



Parks Recreation and Trees

CSEP Meeting

February 28th, 2019

Review: The Benefits of Canopy





130,000 people
38% canopy cover
30,000 street trees

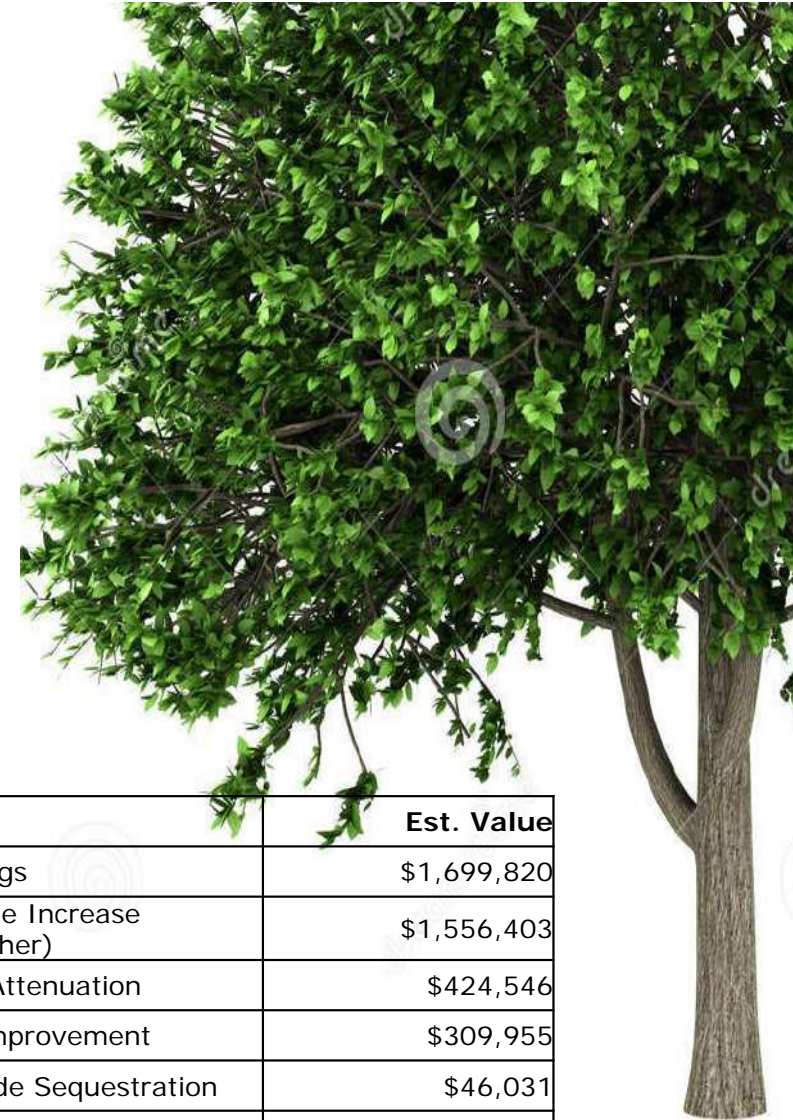
Trees are a public good

Each tree benefits not only the adjacent property, but the neighborhood and the larger community.

From air quality to traffic calming these benefits expand beyond the physical location of the tree.

As part of the tree inventory maintained by our partners at URI, some of these benefits have been quantified.

Not included in this analysis are the reduced medical costs from cleaner air, and the reduced costs in crashes from slower vehicle speeds.



Benefit	Est. Value
Energy Savings	\$1,699,820
Property Value Increase (Aesthetic/Other)	\$1,556,403
Stormwater Attenuation	\$424,546
Air Quality Improvement	\$309,955
Carbon Dioxide Sequestration	\$46,031
Total	\$4,036,795

