Urban Forestry: A Brief Overview of a Few Key Issues

"In the future….the people of Connecticut will understand and value the urban forests as essential parts of healthy urban ecosystems."

From "Connecticut 's Forest Resource Assessment and Strategy", a collaborative document created through a process that included broad public involvement and that was submitted by DEEP Forestry to the US Forest Service in 2010.

www.ct.gov/deep/forestry

“Healthy, sustainable trees and forested ecosystems are just as much a vital part of America’s urban and community infrastructure today as trees were forty, fifty or even 100 years ago, when tree lined neighborhoods dominated the landscapes in cities and towns across America. Trees were then, as they are today, an essential element of public health and quality of life.”

Steve Scott, State Forester of Tennessee

Urban and Community Forestry Committee

National Association of State Foresters

Testimony on Catastrophic Storms and Urban Forests

June 6, 2007 in Biloxi, MS

Connecticut Urban Forestry Program:

Urban Forestry Coordinator

Employee of DEEP Division of Forestry

Outreach Coordinator

Also Employee of DEEP Division of Forestry

Urban Forest Council

Made up of individuals from throughout the state involved in urban forestry related issues

(note – both CL&P and UI are represented on the Council)

The Urban Forestry Program connects to a vast network that includes municipalities, tree wardens, utilities, non-profits, volunteer groups, schools, organizations in related fields, and so on.

DEEP Part of the Program:

Small Grants Program

Outreach

Spearhead Projects

Report to the Forest Service

Other Programs such as Tree City USA

Electrical Hazard Awareness training is a must for everyone involved in tree care.

Simply put, it is a **Basic Matter of Safety**. If you work with trees, you will encounter electricity. Electricity can be very dangerous.

Do you understand all that you need to in order to work safely around electricity and power lines?

This EHAP workshop is being offered by CTPA to help prepare individuals for the electrical hazards they will face in their everyday jobs.

Attendees will learn about the electrical distribution system, the hardware used in that system, the types of electrical hazards a tree care worker is likely to face and how to be prepared when encountering electricity on the job.

In order to help make this workshop affordable for all who wish to attend, CTPA has subsidized the costs. Total cost for each attendee is $100. All attendees will receive the TCIA's Electrical Hazard Awareness workbook - a $135 value. Attendees may request this workbook in English or Spanish.

If you are in tree care and have not taken an Electrical Hazard Awareness course before, you really should consider attending this one.

Please register early!

Announcing:

an Electrical Hazard Awareness Program (EHAP) Workshop

December 8, 2011

7:30 a.m. to 4:00 p.m.

