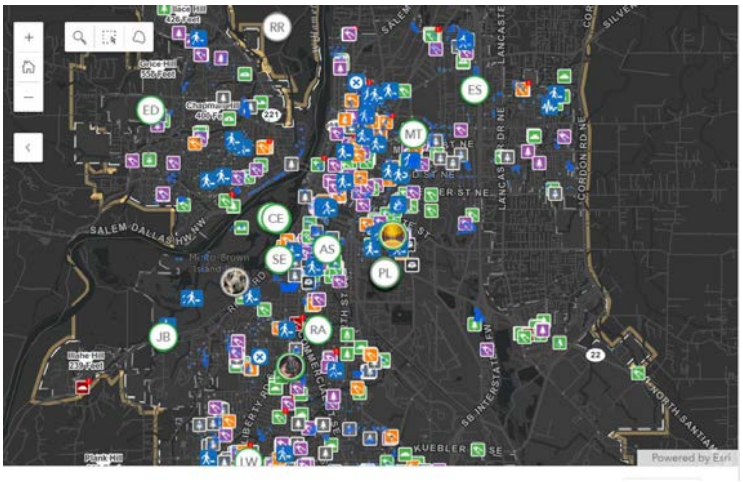
- Service Requests were updated to show priority as High, Medium, Low by city dispatch staff
- Once locations are assessed they are updated with pictures and description of job with equipment needs and priority listed, Service requests change icons once they have been assessed

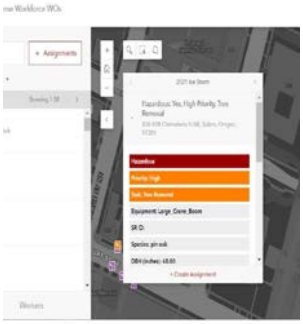


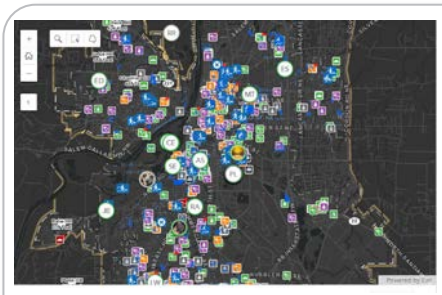
Ice Storm Response

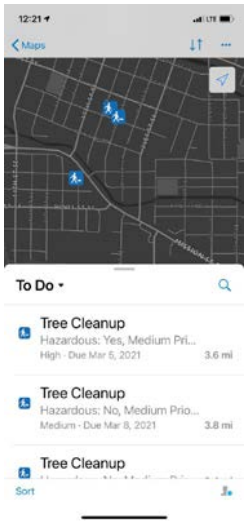
Workforce Ice Storm Map

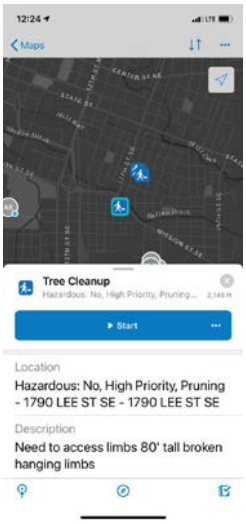
- Service Requests from the FieldMap and Survey 123 assessments are geo-located on the Workforce map.
- They can be assigned to individuals and can be closed in the field. Photos can be taken, and equipment recorded for each job
- Dispatcher/supervisor web-based map for assigning work orders

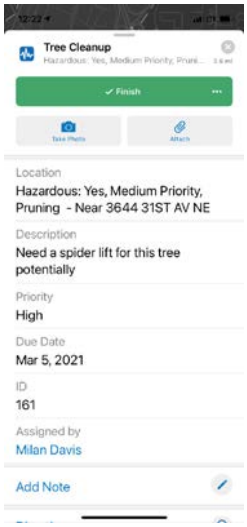








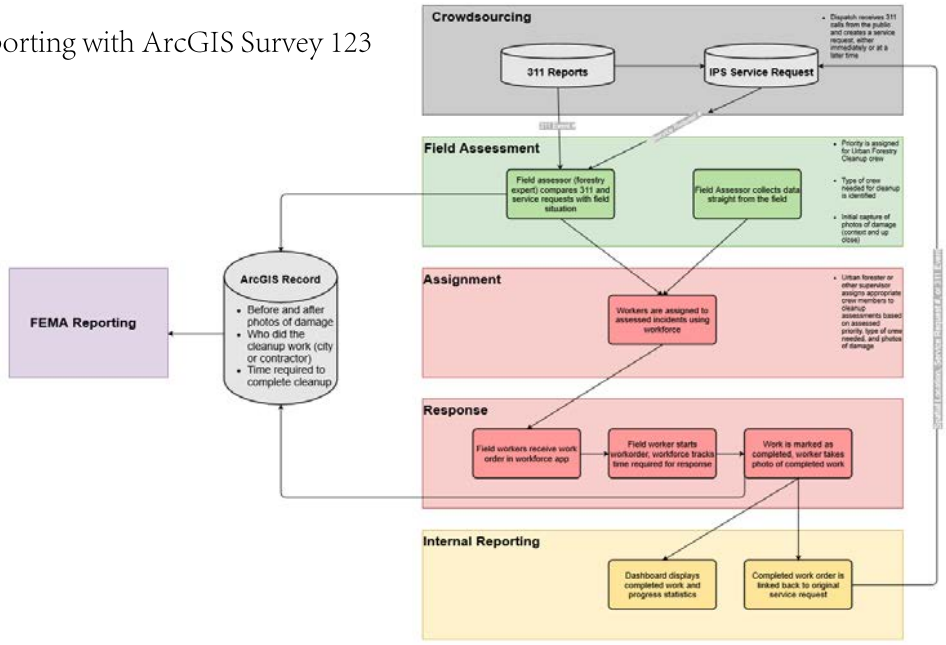




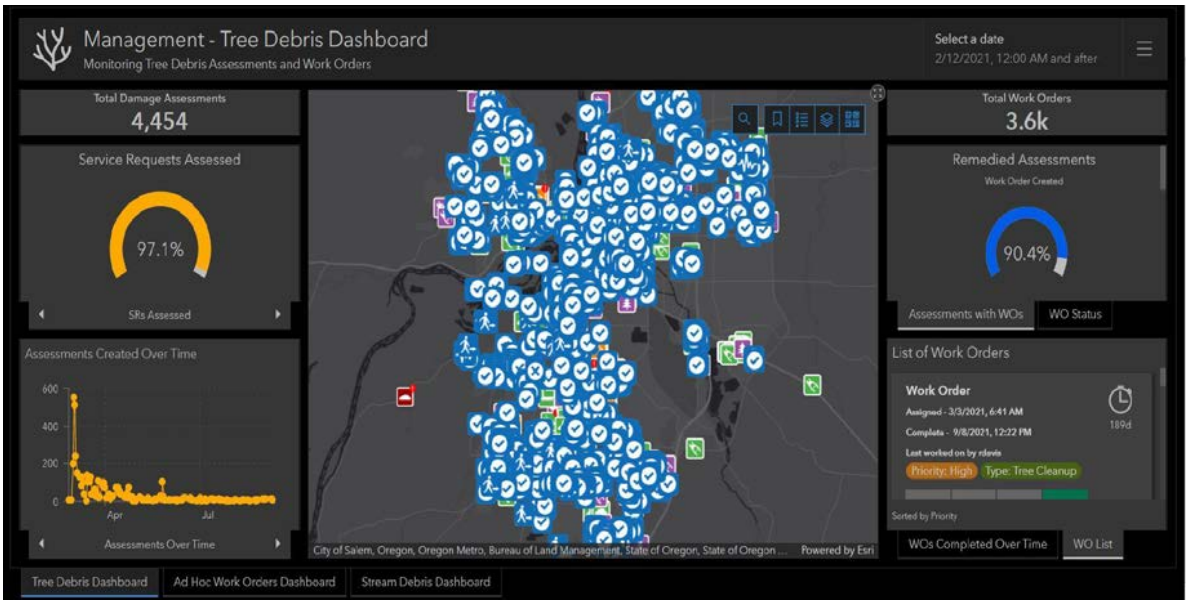
Smartphones & tablets used in the field by work crews