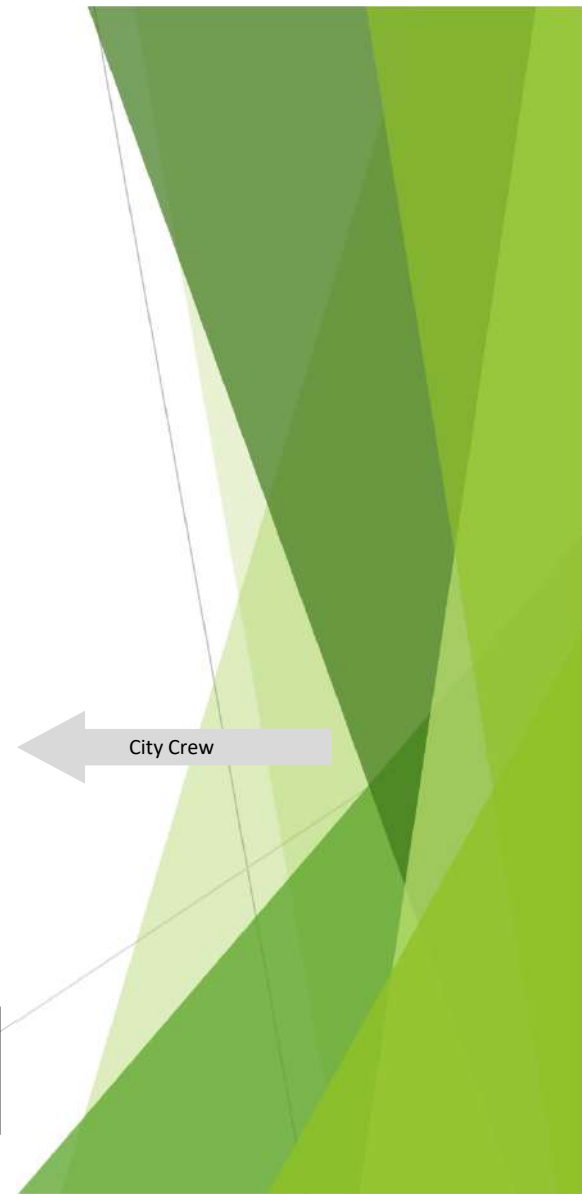
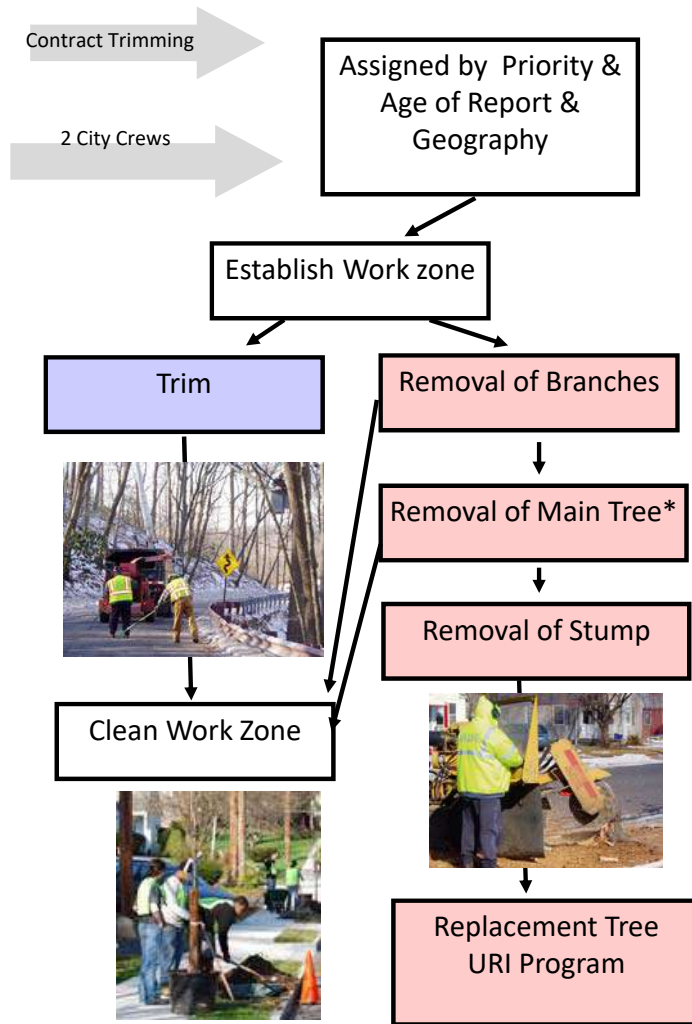
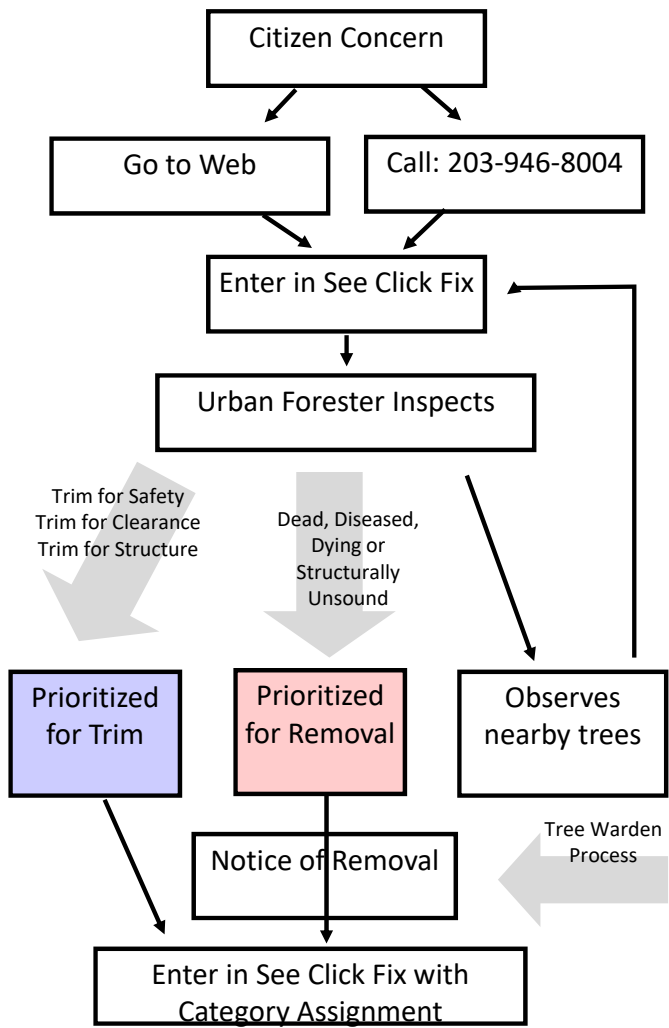
URI Partnership: Planting & More

- ▶ Street Tree Inventory - First completed 2007; updated annually for new plantings and removals (30,000 trees)
- ▶ Tree Planting ('right tree-right place')
- ▶ Structural Pruning (5 yr)



Review: Tree Workflow





ISA Basic Tree Risk Assessment Form

Client _____ Date _____ Time _____
 Address/Tree location _____ Tree no. _____ Sheet _____ of _____
 Tree species _____ dbh _____ Height _____ Crown spread dia. _____
 Assessor(s) _____ Tools used _____ Time frame _____

Target Assessment

Target number	Target description	Target protection	Target zone			Occupancy rate 1 - rare 2 - occasional 3 - frequent 4 - constant	Practical to move target?	Restriction practical?
			Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1								
2								
3								
4								

Site Factors

History of failures _____ Topography Flat Slope _____ % Aspect _____
 Site changes None Grade change Site clearing Changed soil hydrology Root cuts Describe _____
 Soil conditions Limited volume Saturated Shallow Compacted Pavement over roots _____ % Describe _____
 Prevailing wind direction _____ Common weather Strong winds Ice Snow Heavy rain Describe _____

Tree Health and Species Profile

Vigor Low Normal High Foliage None (seasonal) None (dead) Normal _____ % Chlorotic _____ % Necrotic _____ %
 Pests/Biotic _____ Abiotic _____
 Species failure profile Branches Trunk Roots Describe _____



Diagnosing Tree Problems

- ▶ We make careful observations. We must not only focus on the obvious symptoms, but also look for hidden ones
- ▶ We need to know the name and species of the particular tree and its characteristics
- ▶ To diagnose and treat a tree problem, one must determine its cause
- ▶ Very often there is no single cause of a tree problem
- ▶ Trees are exposed to long term factors that influence them to decline
- ▶ Such factors include old age, unfavorable climate, soil moisture, compaction and air pollution

Diagnosing Tree Problems



- ▶ Some events in the tree life may provoke a more rapid decline
- ▶ These include insects (EAB), disease (DES), salt pollution, mechanical injury(MVA), and weather events
- ▶ Just because the tree has an insect, wood decay or root decay, this does not mean that it is the whole cause of the problem, we are aware of these complications to do a good job diagnosing the tree

Diagnostic Procedures

- ▶ Inspection of leaves, leaves is the best starting point because they are most accessible and are first to show the effects of any abnormal condition
- ▶ Inspection of trunk and branches, should follow leaf inspection. We look for sunken areas, holes, scars, branches with no leaves, galls, suckers, and discoloration of bark
- ▶ Inspection of roots, root injury and root disease need to be always considered. We look for girdling roots, winter injury, rodent damage, gasoline, oil, salt pollution, weed killer pollution, sidewalk construction, poor soil, poor drainage and changes in grade

ASH TREE IDENTIFICATION

Across the U.S., ash trees (*Fraxinus spp.*) are under attack by the emerald ash borer (EAB), an invasive insect that attacks and kills all native species of ash trees. The information below will help you properly identify ash trees.



Ash trees have an opposite branching pattern, meaning that branches are directly across from each other.