Presented by

The Connecticut Tree Protective Association

at

Northeast Utilities Headquarters

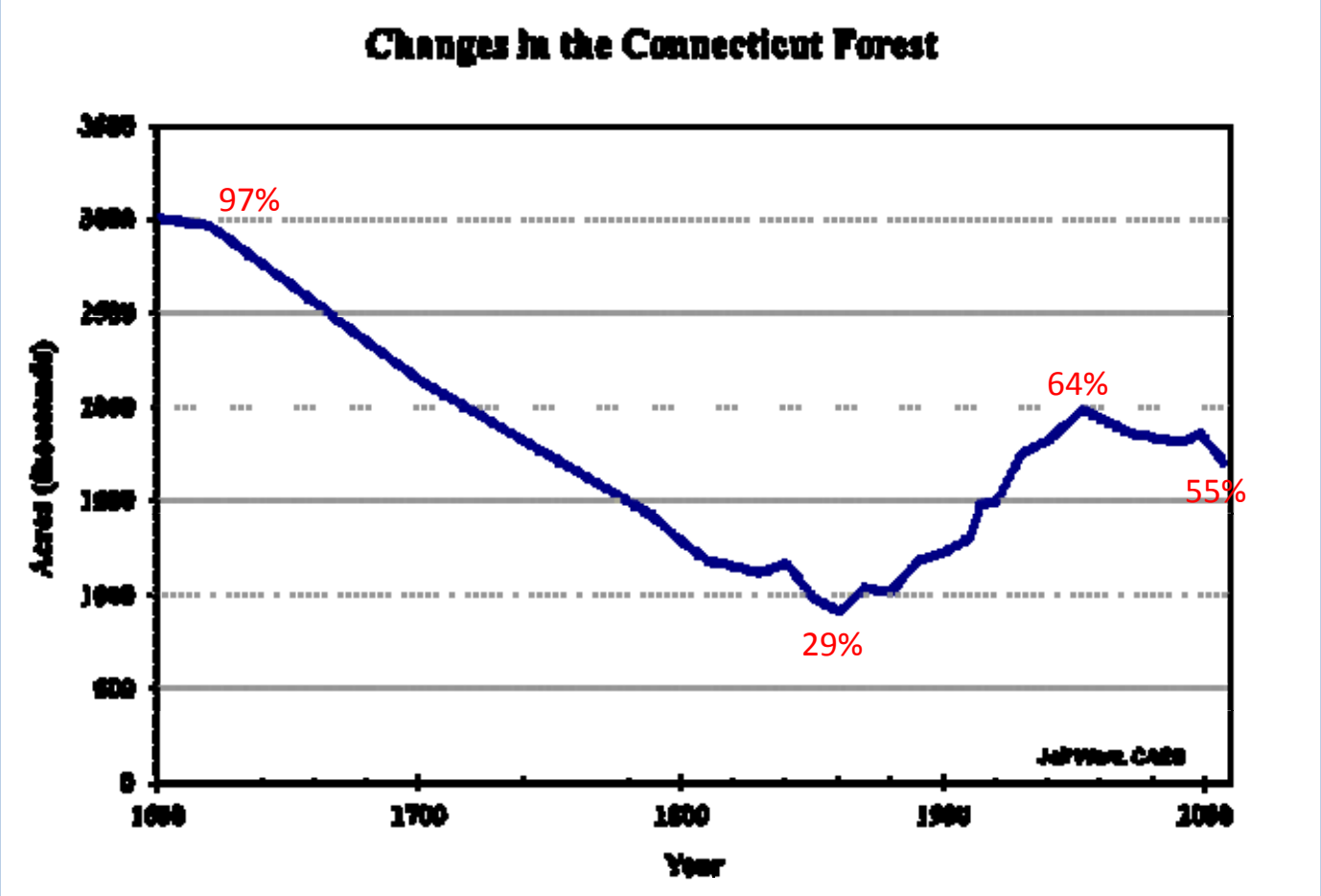
Berlin, CT

CTPA
58 Old Post Road
PO Box 356
Northford, CT 06472-0356

Connecticut Tree Protective Association –

educational association made up largely of people involved in tree care. Currently, there are over 800 members, including commercial arborists, utility arborists and tree wardens.

The Aging of Connecticut's Forests



Technical note: graph is based on timberlands, not all forested lands. If all forested lands were used, the current total would be just slightly under 60% forested.

Other notes: The period from 1850 to 1950 is widely interpreted as a period of forestland increase due to farm abandonment. However, the period of the late 1800's and early 1900's was one of heavy forest harvesting and use, especially for charcoal – as a result, the forest stayed young. The period from the early 1900's until today has been one of steady individual tree growth and less harvesting – the forest has aged. In the late 1900's, the overall acreage of forestland has slightly decreased, due in part to increased sprawl – people moving out to live among the trees.

From: **"Urban and Community Forests of New England"**, by David J. Nowak and Eric J. Greenfield. Published by the US Forest Service.

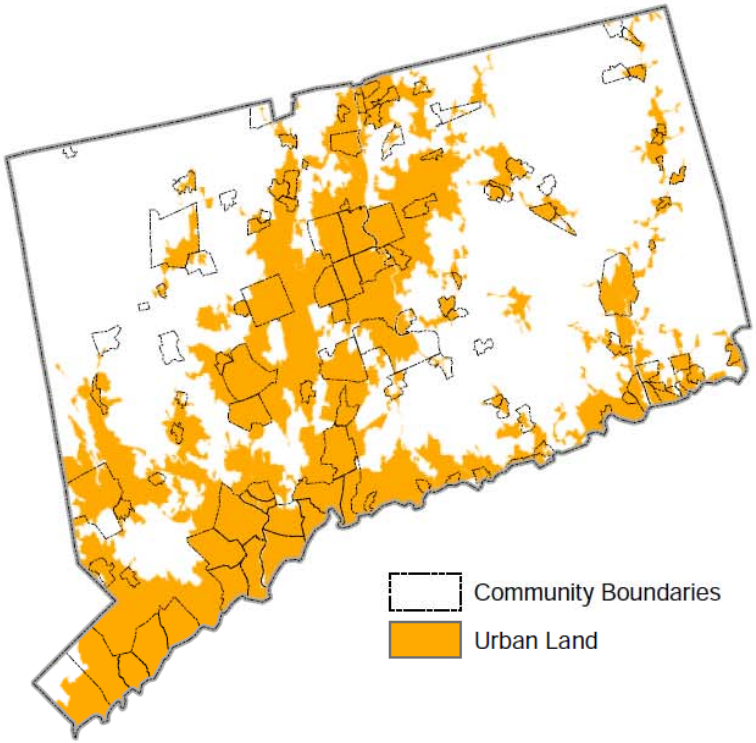


Figure CT-1.—Urban or community land in 2000; urban area relative to community boundaries.