Ice Storm Response

FEMA Reporting with ArcGIS Survey 123

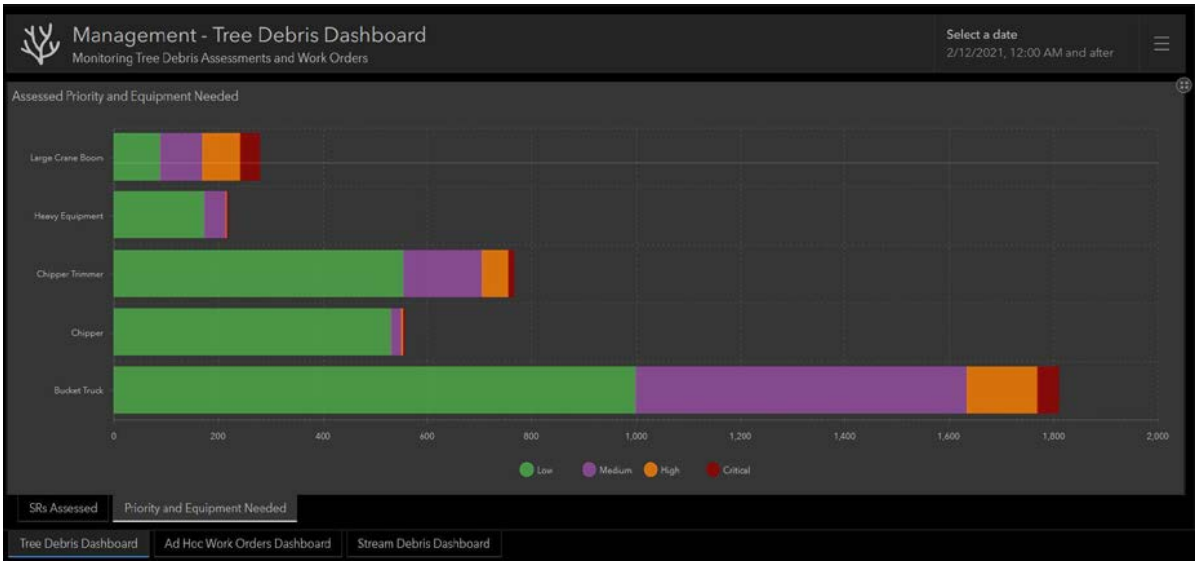


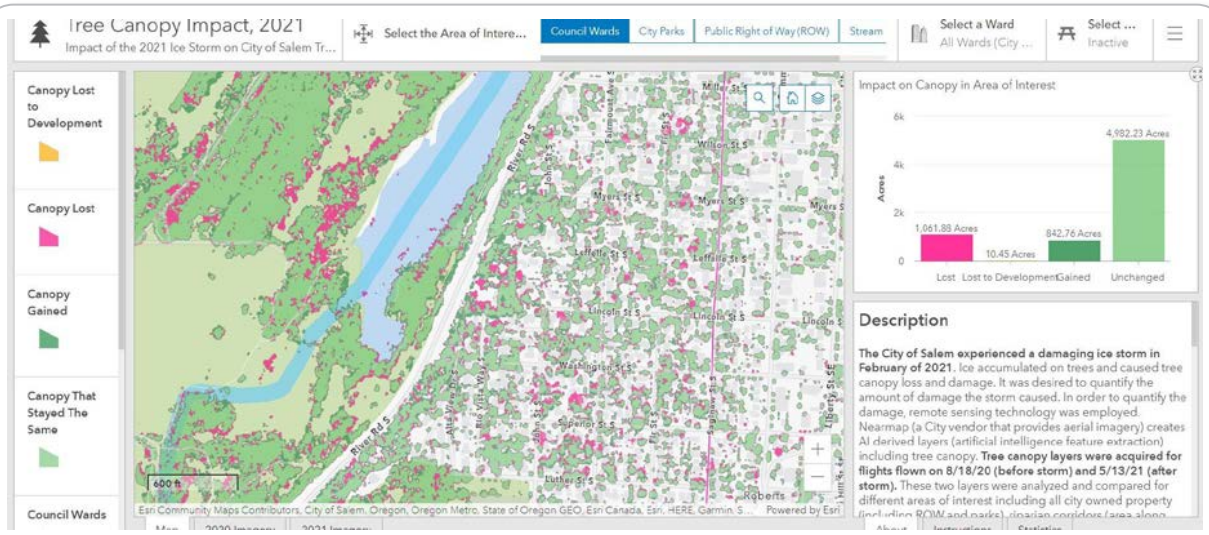
Workforce Management Dashboard to track completed work



Ice Storm Response

Workforce Management Dashboard





GIS Tree Canopy Analysis

The City of Salem experienced a damaging ice storm in February of 2021. Ice accumulated on trees and caused tree canopy loss and damage. It was desired to quantify the amount of damage the storm caused. In order to quantify the damage, remote sensing technology was employed. Nearmap (a City vendor that provides aerial imagery) creates AI derived layers (artificial intelligence feature extraction) including tree canopy. Tree canopy layers were acquired for flights flown on 8/18/20 (before storm) and 5/13/21 (after storm). These two layers were analyzed and compared for different areas of interest including all city owned property (including ROW and parks), riparian corridors (area along streams and creeks), and council wards.

Summary statistics were created for each area of interest. It is not possible to quantitively discern the exact amount of damage due to the ice storm directly. Differences in camera angle (Nadir vs Oblique), seasonal variation in canopy, as well as private citizen impacts on private property contribute to canopy changes that cannot be isolated. It is certainly safe to infer that the ice storm reduced canopy, but it is impossible to tell by exactly how much. We do know that the canopy is less in May 2021 than it was in August 2020.

Ice Storm Response

Storm Debris Collection

- As part of a larger effort with the PW Operations Division debris was collected from city streets and drop off sites were created by the EOC
- Up to four dump sites were created to allow residents to dump off any tree debris during the peak of the cleanup this was a major undertaking. Pictured right is the Woodmansee Park debris pile
- An agreement with Marion Co allowed City of Salem to dump any woody debris at Browns Island Dump for over a month
- Marion Co Juvenile Department took all large wood to be processed for milling or firewood to support their program
- Next two slides highlight wood reuse by Marion Co Juvenile Department

Marion County Juvenile Department firewood & log splitting operation

Ice Storm Response

Ice Storm Wood waste Marion Co Juvenile Facility

Woodchip collection sites

- Multiple locations were established to create wood chip drop locations for tree crews
- Through discussions in the EOC some of these sites were opened to the public with great success
- Woodchip management was a heavy burden on city staff and is an issue we are still dealing with currently
- Woodchips are being used on city trails, in parks planting beds, for tree mulch rings and for roadbeds in some natural areas
- There were fire hazards over the high index heat days and lessons learned from how to properly store properly

Ice Storm Response

Ice Storm Remediation
Future planning and foresight

- Stump removal and site preparation
- Currently working on a contract for bid
- Selecting trees
  - Improved storm resiliency
  - Consider drought tolerant, extreme heat tolerant species
  - Native trees/ Western trees for added ecological benefits
- Methods for water conservation and soil building

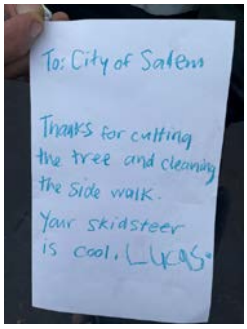
Collaboration & Teamwork

Using the resources available within COS Public Work Department and working closely with contractors to complete work we could not do without assistance.