Ash seeds are paddle shaped and occur in clusters. Seeds will typically remain on trees until late fall or early winter.

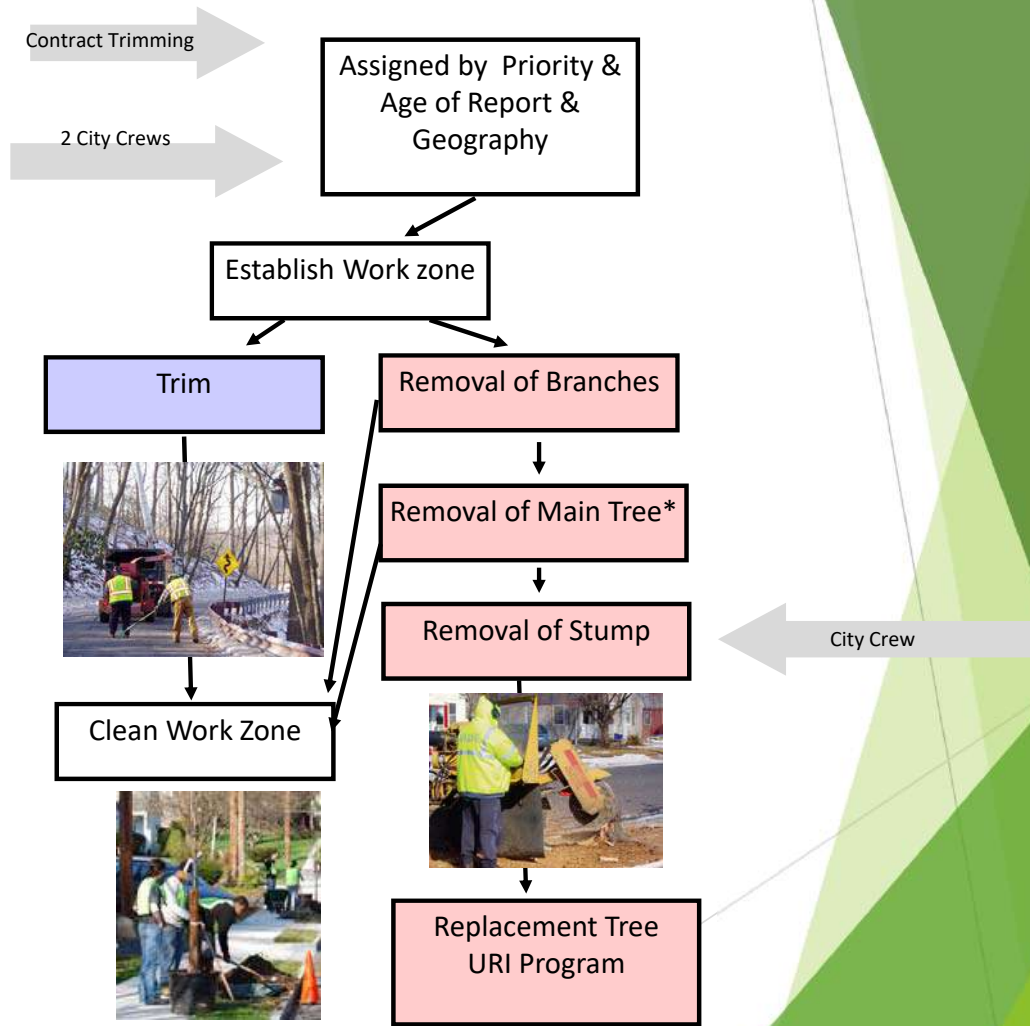
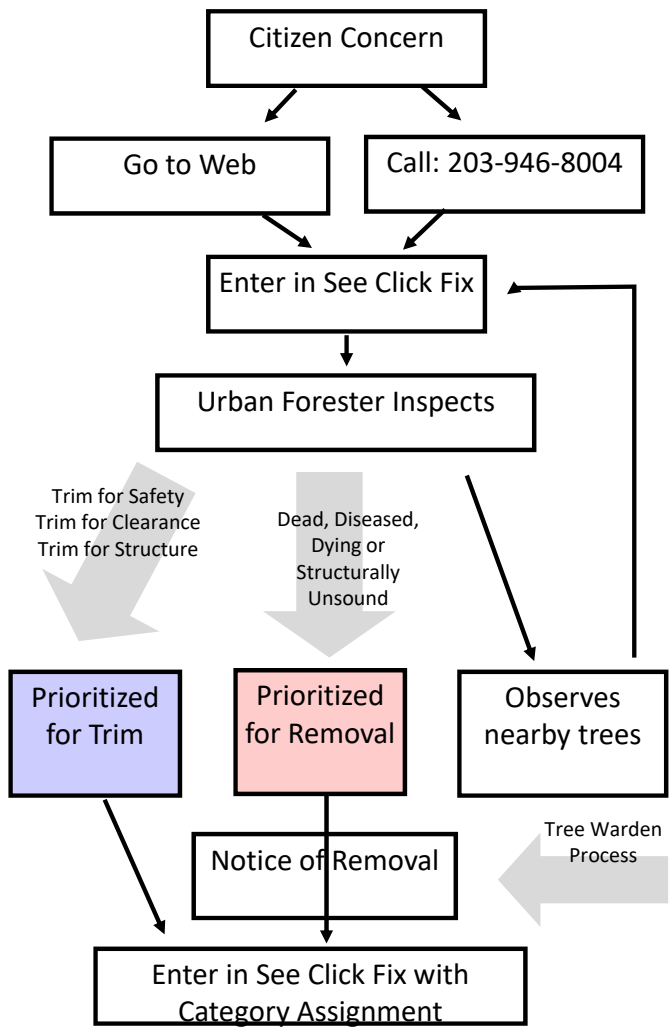


Ash leaves are compound and typically consist of 5-11 leaflets. The edges of the leaflets may be smooth or toothed.



On mature ash trees, the bark has a distinct pattern of diamond-shaped ridges. Younger ash trees have smoother bark.