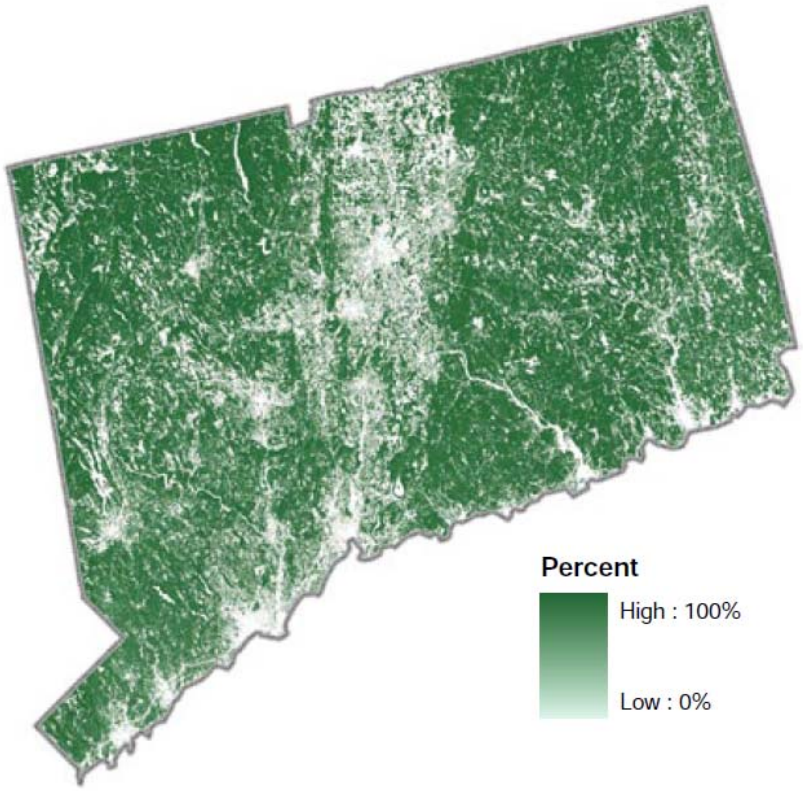


Figure CT-4.—Percentage tree canopy cover.

<u>Total Tree Canopy Cover (urban land): 49.3%</u>

Per Cent of Connecticut that is considered urban land: 36.4%

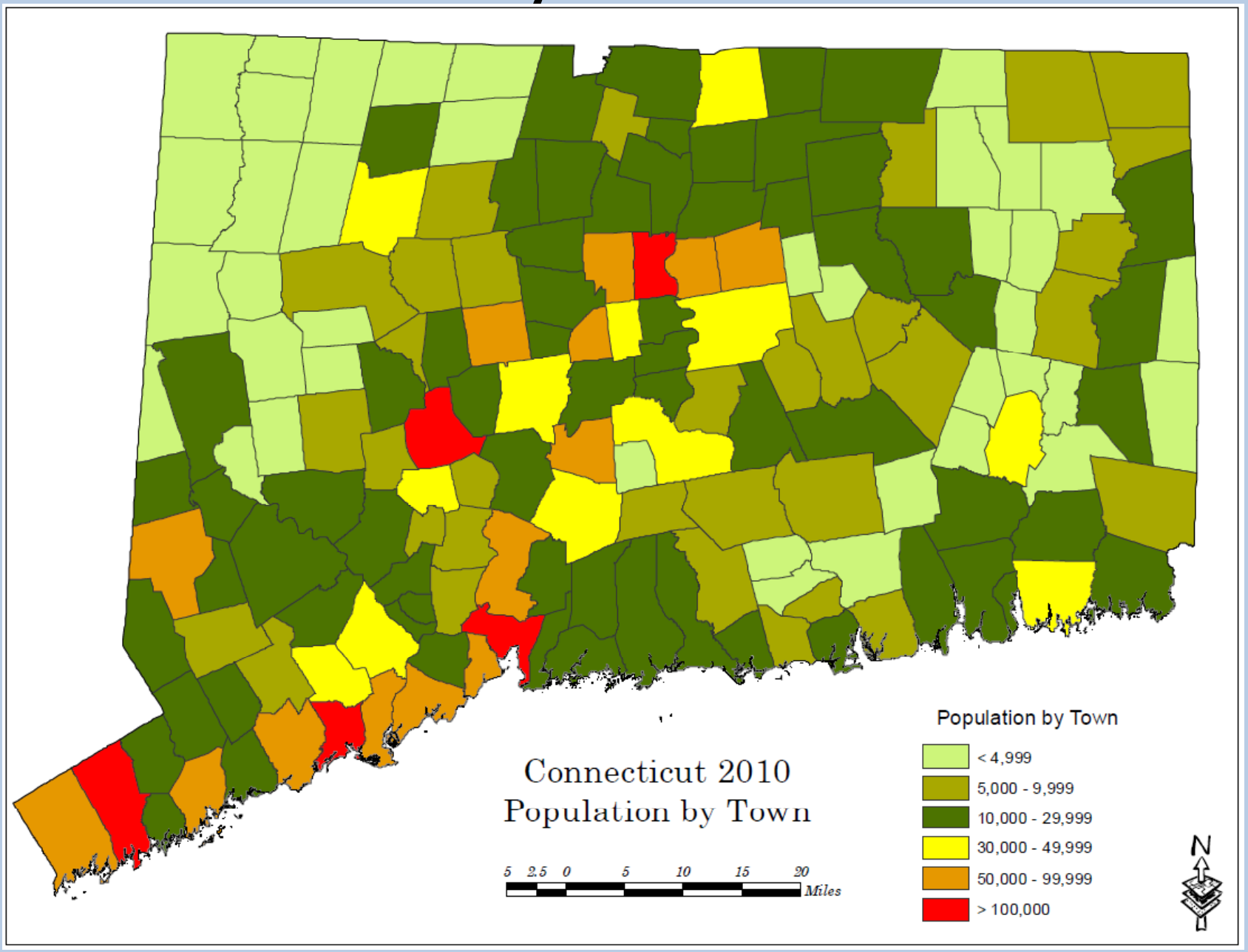
Total Tree Canopy Cover (statewide): 64.5%