City of Salem PW Stormwater Crew assisting with their Gradal machine and dump trucks

Ice Storm Response

Pictured L to R Parks operations assisting in log clean up and drop off. Mt View tree service assisting in tree work over 80+ with the use of their track lift.



Ice Storm Response

Total assessments by Parks and PW staff using GIS tracking technology:
5010 ice storm related assessments of damage
4127 work orders created
3686 plus work orders completed
1000+ trees removed and counting

Thru June 1st totals kept for FEMA purposes:
During the storm event over 18,500 tons of storm debris were removed from the city streets by contractor crews and Parks and PW staff.
Wood chip debris hauled by contact crews- 3900 tons
Wood chip debris hauled by city tree crew- 753 tons
Woody debris hauled by city tree crews – 3553 tons
Woody debris hauled by Parks staff- 1729 tons
Woody debris hauled by PW staff- 4303 tons
Woody debris hauled by Stormwater staff- 3400 tons

Current Urban Forestry Tree Crew staff:
Milan Davis- Urban Forester, Supervisor
Tom Bradley- Project Coordinator, ISA certified arborist, TRAQ certified, inspections on field map
Don Gunther- CDL Tree Trimmer, ISA certified arborist, TRAQ certified, inspections on field map, directing contract crews in Workforce
Jacob Downer- CDL, Tree Trimmer, rigging specialist, TA 67ft high lift operator, directing crews using Workforce
Evan Doney- CDL, Tree trimmer, rigging, climber, bucket operator, directing crews using Workforce
Mike Tyler- CDL, Tree Trimmer, 54ft boom truck operator, climber
Cesar Estrada - PMO , ground support, smartphone inspections, updating Workforce

Current Parks staff assisting in ice storm cleanup
Dan Silberstein- Project Coordinator, CDL, heavy equipment operator, rigging and tree removal
Jeff Ball- PMO CDL driver, Chip truck and 14k dump trailer
Sam Welsh- PMO, heavy equipment operator, skid steer and Vermeer log grapple
Jason Bailey PMO ground support / driver
Priscilla Lopez, Project Coordinator, directing contract crews using Workforce

Seasonal Staff assisting in tree cleanup
David Kahawai Jr- ground support/ dump bed driver, assisting crew with Workforce
Jacob Rybloom- ground support/ dump bed driver, assisting crew with Workforce

Ice Storm Response

Friends of Trees Event Calendars 2021

Plant Trees in Salem

Individuals and families are invited to plant trees for a healthier Salem!
Saturday mornings, November 2020 - May 2021, 9am-1pm
Social Distancing and Masks Required, for more information on how Friends of Trees is Following COVID-19 guidelines visit: Friendsoftrees.org/covid

For more information about events please visit: FriendsofTrees.org/Salem

NOV
11/14/20
McKay School Park
Arbor Day Event
NE Salem

DEC
12/5/20
Fisher Road Park
NE Salem

JAN
1/9/21
McKay School Park
NE Salem

FEB
2/13/21
Lansing Park
NE Salem

MAR
3/6/21
McKay School Park
NE Salem

MAR
3/20/21
Hammond School Park
NE Salem

APR
4/3/21
Northgate Park
Arbor Day Event
NE Salem

MAY
5/1/21
McKay School Park
Tree Care Event
NE Salem

With the support of and in partnership with:

Clean Streams CLEAR CHOICES
FRIENDS of TREES
CITY OF Salem AT YOUR SERVICE Public Works Department

COMMUNITY TREE SURVEY RESULTS 2021

DECEMBER 2021

CITY OF SALEM
Prepared by EnviroIssues

CITY OF Salem AT YOUR SERVICE
Public Works Department
APWA ACCREDITED AGENCY

Background

The City of Salem contracted with EnviroIssues to conduct a community tree survey. The purpose of the survey was to better understand residents' relationships with trees – primarily in low-canopy areas –, specifically related to barriers that might keep property owners from planting more trees, and incentives or information that might encourage them to plant trees.

Salem has been working to increase its tree canopy through various tree plantings in parks, in schools, and along streets and streams. The City provides limited planting on private lands. To reach the shade canopy goal, the City is considering assisting homeowners with tree planting opportunities on their properties. The City will use survey findings to help build programs and policies that are responsive to residents' needs and concerns and help increase the tree canopy in these areas to meet the tree canopy goal of 28 percent by 2030.

Methodology

As Salem seeks to increase its tree canopy, reaching out to property owners in the low-canopy areas of town was of primary importance for a number of reasons, including equity, environmental justice, and the urban heat island effect in low canopy areas. Low canopy for this survey is defined as any area below the City's goal of 28 percent canopy using Census block groups.

They survey was distributed specifically to property owners in low-canopy areas via mailed postcards. To boost the total number of responses, the survey was also distributed to the general public online. Having data from the general public also provided a comparison point to see if responses from low-canopy areas differed significantly from the wider population.

The survey was available for low-canopy respondents from October 1 – October 25, 2021 and to the general public online from October 11 – October 25, 2021. The survey was available in English and Spanish.

Identifying low-canopy respondents

The survey aimed to gather responses from two main groups within low-canopy areas:

- Homeowners and property owners in low-canopy areas of the City whose properties also include enough room for a mature tree.
- Homeowners and property owners with large lots that have less than 28 percent canopy. These individual properties may also be outside of the designated 'low-canopy' block groups.

A database of 15,313 properties that met these criteria was provided by the City. Specific parameters included:

- Areas with less than 28 percent canopy cover by census block group.
- Parcels with Potential Planting areas of over 700 square feet.
- Residential zoning (RD, RH, RA).

The goal was to receive a total of 600 responses from this group which would have yielded a 4 percent margin of error. Estimating a response rate of about 10 percent, a random sample of 6,092 addresses was selected from the full database. These addresses received a postcard invitation to take the survey.

Respondents could access the survey through a QR code or URL link printed on the postcard. A gift card incentive was also publicized on the postcards to encourage participation. Ten $50 Visa gift cards were distributed to randomly selected participants who had opted in for the raffle after the survey had concluded.

A total of 232 confirmed postcard responses were received equaling a response rate of 3.8 percent. For a population of 15,313 in the original database, a sample size of 232 yielded a 6.4 percent margin of error with a 95 percent confidence level. This means that if the survey were to be repeated, results would fall within plus or minus 6.4 percent of the original survey results 95 percent of the time.

To enable comparison of data across the city's geography, postcard addresses were segmented using a customized distribution link and QR code for each U.S. Census block group that was included in the random sample. Out of a total of 64 block groups in the original database, 60 were included in the random sample. Having data available by block group will allow the City the flexibility to map and compare responses by neighborhood and/or geographic area.

A summary of results for both quantitative and qualitative survey questions is included in this report.

Online engagement

To increase the total survey responses, another unique distribution survey link was posted and publicized online for the general public to participate. This survey link was posted to the City of Salem's Facebook account, distributed via the City's electronic newsletter, and to community partners and leaders.

The City's Facebook post received 62 reactions, 46 comments, and was shared 27 times. A total of 249 confirmed online responses to the survey were received.