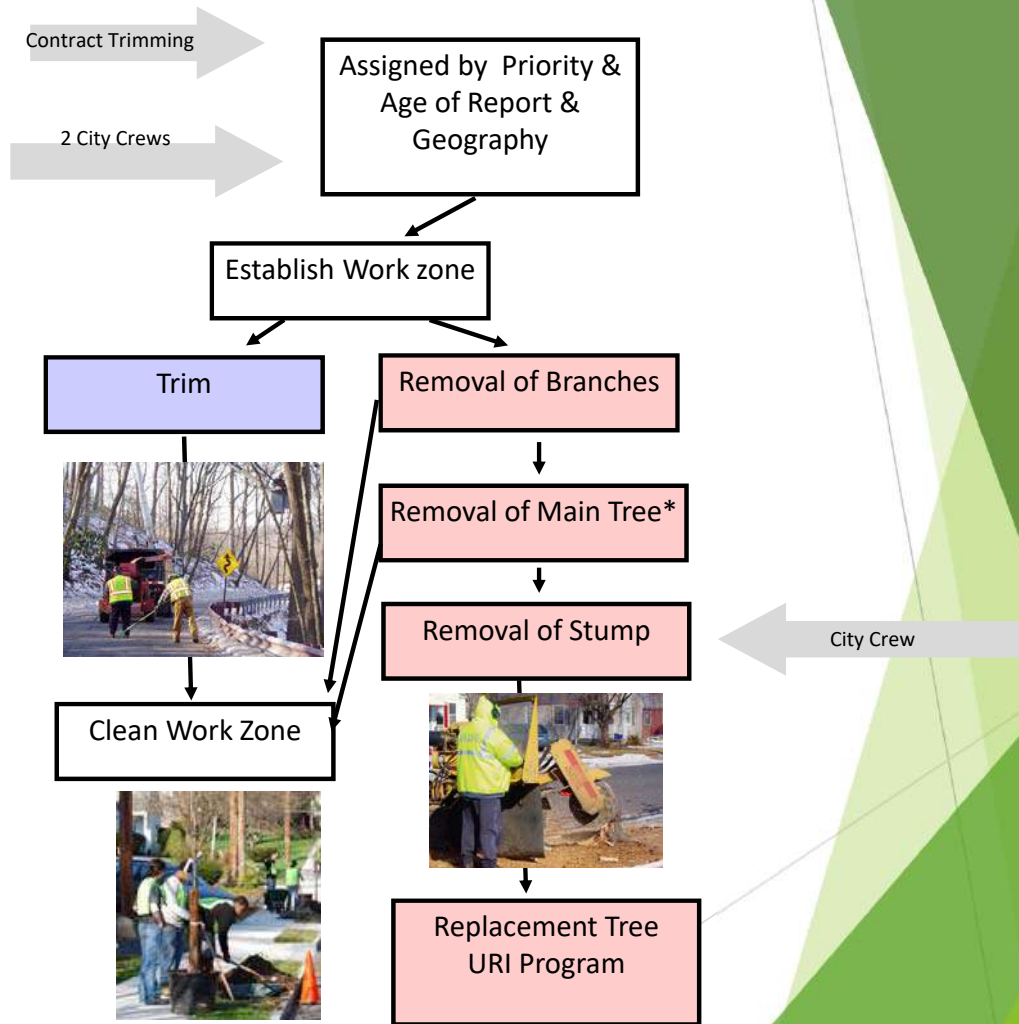
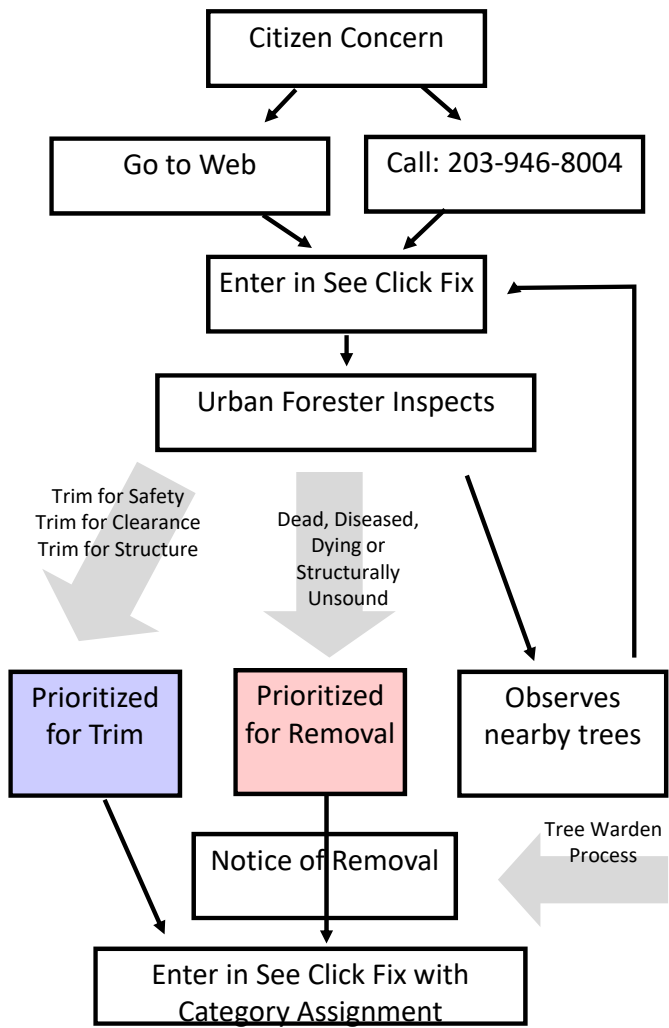
Background photo: Keith Kanoti, Maine Forest Service, Bugwood.org. Ash photos: Nebraska Forest Service.



Row Labels	Count of Category
Ash Tree	356
Elm Tree	52
Engineering Tree Request	27
Ground Work	1
Hanging Branches	1
Removal - Priority 1	119
Removal - Priority 2	87
Removal - Priority 3	20
Storm Work: Make Safe	2
Stumps	1021
Tree Debris	16
Trees to Be Inspected	899
Trimming - Priority 1	439
Trimming - Priority 2	318
Trimming - Priority 3	96
Trimming For Cameras, Lights or Signs	17
Trunks	33
UI - Trimming Request	18
UI-Removal Request	12
Grand Total	3534

*Data collected 2.19.18





Understanding Tree Trimming





Safety In Tree Trimming:

- ▶ Crew safety is important
 - ▶ Crews must establish a safe workzone
 - ▶ They are often working around electrical wires and need to be EHAP certified
 - ▶ Many hazards may exist within the dropzone - area where branches may fall. These can include buildings, sidewalks and roadways.