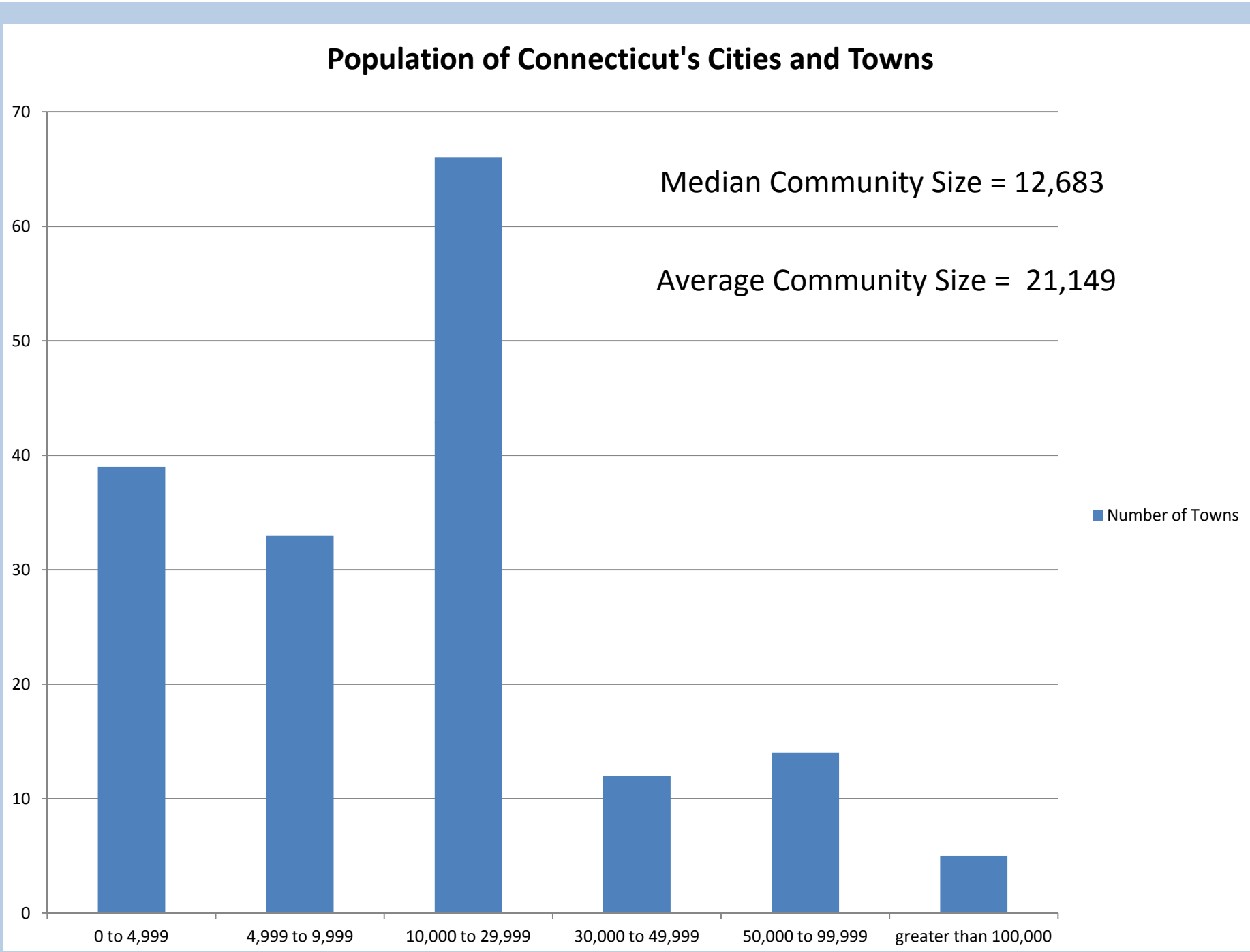
This includes tree cover over all land uses