In addition to several people taking the online survey via the online link, the comments from the Facebook post also provided useful information. Unlike the survey where respondents were asked to comment about trees on their private property, users on Facebook volunteered general information about City-owned trees. The themes of responses below are ranked from most common to least common with the last seven items receiving one comment each.

- Lack of maintenance for city trees
- Property damage from trees
- Wrong or nuisance trees
- Love planting trees
- More fruit trees
- Wants to plant trees, but City has not responded
- Update City tree policy to lessen risks
- Stop the massive cut downs for houses and apartments
- Safety concerns
- Water shortage, no new plantings

Additional responses

In addition to the confirmed low-canopy responses generated by the postcard mailing and responses from online engagement, 196 responses came from unknown sources. These responses still include valid

and valuable survey data; however, it is not known if the responses came from either the postcard or online outreach. This is likely due to adblockers on individual's browsers that strip source metadata from the survey.

Survey data from these responses is included in the "General public" category in the Results section of this report.

Results

Table 1 shows the response rate for the different sources of survey data. Of the total 677 responses received, 232 were from confirmed low-canopy areas, 249 were from the online outreach, and 196 could not be confirmed due to the stripped metadata.

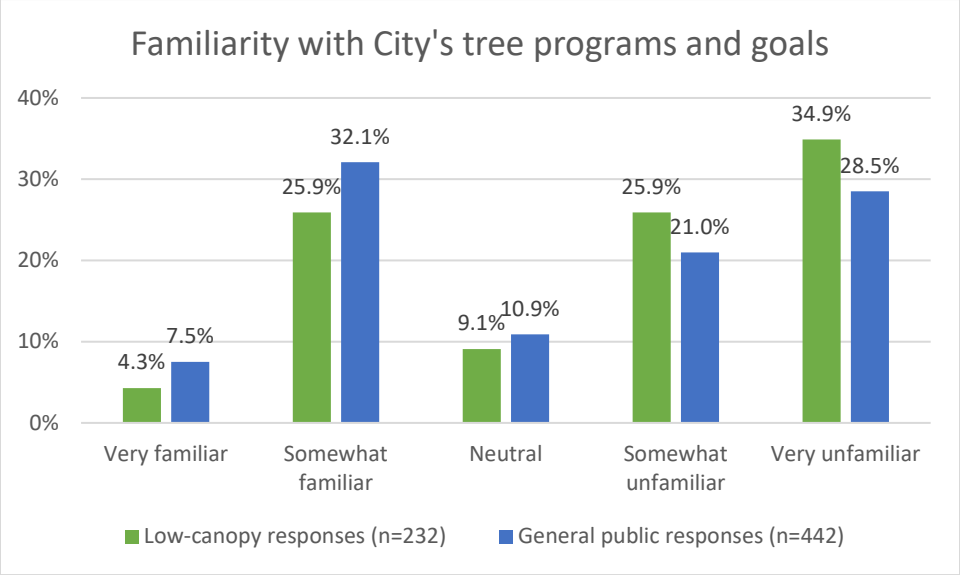
Table 1. Survey responses by source.

Response source	Responses	Percentage of total responses
Confirmed low-canopy responses	232	34.3 percent
Confirmed online responses	249	36.8 percent
Additional responses	196	29.0 percent
Total responses	**677**	

Tree-related questions

The following graphs represent two sections of the population surveyed: 1. The low-canopy area, and 2. the general public responses. The exceptions are for the two open-ended questions where only the responses from the low-canopy participants are noted due to budget constraints limiting the time that could be spent on the manual categorization of written comments.

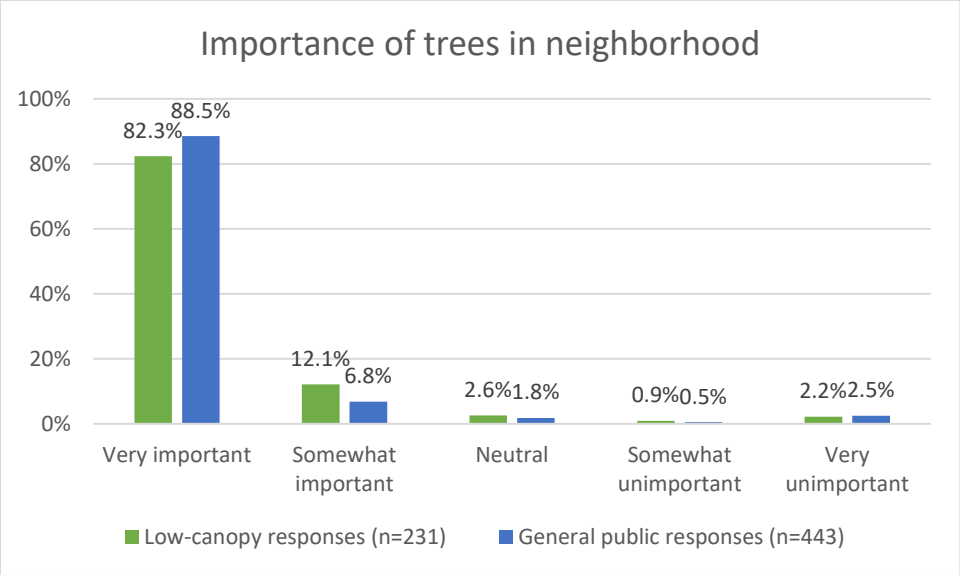
Question 1 - How familiar are you with the City's tree programs and goals to increase tree canopy?



30.2 percent of low-canopy respondents were very familiar or somewhat familiar with the City's tree programs and goals to increase the tree canopy. 60.8 percent were somewhat unfamiliar or very unfamiliar.

General public respondents were slightly more familiar, but 49.5 percent were still unfamiliar with tree programs and goals.

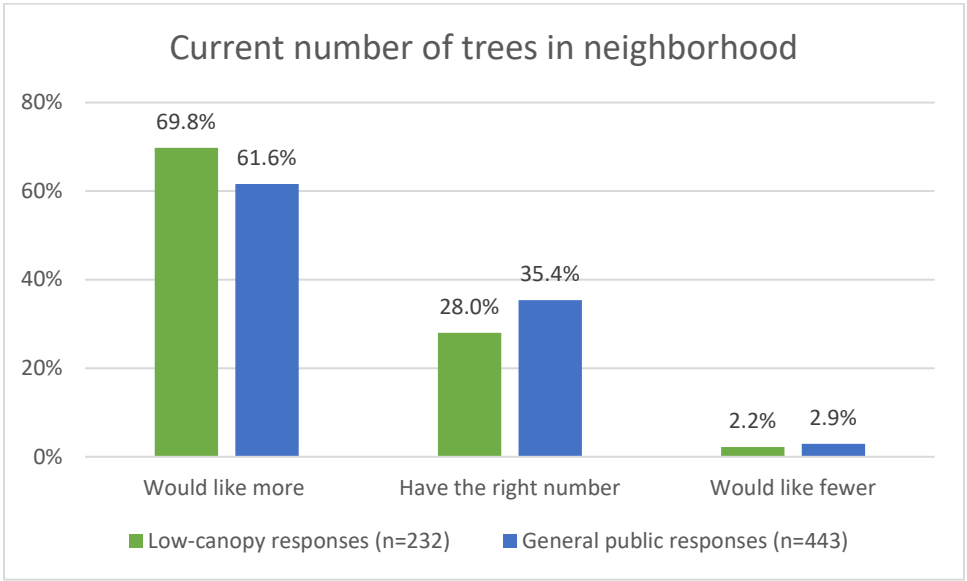
Question 2 - How important is it to have trees in your neighborhood?