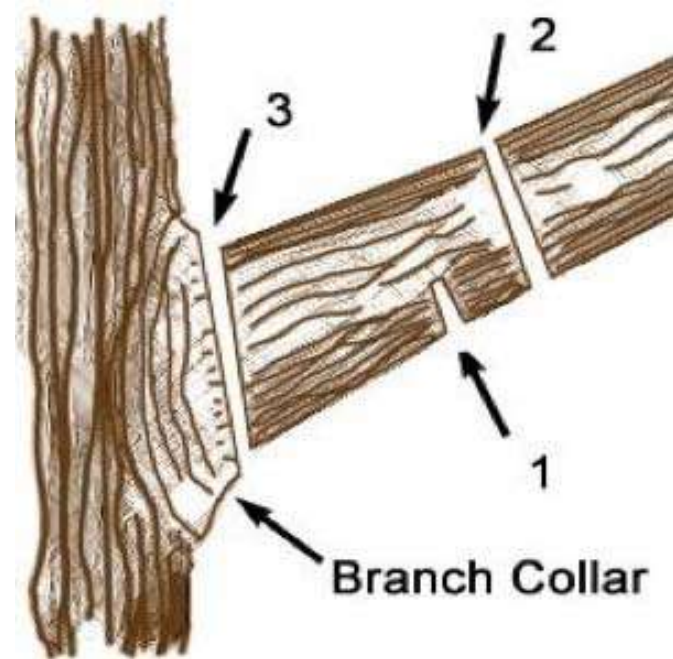
Safe Drop Zones

- ▶ The drop zone is the area where a limb is likely to fall from a cut
- ▶ Proper cutting technique allows the trimmer to control the fall
- ▶ Generally speaking, the drop zone is anywhere beneath the trees limbs
- ▶ When there are hazards in the drop-zone like buildings, sidewalks, roadways you must further control with
 - ▶ Signage, flaggers, groundmen
 - ▶ Roping of cut limbs



Getting the Right Cut:

- ▶ Proper pruning techniques are important in tree trimming
- ▶ Poor cuts can lead to disease or can cause structural problems with trees
- ▶ Tree crews must be under the broad supervision of a licensed arborist
- ▶ ANSI 300 Standard



Bad vs Good Tree Trimming:

Bad



Good



How long does it take to remove a tree?

- ▶ On average 1-3 days depending on the size, area of the tree, etc.



Challenges in Managing Tree System

The background of the slide is white with abstract green geometric shapes. On the right side, there is a large, complex shape composed of several overlapping triangles and polygons in various shades of green, ranging from light lime to dark forest green. A thin, light-colored line extends from the bottom left towards the top right, passing through the green shapes. On the far left edge, there is a small, solid green triangular shape pointing towards the center.

Emerald Ash Borer

- ▶ Beetle infestation of Ash Trees
- ▶ 355 remaining in inventory
- ▶ Continuing to “triage” the ash trees to integrate into overall removals

Row Labels	Count of Category
Adopted Tree	9
Monitor Tree	139
Removal Priority 1	187
Removal Priority 2	18
URBAN FORESTER City of New Haven	2
Grand Total	355





Dutch Elm Disease

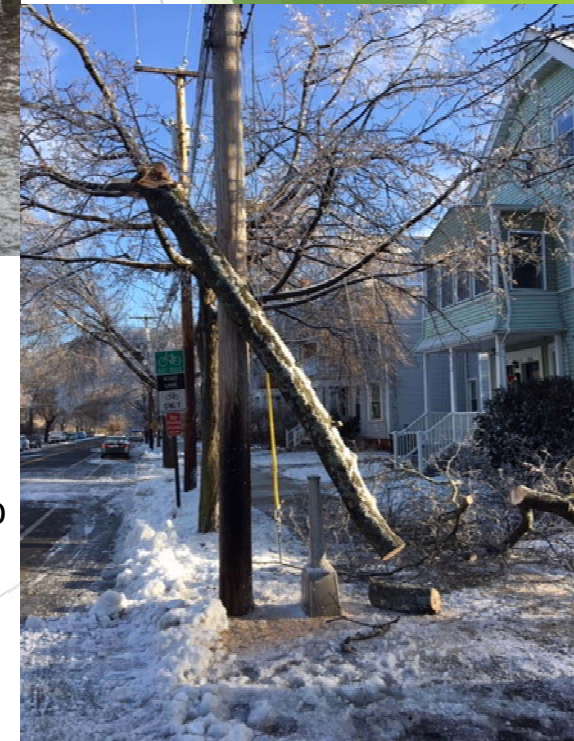
- ▶ Invasive fungus that impacts Elm Trees
- ▶ Newer cultivars of elms are resistant
- ▶ Spreads through beetle activity and through roots
- ▶ To reduce spread only trimmed between November and April
- ▶ Progresses very quickly through the tree

Row Labels	Count of Category
70ft Truck (Priority 1 Removal - special resources)	1
Removal Priority 1	23
Trimming Priority 1	13
Trimming Priority 2	11
Trimming Priority 3	1
Trimming: Cameras, Lights, Signs (1A)	3
Grand Total	52

Weather Events

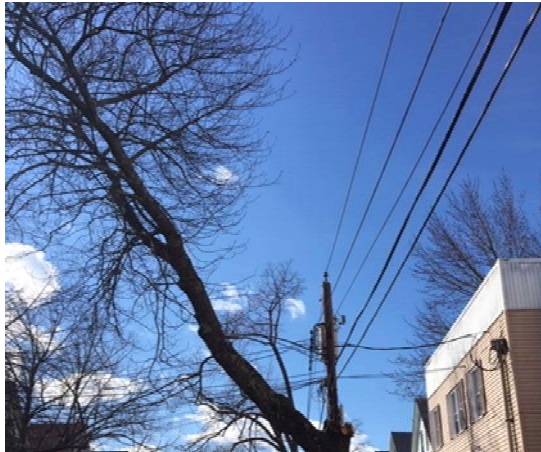
- ▶ October 2017
- ▶ January 2018
- ▶ February 2018
- ▶ March 2018
- ▶ May 2018
- ▶ October 2018
- ▶ President's Day, January 2019
- ▶ Monday, February 25, 2019

Each storm can result in weeks of work - by way of example, the President's Day Storm was a 150+ incident event, we still have at least two large jobs from that storm to complete and previously spent 2.5 weeks on cleanup. We still have work to complete from the May storm - downed trees within parks.