Urban Forestry – is about the population of trees that surround us in our homes, places of business and in most of our daily activities – the forest where we live, work and play

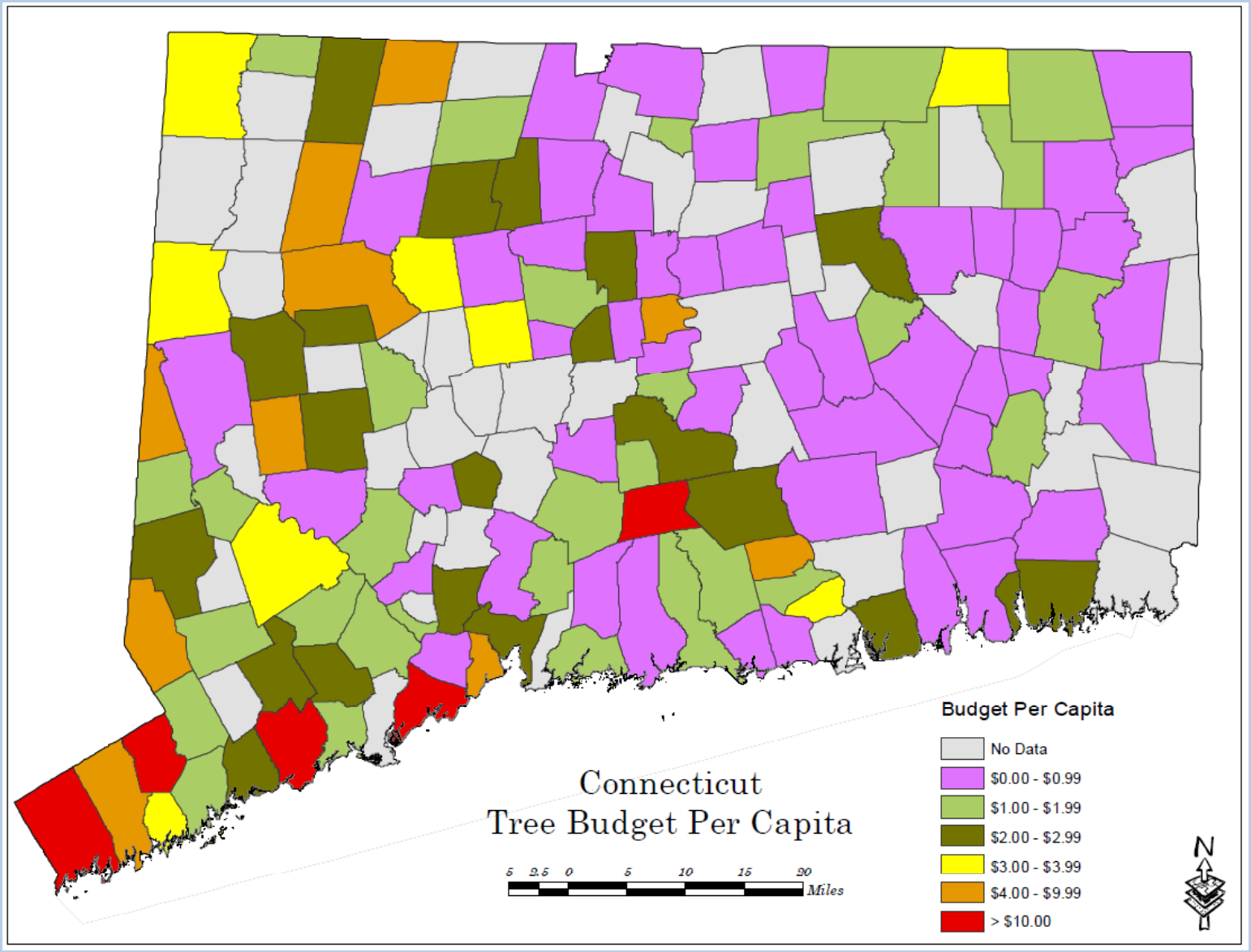
Roadside Trees – the street trees in our cities and towns and, in more rural areas, those trees that line the roads, side-roads and highways.