The large majority of low-canopy respondents, 94.4 percent, said that having trees in their neighborhoods was very important or somewhat important.

General public responses were similar. 95.3 percent of general public respondents said that having trees in their neighborhoods was very important or somewhat important.

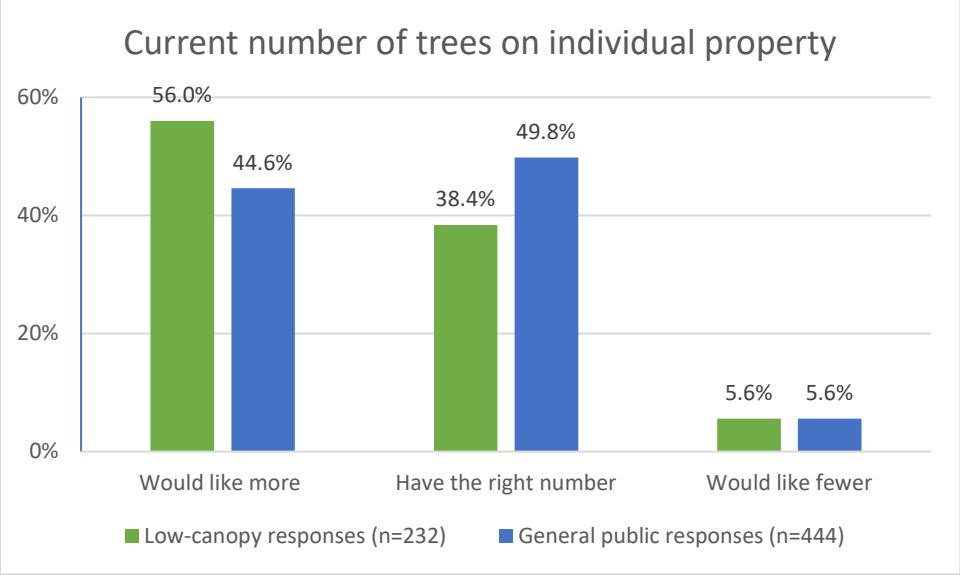
Question 3 - What do you think about the number of trees that are currently in your neighborhood?



The majority of low-canopy respondents, 69.8 percent, said that they would like more trees in their neighborhoods. 28.0 percent said they had the right number and 2.2 percent said they would like fewer trees.

General public responses were similar. Slightly fewer, 61.6 percent, said they would like more trees in their neighborhoods. Slightly more, 35.4 percent, said they had the right amount and about the same number of respondents, 2.9 percent, said they would like fewer trees.

Question 4 - What do you think about the number of trees on your specific property?

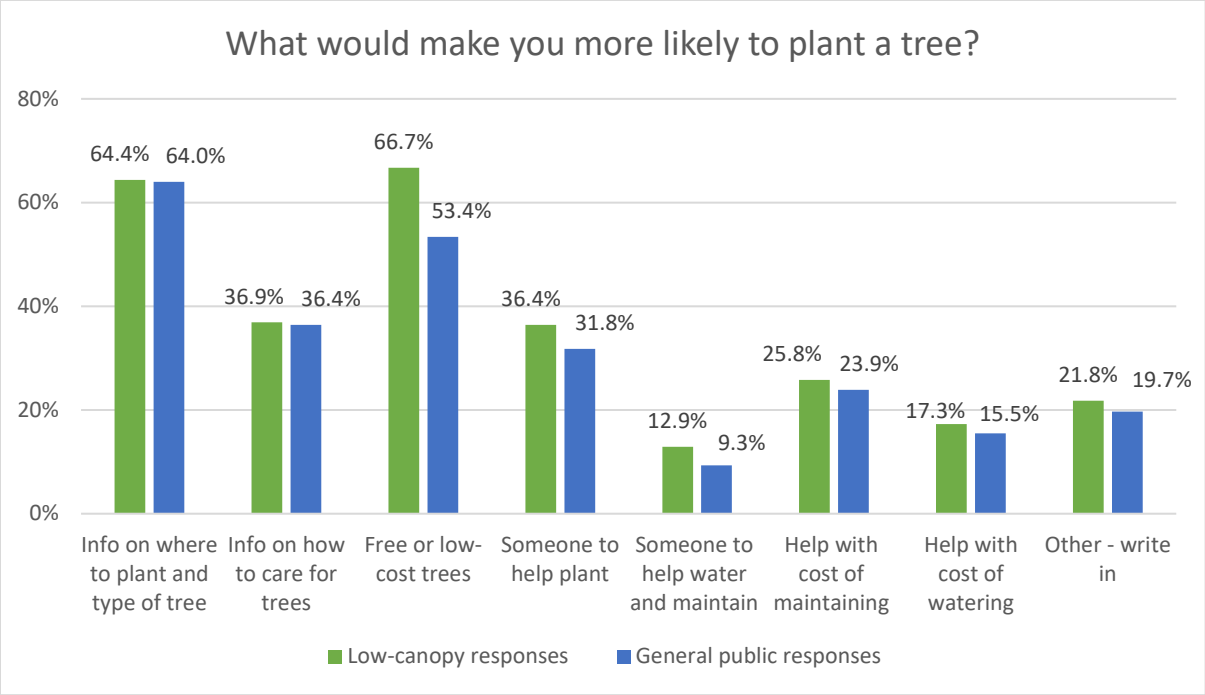


Over half of low-canopy respondents, 56.0 percent, said they would like more trees on their specific properties. 38.4 percent said they had the right number and 5.6 percent said they would like fewer trees.

General public responses were similar, however, slightly fewer, 44.6 percent, said they would like more trees on their properties. Slightly more, 49.8 percent, said they had the right amount and about the same number of respondents, 5.6 percent, said they would like fewer trees.

Salem Tree Survey Summary

Question 5 - What would make you more likely to plant one or more trees on your property?