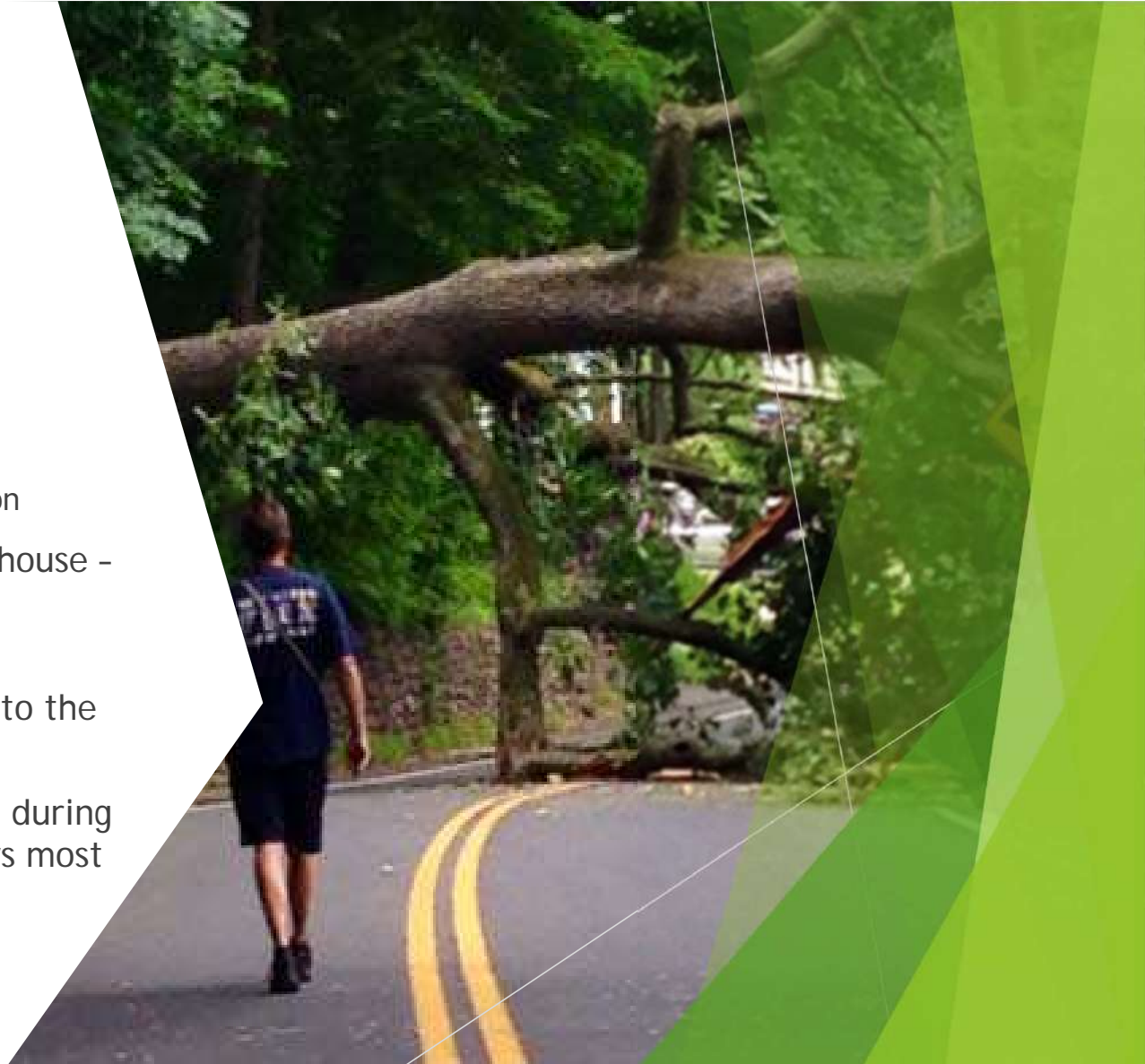
Working with Utilities

- ▶ UI is called by PSAP when a tree emergency involves wires
- ▶ We contact UI for assistance on removals or trims where there is significant wire involvement or direct contact
- ▶ UI completes direct contact trimming as of right
- ▶ Enhanced Tree Trimming Program (ETP) - requires Tree Warden and Abutting Property Owner Approval
- ▶ Currently UI is performing ETP under guise of direct contact Trimming
- ▶ Considerable amount of staff time required to ensure the UI does not abuse powers and destroy city trees



Limited by time and resources.

- ▶ Existing staff
 - ▶ 4 Tree Trimmers
 - ▶ 1 Groundman
 - ▶ 1 Heavy Equipment Operator
 - ▶ 1 Urban Forester - Inspections/supervision
- ▶ The City does not have a 70ft bucket in house - larger trims require outside contractor capacity to complete
- ▶ Finding a contractor may take time due to the demand from surrounding towns
- ▶ Schedule 12 Weeks of contract trimming during hurricane season - could only get 3 crews most weeks - requested 4



Additional Challenges Faced

- ▶ Cars parked in way that need to be moved
- ▶ Potential to create additional damage through removal/trimming process
- ▶ Distracted pedestrians traveling into work zone
- ▶ Staff vacancies
 - ▶ Illness
 - ▶ Injury
 - ▶ Retirement



Current & Systematic Backlog



Backlog History: Where Did it Come From

- ▶ The City adopted See Click Fix as its workorder management system for trees in 2012/13
- ▶ On average over 2,300 requests are reported each year.
- ▶ On average our budgeted capacity can address approximately 1,700 requests - each year is different as a removal requires more resources than a trim.
- ▶ Please note there is a lag in our data entry as we rely on interns.

Row Labels	Count of Created Year	Acknowledged	Closed	Duplicates	Acumulated Backlog
2008	14	5		1	13
2009	62	16		2	73
2010	115	15		1	187
2011	213	6		2	398
2012	2,735	752	2,325	13	795
2013	2,546	1,234	2,567	130	644
2014	2,566	1,490	1,764	123	1,323
2015	2,051	1,490	1,243	46	2,085
2016	1,454	523	907		2,632
2017	2,654	849	2,401		2,885
2018	1,989	926	1,165		3,709
2019	262	145	437		3,534
Grand Total	16,661	7,451	12,809	318	

Closed without Acknowledge	8,304
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	Oct-18	Feb-19	Change
Created	16,107	16,661	554
Closed	12,253	12,809	556
Duplicates	318	318	0
Acknowledged	2,331	2,635	304
To Be Inspected	1,205	899	(306)
Total Outstanding	3,536	3,534	(2)

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To Be Inspected	1,205	899	(306)
Total Outstanding	3,536	3,534	(2)

What resources do we have:

Resources

- ▶ City Staff
 - ▶ 4 Tree Trimmers
 - ▶ 1 Groundman
 - ▶ 1 Heavy Equipment Operator
 - ▶ 1 Urban Forester - Inspections/supervision
- ▶ Capital Contracts
 - ▶ 500,000 trimming/removals
 - ▶ 225,000 planting
 - ▶ 25,000 young tree pruning