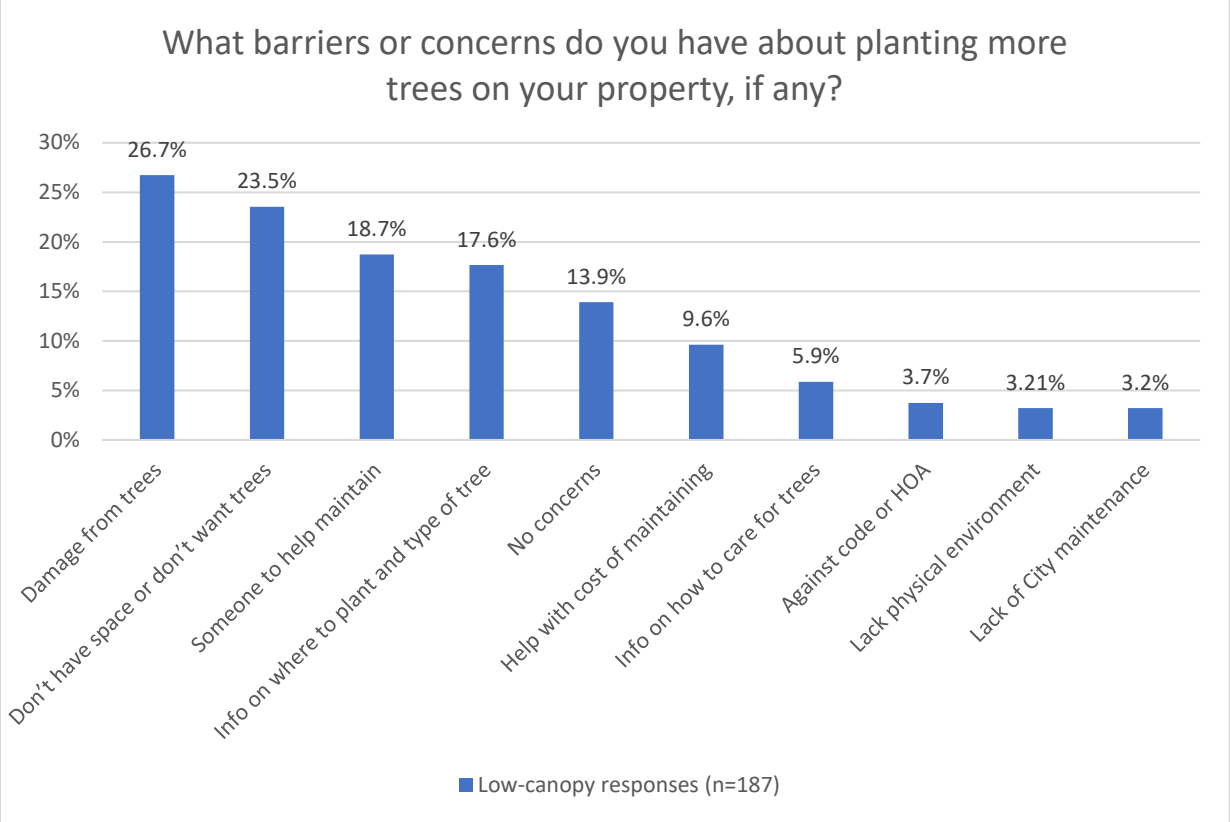
The top two selections for low-canopy respondents about what would make them more likely to plant one or more trees on their properties were free or low-cost trees and information on where to plant and what kind of trees would work best. The third and fourth options were information on how to care for trees and someone to help plant the trees.

General public respondents selected the same top four options; however, their top two selections were switched compared to low-canopy respondents. They selected information on where to plant and what kind of trees as their first option followed by free or low-cost trees.

Other – write in (Low-canopy responses only):

- No space for trees.
- Help maintaining trees.
- Multiple respondents specifically wanted edible trees such as fruit or nuts to also provide food.
- Some called for the City to better manage street trees when they cause damage to sidewalks, become overgrown or are damaged.
- Some asked for information on how to care for existing trees.
- One person specifically asked for a rebate program.
- One person noted they would like to have consensus with their neighbors since street trees will affect them all once grown.

Question 6 - What barriers or concerns do you have about planting more trees on your property, if any?



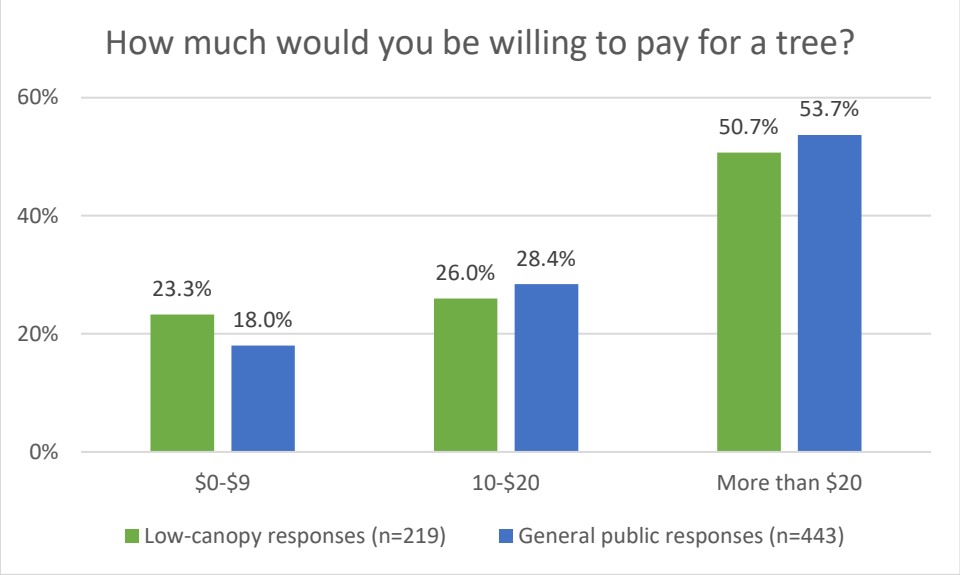
Only low-canopy responses were categorized for this summary due to budget considerations limiting the time that could be spent on the manual categorization of written comments. The most common concerns were related to damage associated with trees, lack of space or adequate conditions for trees, and the amount of ongoing maintenance for the trees.

In order of most to least common:

- **Damage from trees:** concerns about trees damaging sidewalks, utilities, homes etc.
- **Don't have space or don't want trees:** concerns about not having space for a tree or didn't want one because it would block sunlight to other plants or for aesthetic reasons.
- **Someone to help maintain:** concerns about the amount of maintenance required like raking leaves and trimming.
    - Some noted they are physically disabled and unable to maintain or plant a tree.
- **Info on where to plant and type of tree**: concerns about not knowing the best kind of tree to choose or the best location to plant one.
    - Some specifically wanted more information on choosing native trees.
- **No concerns:** Had no concerns.
- **Help with cost of maintaining:** concerns with the cost of the tree itself and cost of maintaining.
- **Info on how to care for trees:** concerns about having a lack of knowledge about how to maintain a tree, i.e. trimming, fertilizing and what to do about pests.
- **Against code or HOA:** concerns for going against city codes or HOA rules.

- **Lack physical environment:** concerns that their property doesn't have the proper physical environment for a tree to survive, i.e. amount of sunlight, drainage or soil quality.
- **Lack of City maintenance:** concerns that the City is not doing its part to care for current trees and fixing the damage they can cause.

Question 7 – How much would you be willing to pay for a new tree on your property?

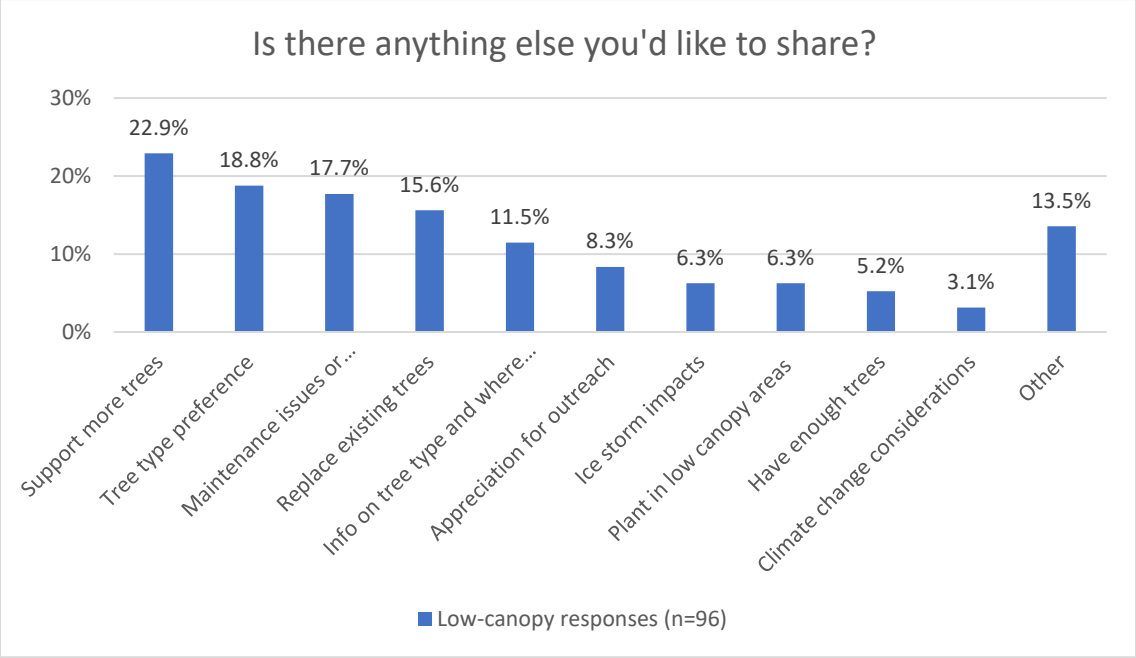


About half of low-canopy respondents, 50.7 percent, said they would be willing to pay more than $20 for a tree. 26.0 percent said they'd be willing to pay between $10-$20 and 23.3 percent said they'd pay between $0-$9.

General public responses were very similar. Slightly more respondents, 53.7 percent, said they would be willing to pay more than $20 for a tree. 28.4 percent said they'd be willing to pay between $10-$20 and 18.0 percent said they'd pay between $0-$9.

Salem Tree Survey Summary

Question 8 - Is there anything else you would like to share?



Only low-canopy responses were categorized for this summary due to budget considerations limiting the time that could be spent on the manual categorization of written comments. The most common comments expressed general support for more trees, preferences for specific types of trees, and concerns or suggestions around maintenance issues.

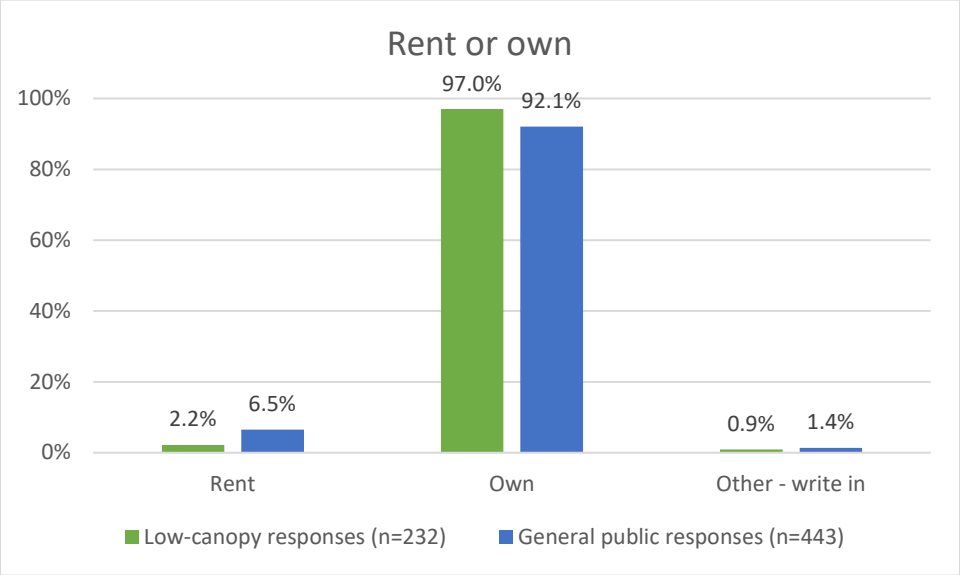
In order of most to least common:

- **Support more trees:** general support for more trees, both on personal properties and city-owned property.
- **Tree type preference:** requests for specific types of trees, primarily fruit trees. Some requests for deciduous and colorful trees.
- **Maintenance issues or suggestions:** concerns about trees causing damage to sidewalks, trimming, and proximity to powerlines. Requests for the City to ensure that new trees do not cause more issues.
- **Replace existing trees:** requests for information about or help with replacing aging or dead trees on their properties.
- **Info on tree type and where to plant**: requests for additional information about types of trees and where to plant them.
- **Appreciation for outreach:** gratitude for the information provided and outreach efforts.
- **Ice storm impacts:** requests and support for replacing trees lost or damaged by the 2021 ice storms. One comment noting the cost associated with clearing damage from the storms.
- **Have enough trees:** content with the current amount of trees on their properties or neighborhoods.
- **Plant in low-canopy areas:** requests to focus on areas that currently have fewer trees.

- **Other:** a variety of comments including ensuring new trees are able to adapt to climate change, using trees as buffers between modes of transportation or for sound dampening, and concerns about spending personal and City resources on trees.

Demographics

Question 9 – Do you or a family member own or rent your property?



The large majority of low-canopy respondents, 97.0 percent, own their properties. 2.2 percent rent and 0.9 percent selected 'other.'

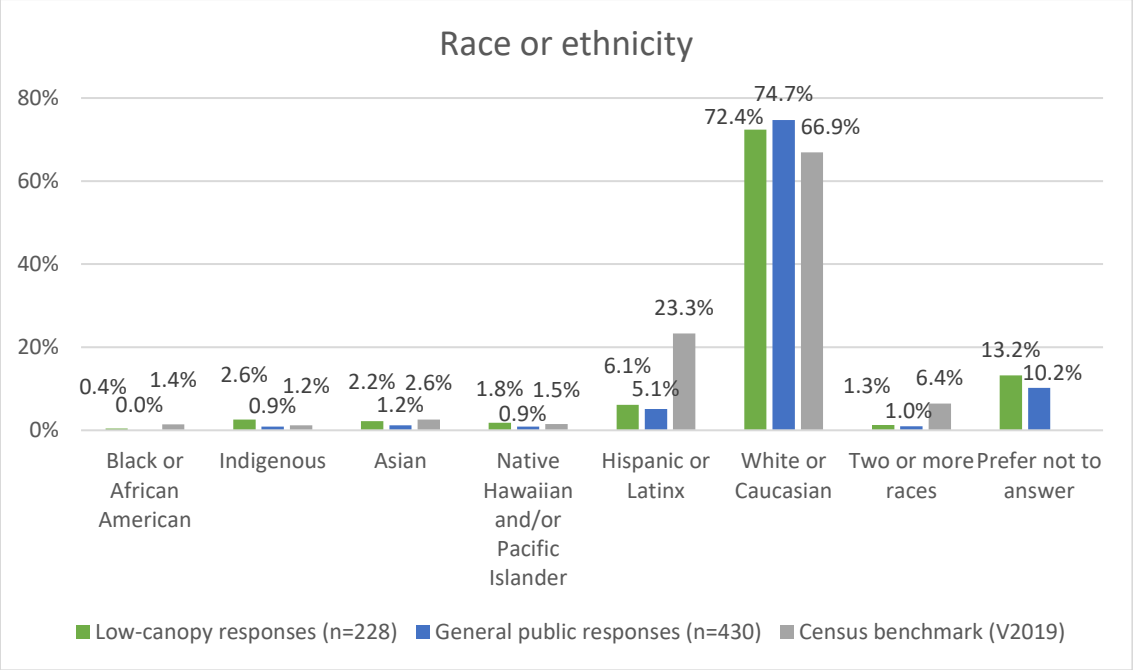
The large majority of general public respondents, 92.1 percent, own their properties. About 6.5 percent rent and about 1.4 percent selected 'other.'

Question 10 – What is your property address?

Respondents were given the option to enter their property addresses. If requested, this data could be used by the City to map responses by geography.