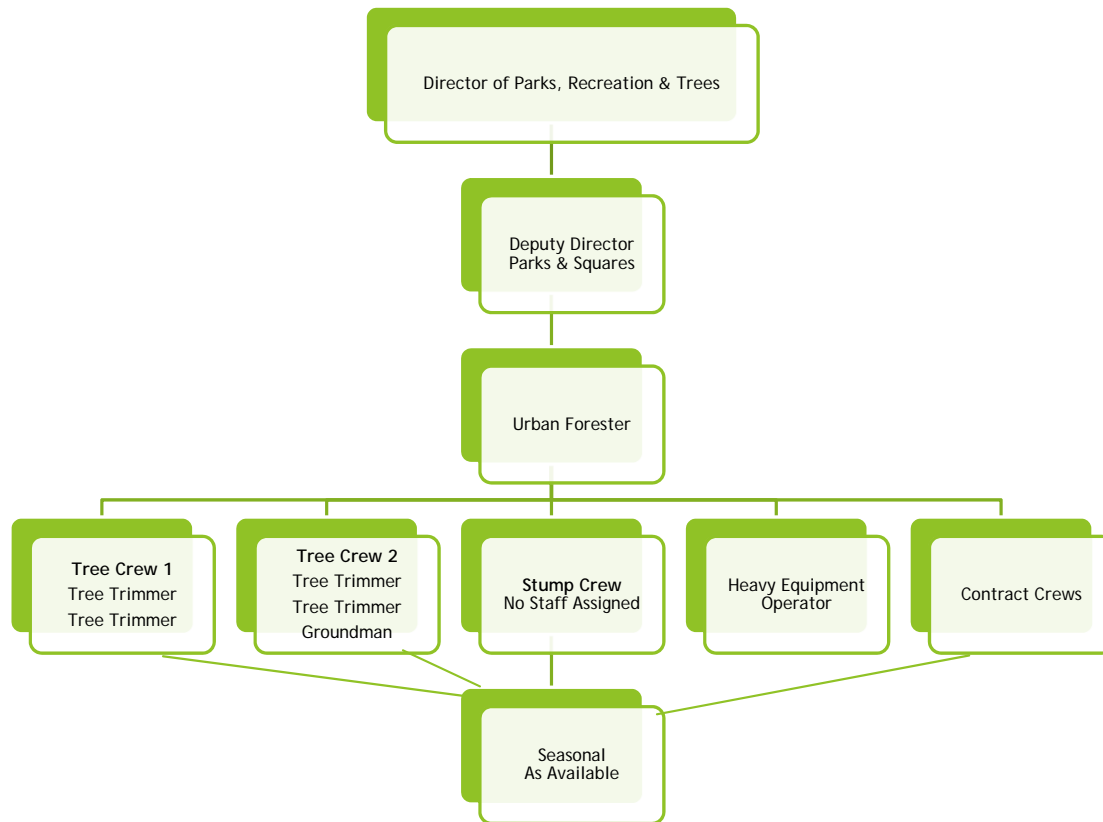
Time

- ▶ Crew 1: two tree trimmers - 218 days
- ▶ Crew 2: two trimmers & groundman - 218 days
- ▶ HEO - cleanup of debris (city and contract crews) - 218 days
- ▶ Urban Forester - 218 days - inspections and supervision
- ▶ Average 500 days of a 2 man crew (based on availability)

Capital History

<i>FY</i>	<i>Amount</i>
<i>2010/11</i>	<i>550,000</i>
<i>2011/12</i>	<i>300,000</i>
<i>2012/13</i>	<i>510,000</i>
<i>2013/14</i>	<i>580,000</i>
<i>2014/15</i>	<i>360,000</i>
<i>2015/16</i>	<i>400,000</i>
<i>2016/17</i>	<i>520,000</i>
<i>2017/18</i>	<i>700,000</i>
<i>2018/19</i>	<i>750,000</i>

Tree Division: Current Org Chart



What do you get with current resources:

Removal Focus				Trimming Focus			
Crew 1	2 men	Trimming	545	Crew 1	2 men	Trimming	545
Crew 2	3 men	Removals	218	Crew 2	3 men	Removals	218
Contract Crew	2 men + seasonal	Removals	500	Contract Crew	2 men	Trimming	1,250
Total			1,263	Total			2,013

Urban Forester - 1/3 Time Inspections, 2/3 Time Supervision. Inspections= 1,090

*This does not allocate crew time to stump removals which divert crew resources.

Addressing the Backlog

Systematic Backlog vs Current Backlog



Systematic Backlog



Systematic Backlog

With Current Resources:

- ▶ Trimming/Removals:
 - ▶ Average of 2,300 requests
 - ▶ Average of 1,700 completed
 - ▶ Backlog grows by approximate 600 requests a year
- ▶ Inspection:
 - ▶ Average of 2,300 requests
 - ▶ Average of 1,090 completed per year
 - ▶ Backlog grows annually*

Needed Resources to address:

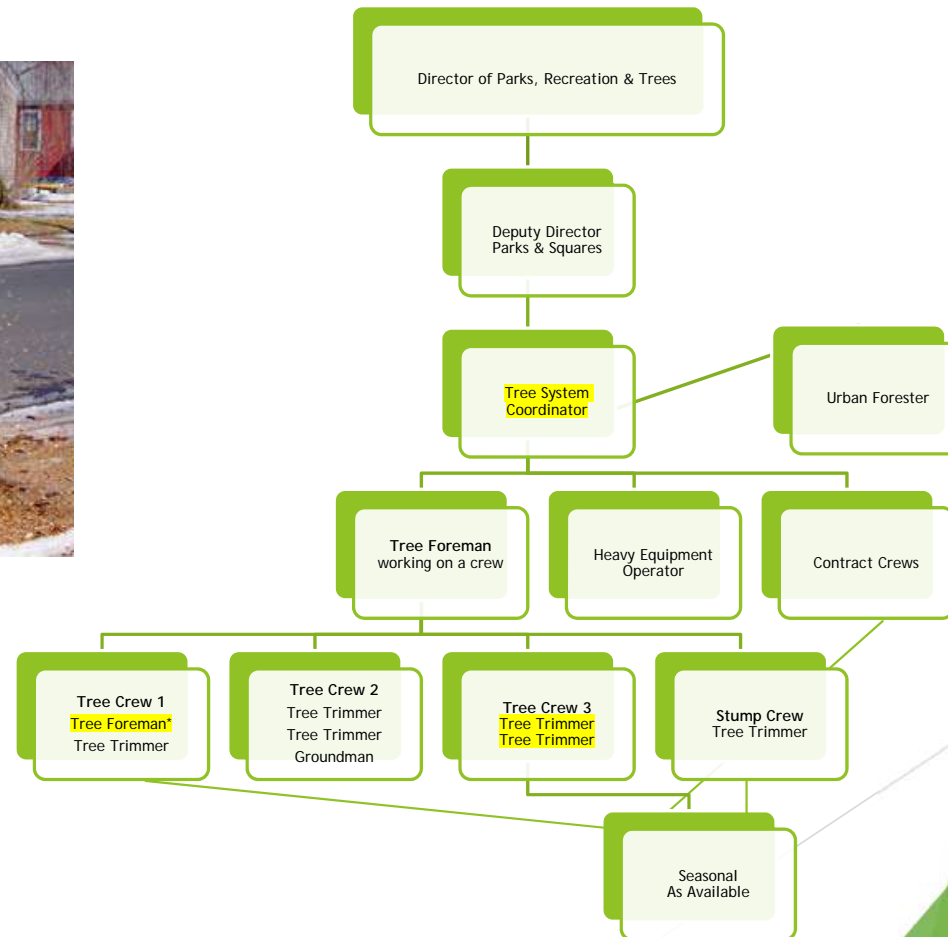
- ▶ 1 Additional Crew
- ▶ 1 Trimmer devoted to stumps
- ▶ Existing Trimmer upgraded to foreman to increase supervision/reduce Urban Forester Responsibility
- ▶ Tree Division Head Position
 - ▶ Additional oversight, planning, dealing with utility - move us out of crisis management mode