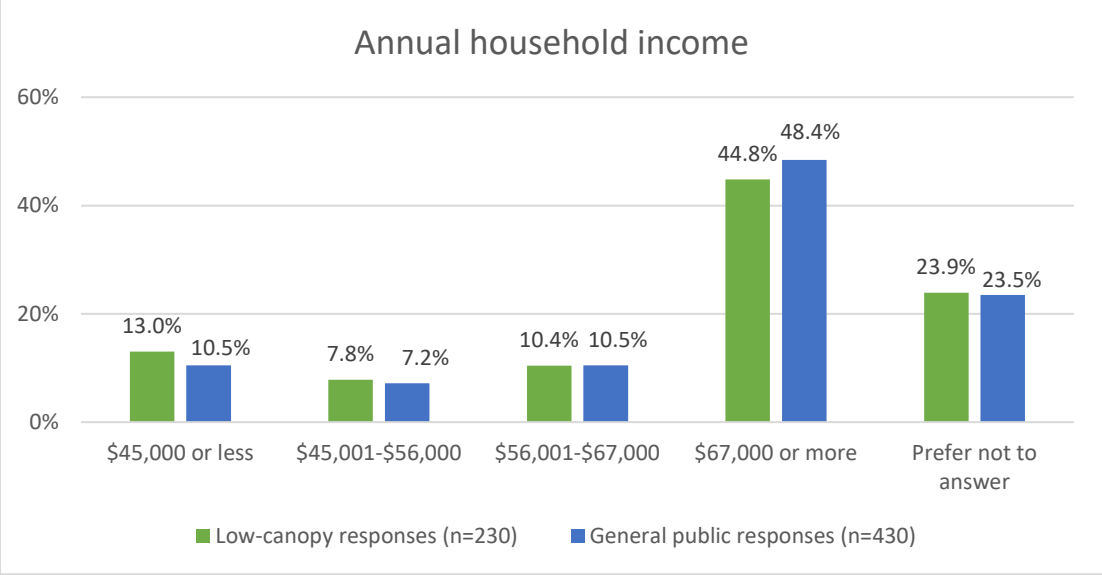
See Appendix A for raw data.

Question 11 – What is your racial or ethnic group?



Census categories were used to collect race and ethnicity data to be able to compare against benchmark data. White or Caucasian respondents were overrepresented in the low-canopy and general public responses. Races and ethnicities of color were underrepresented, especially people who identify as Hispanic or Latinx.

Question 12 – What is your average annual household income?



The U.S. Department of Housing and Urban Development defines low-income households as those, "whose incomes do not exceed 80 percent of the median family income for the area." The median household income for the City of Salem is $55,920. For the purposes of this survey, respondents who indicate an income of $45,000 or less (80 percent of the median income) can be considered low-income. 13.0 percent of low-canopy respondents and 10.5 percent of general public respondents selected this category.

The City could consider cross tabulating survey results by income to see if responses differ significantly for respondents with an income of $45,000 or less, however, results would not be very representative of a larger population because of the low sample size. Only 30 low-canopy and 45 general public responses were in this category. For a more meaningful comparison, more data would have to be collected.

Conclusions

Overall, survey respondents were largely in favor of trees and about half said they would like more trees on their properties. Additional observations from survey data include:

- Most people are not familiar with tree programs or canopy goals.
- Vast majority think it's very important to have trees in neighborhoods.
- Most people would like more trees in their neighborhoods.
- About half of respondents would like more trees on their property. Most of the remainder are happy with their current trees. Only a small amount want fewer trees.
    - About 10 percent more low-canopy respondents want more trees on their properties compared to general public respondents.
- The top incentives for people to plant more trees were to provide free or low-cost trees, especially for low-canopy areas, and information about where to plant and what kind of trees would be best.
    - Information about how to care for trees and someone to help plant the trees were secondary options.
    - Financial assistance with maintenance or watering were lesser priorities for low-canopy or general public respondents, but still made up 20-25 percent of responses.
- The most common concerns were related to damage associated with trees, lack of space or adequate conditions for trees, and the amount of ongoing maintenance for the trees.
- Hispanic and Latinx communities were significantly underrepresented in the survey respondents.

Additional observations from the survey process include:

- Response rates to community surveys are difficult to predict. One of the best ways to boost responses is by following up directly via mail, door-to-door fliers or canvassing. Additional budget and resources to do so were not available for this survey effort, however, this may be considered for future outreach, especially for pilot programs in a more focused geographic area, such as a specific neighborhood.
- Ad blockers strip pre-coded data. Some of the unconfirmed source responses likely correspond to postcards sent to low-canopy addresses but cannot be specifically linked.

Discussion

Survey results indicate that there is a general lack of knowledge about the City's tree programs and the City's tree canopy goals. Although this study sought to gain information regarding areas of low canopy, the trends between the general public and low-canopy areas did not show great variation. Consequently, there are many opportunities to reach out to the public and ask them to participate in growing the tree canopy to meet the City goal of 28 percent by 2030.

Recommendations for future outreach

Recommendations for future outreach include focusing on educational campaigns to help people make informed decisions about the types of trees that are appropriate for different needs and the best areas to plant them. The City might also consider a pilot program that provides free or low-cost trees and help with planting them in a specific geographic area before investing in city-wide efforts.

Additional recommendations include:

- Move forward with creating and providing educational materials about appropriate trees and places to plant and assisting homeowners with tree planting opportunities.
- Equity lens: Focus efforts in low-canopy areas that also have the highest populations of communities of color and/or low-income households.
    - Because the low-canopy respondent data was pre-coded by block group, the City has the option to map data by block group and identify the specific areas that have the most interest in trees (Question 4).
        - Sorting and contacting specific respondents with the address data they provided in the survey is ***not recommended*** since this was not explicitly stated as a possible use and may be seen as an intrusive practice. Respondents were informed that location data would help the City identify differences in concerns or opinions in different neighborhoods, but were not told that it may be used to contact them. Contact information was provided only for the gift card drawing and should not be used for any additional focused outreach.
    - Build relationships with communities of color to increase engagement and gather responses that are more representative of the overall population of Salem residents, especially the Hispanic and Latinx community that makes up about a quarter of the City's population. Partnering with community organizations and leaders can complement translation and incentive efforts such as raffle opportunities. Communities of color may not have a trusting relationship with government agencies and would be much more likely to engage with pilot programs or information coming from trusted leaders who are integrated in their communities.
        - Provide information via channels and places where communities are already gathering. Expand outreach beyond official City social media channels and e-newsletters.
        - Boots on the ground outreach, such as distributing fliers or door-to-door canvassing, can also be very effective. Seek opportunities to table at events located in the neighborhoods where you want to plant. Partner with trusted

community leaders to host a meet and greet event to promote the program and establish relationships.

- Focus on educational materials, both about the program and to address specific elements of the incentives and barriers to planting trees (Questions 5 and 6). Many people are unfamiliar with the City's tree programs and goals, but there is a lot of interest in the topic.
    - Work with community organizations and leaders to develop outreach materials that are culturally competent and tailored to specific communities.
    - Leverage the City's partnership with Friends of Trees or other environmental organizations to share existing information or adapt information about appropriate tree types and locations.
    - Include the opportunity for people to provide feedback to gauge whether outreach efforts are effective and if there is interest in additional or different information.
- Conduct pilot program beginning in 2022 and assess the level of participation. The pilot program will provide free street trees or low-cost front yard trees to residents in a specific neighborhood (i.e. NOLA in 2022). This work will be leveraged through the City's existing contract with Friends of Trees. Follow it up with help planting and information on maintenance.
    - Work with community organizations and leaders to develop outreach materials that are culturally competent and tailored to specific communities.
- Consider a pilot volunteer program to help with raking and collecting leaves for people who are not able to or are concerned with maintenance.
- Promote programs with local businesses.
    - Consider partnering with local garden and home improvement stores.
    - Make and provide signs, brochures, and tree tags to place on trees that have information about City programs.