What do you get with new level of resources:

Removal Focus				Trimming Focus			
Crew 1	2 men	Trimming	545	Crew 1	2 men	Trimming	545
Crew 2	3 men	Removals	218	Crew 2	3 men	Removals	218
Crew 3	2 men	Trimming	545	Crew 3	2 men	Trimming	545
Contract Crew	2 men + seasonal	Removals	500	Contract Crew	2 men	Trimming	1,250
Stumps	1 man + seasonal	Stumps	432	Stumps	1 man + seasonal	Stumps	432
Total			2,240	Total			2,990

Urban Forester - 100% Inspections= 3,270 - Can PROACTIVELY REVIEW ISSUES

Tree Division: Proposed Org Chart



Addressing the Current Backlog



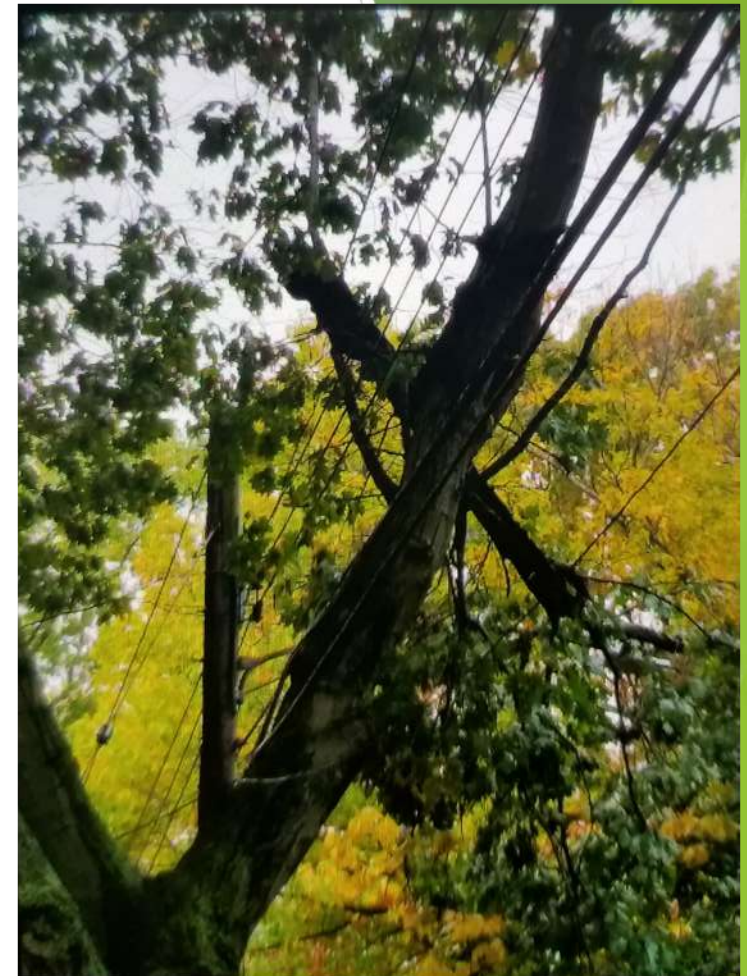
Backlog of Removals	Count of Category	Estimated Removal Cost
Ash Tree	205	205,000
Elm Tree	24	24,000
Removal - Priority 1	118	118,000
Removal - Priority 2	87	87,000
Removal - Priority 3	20	20,000
Removal Total	454	454,000



*Data collected 2.15.18

Estimated Necessary Additional Contract Capacity

Type	Current	Estimated Contract Costs
Inspections	899	30,000
Removals	454	454,000
Trimming Supplement	106	106,000
Stumps	1,021	90,000
TOTAL		680,000

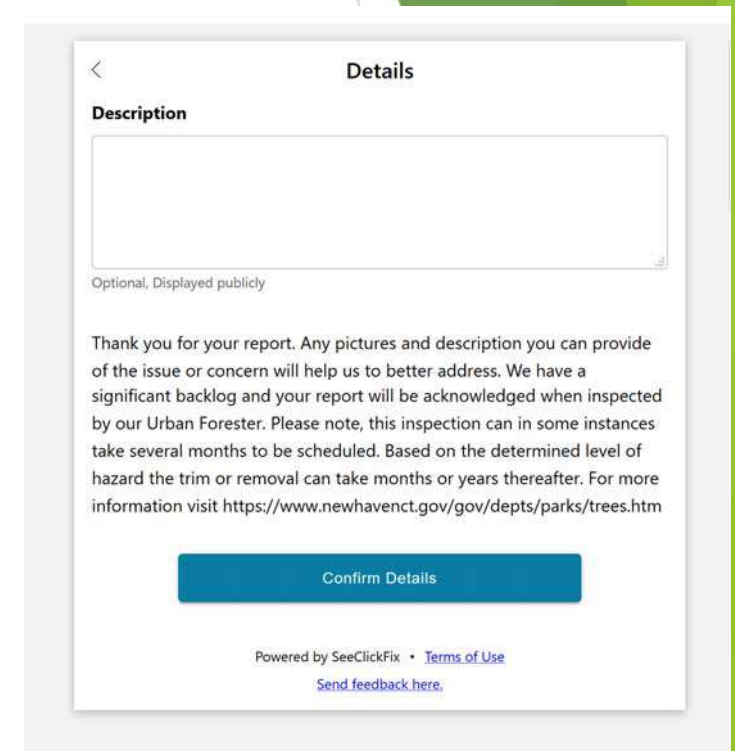


Other Areas for Improvement



Communications

- ▶ Have implemented daily reports of new requests reviewed and triaged by Deputy and Director
- ▶ Exploring residential door hangers for completed work updates
- ▶ Exploring use of SCF Work to add additional statuses which will allow more communication points
- ▶ Potential for collaborations and force multiplication



The screenshot shows a mobile application interface titled "Details". At the top left is a back arrow icon. Below the title is a "Description" section with a large text input field. Underneath the input field, it says "Optional, Displayed publicly". A paragraph of text follows: "Thank you for your report. Any pictures and description you can provide of the issue or concern will help us to better address. We have a significant backlog and your report will be acknowledged when inspected by our Urban Forester. Please note, this inspection can in some instances take several months to be scheduled. Based on the determined level of hazard the trim or removal can take months or years thereafter. For more information visit <https://www.newhavenct.gov/gov/depts/parks/trees.htm>". At the bottom of the form is a blue button labeled "Confirm Details". Below the button, it says "Powered by SeeClickFix" with a link to "Terms of Use" and another link "Send feedback here."

Volunteer Capacity

- ▶ Presidents Public Service Fellows
- ▶ Citizen Scientists
- ▶ Leverage Park Friends Groups



Discussion