A Diversity of Town Sizes

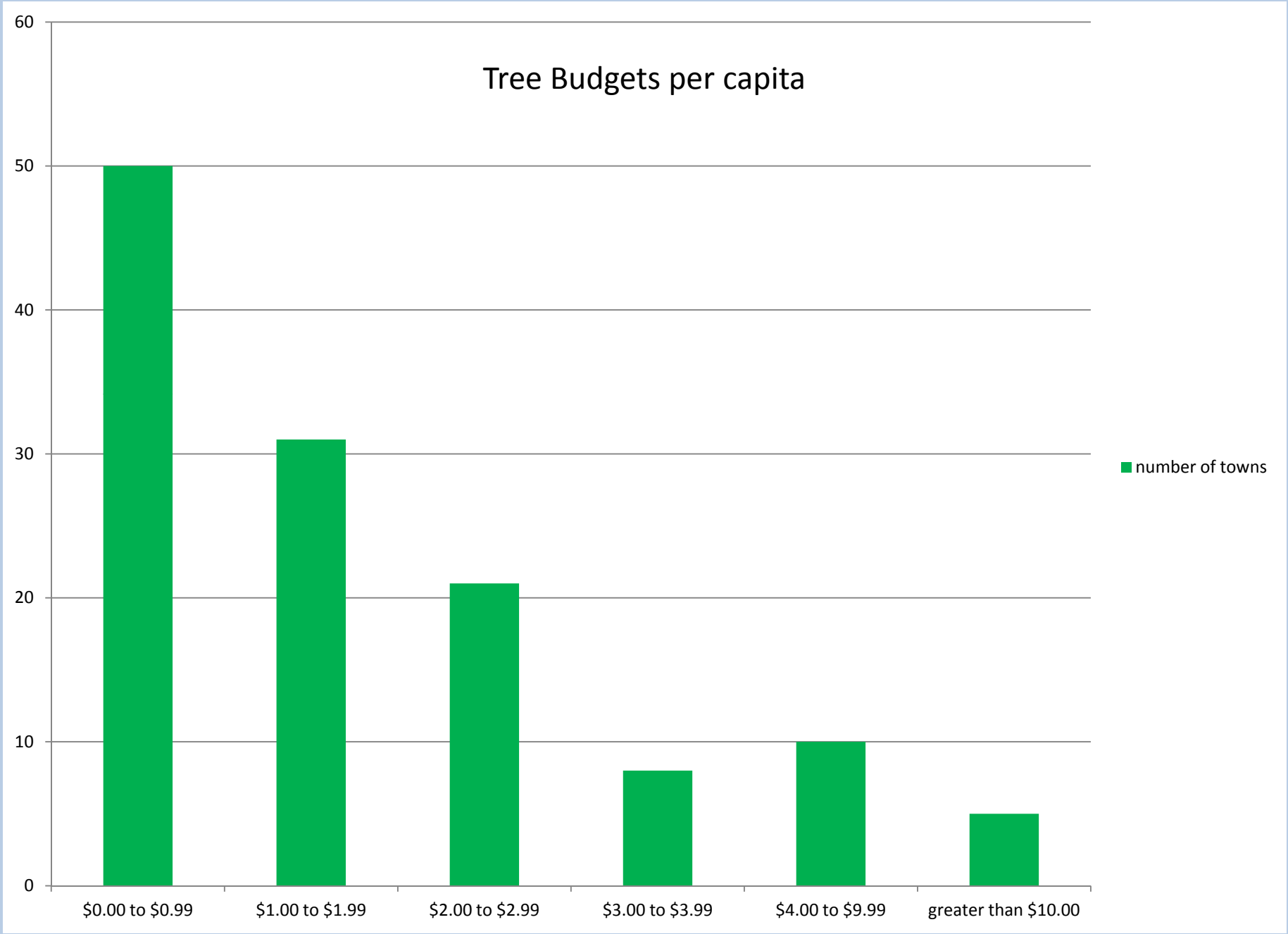


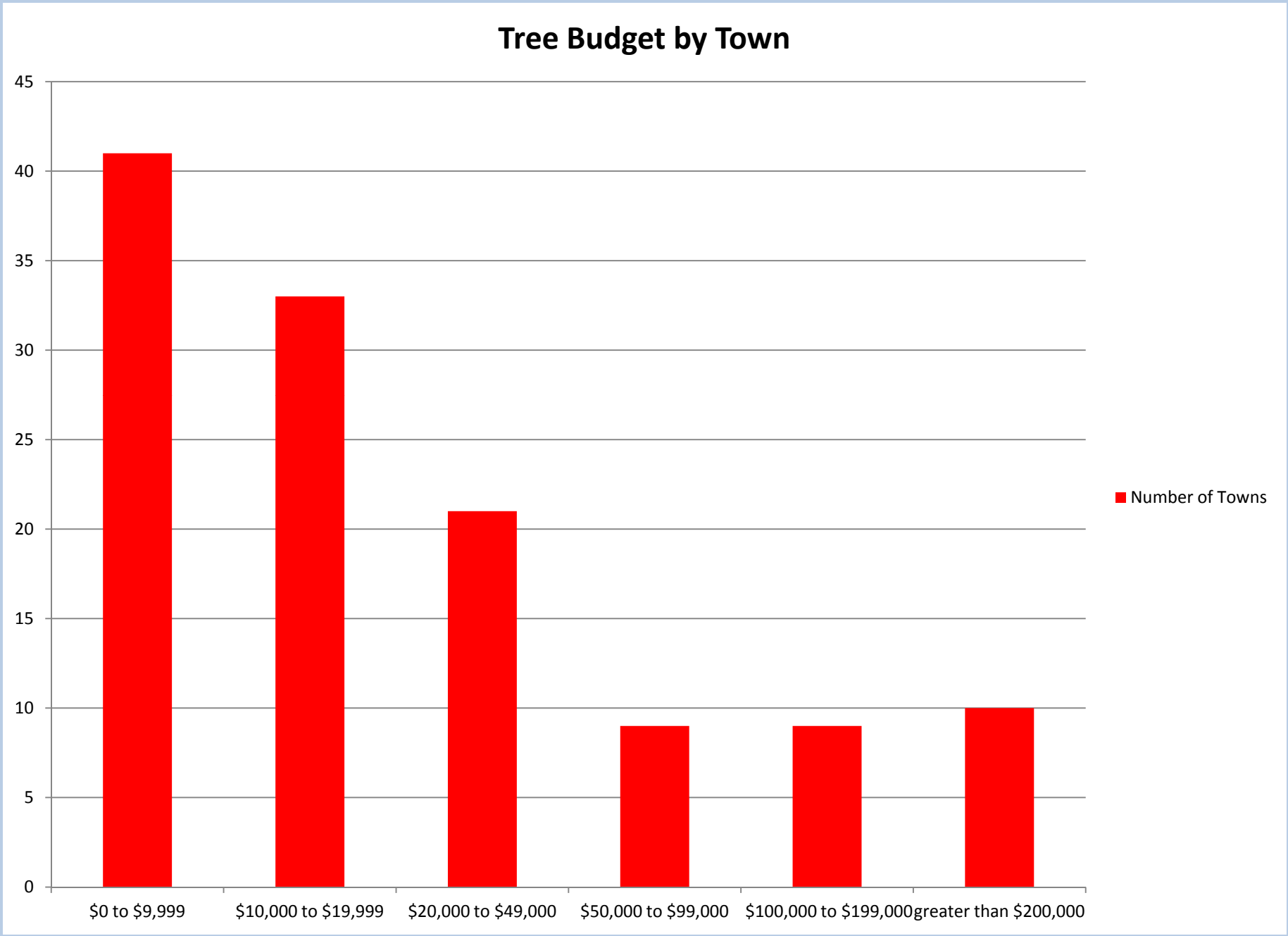

Population of Connecticut's Cities and Towns
70
60
50
40
30
20
10
0
Median Community Size = 12,683
Average Community Size = 21,149
Number of Towns
0 to 4,999
4,999 to 9,999
10,000 to 29,999
30,000 to 49,999
50,000 to 99,999
greater than 100,000

A Diversity of Tree Budgets



Data drawn from a survey conducted in 2004 by the DEP Urban Forestry Program. Results not published.


Tree Budgets per capita
60
50
40
30
20
10
0
$0.00 to $0.99
$1.00 to $1.99
$2.00 to $2.99
$3.00 to $3.99
$4.00 to $9.99
greater than $10.00
number of towns


Tree Budget by Town
45
40
35
30
25
20
15
10
5
0
$0 to $9,999
$10,000 to $19,999
$20,000 to $49,000
$50,000 to $99,000
$100,000 to $199,000
greater than $200,000
Number of Towns

Budget Summary

Tree Budgets:

Total Tree Budgets

Maximum: $900,000.00 (Greenwich – Fairfield #2 ($650,00) and Milford #3 ($602,000))

Average: $58,918.86

Minimum: $217.00 (Sprague – Scotland #2 at $800)

Per Capita Tree Budgets:

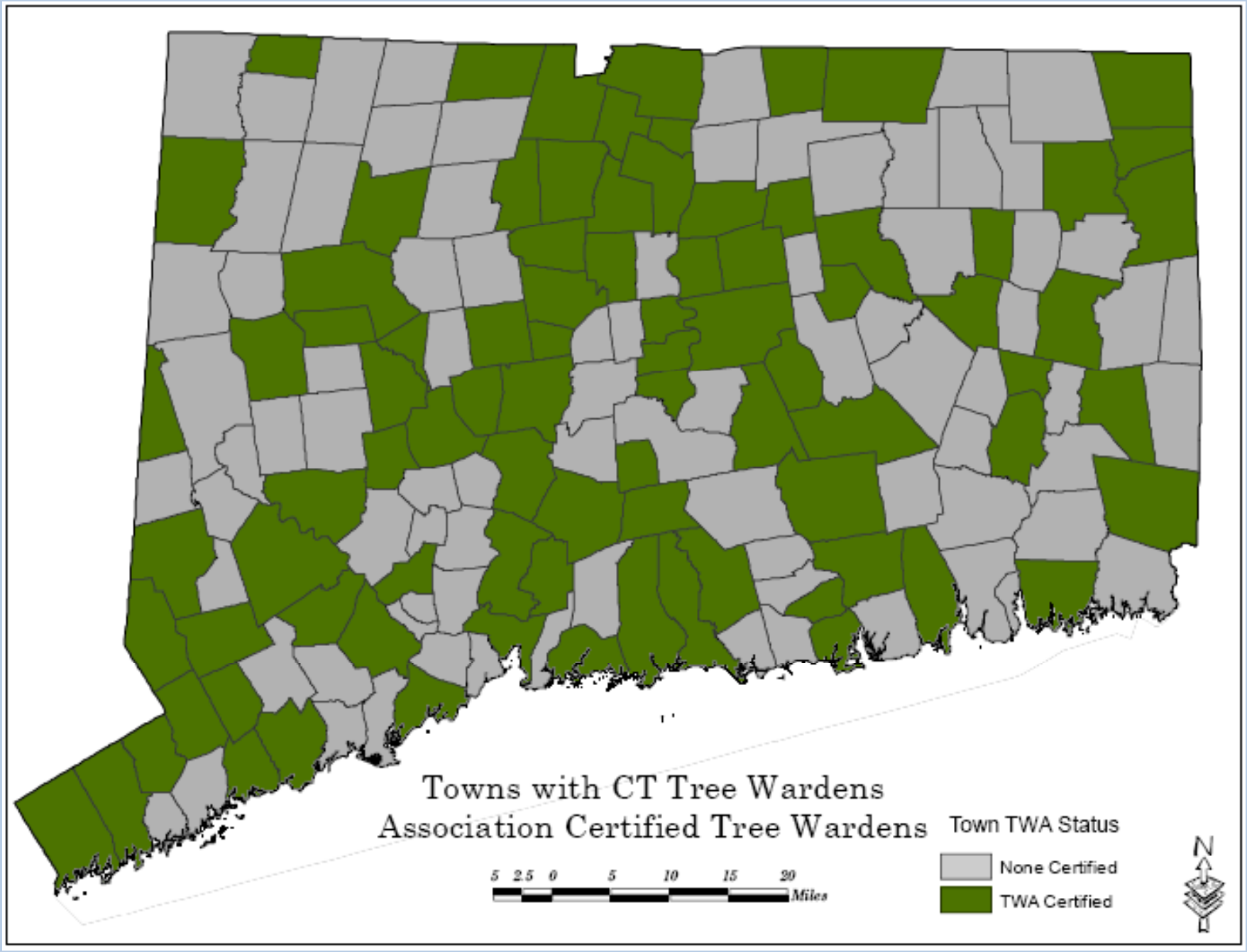
Maximum: $16.60 (New Canaan – Greenwich is second at $14.73)

Average: $3.00 (state per capita average)

Minimum: $0.07 (Sprague – Naugatuck next lowest at $0.10 per capita)

Based on an average budget of $3 per capita, the total expenditure on trees by municipalities in the state is approximately $10,500,000.

Certified Tree Wardens in Connecticut



A Critical Assessment of Where We Are

- The quality of tree care, as practiced in Connecticut, is very high.

- There do not exist specific industry standards, aside from the Safety Standards in ANSI Z 133.1 and OSHA 1910.269 and the Operational Standards in the ANSI A 300 series, to direct the actions of tree wardens or of those doing the utility pruning.

- We (the people of Connecticut) have yet to define the overall goal, or purpose, of the road side forest in terms that are clearly understood and generally accepted by most people.

Two Laws

CGS 23-58 and CGS 23-59

The Tree Warden Law (1901) – establishes that there is one individual appointed in each municipality who is responsible for the "care and control" of public trees. The law, however, sets no criteria by which an individual may be appointed as a tree warden.

CGS 23-61

The Arborist Law (1919) – established that anyone who practices commercial arboriculture within Connecticut needs to be licensed by the state. Testing for the arborist license is rigorous, with a successful passing ratio of about 50%. Currently, there are 928 licensed arborists in Connecticut.

Standards for Tree Care

American National Standards Institute

ANSI Z 133.1 – Safety Standards in Tree Care (1972*)

ANSI A 300 – Standards for Tree Care Operations:

Part 1 – Pruning (1996)

Part 2 – Soil Management (Fertilization) (1999)

Part 3 – Guying, Bracing and Cabling (2000)

Part 4 – Lightening Protection Systems (2004)

Part 5 – Site Planning and Site Development (2005)

Part 6 – Transplanting and Planting Trees (2005)

Part 7 – Integrated Vegetation Management (2006)

Part 8 – Root and Root Zone Management (in progress)

Part 9 – Tree Risk Assessment (2011)

Part 10 – Integrated Pest Management (in progress)

**reference is to the year when the standard was first published*

From ANSI A300 (Part 1) – Pruning (2008) (most recent edition)

9 Utility pruning

9.1 Purpose The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, maintain access, and uphold the intended usage of the facility/utility space while adhering to accepted tree care performance standards.

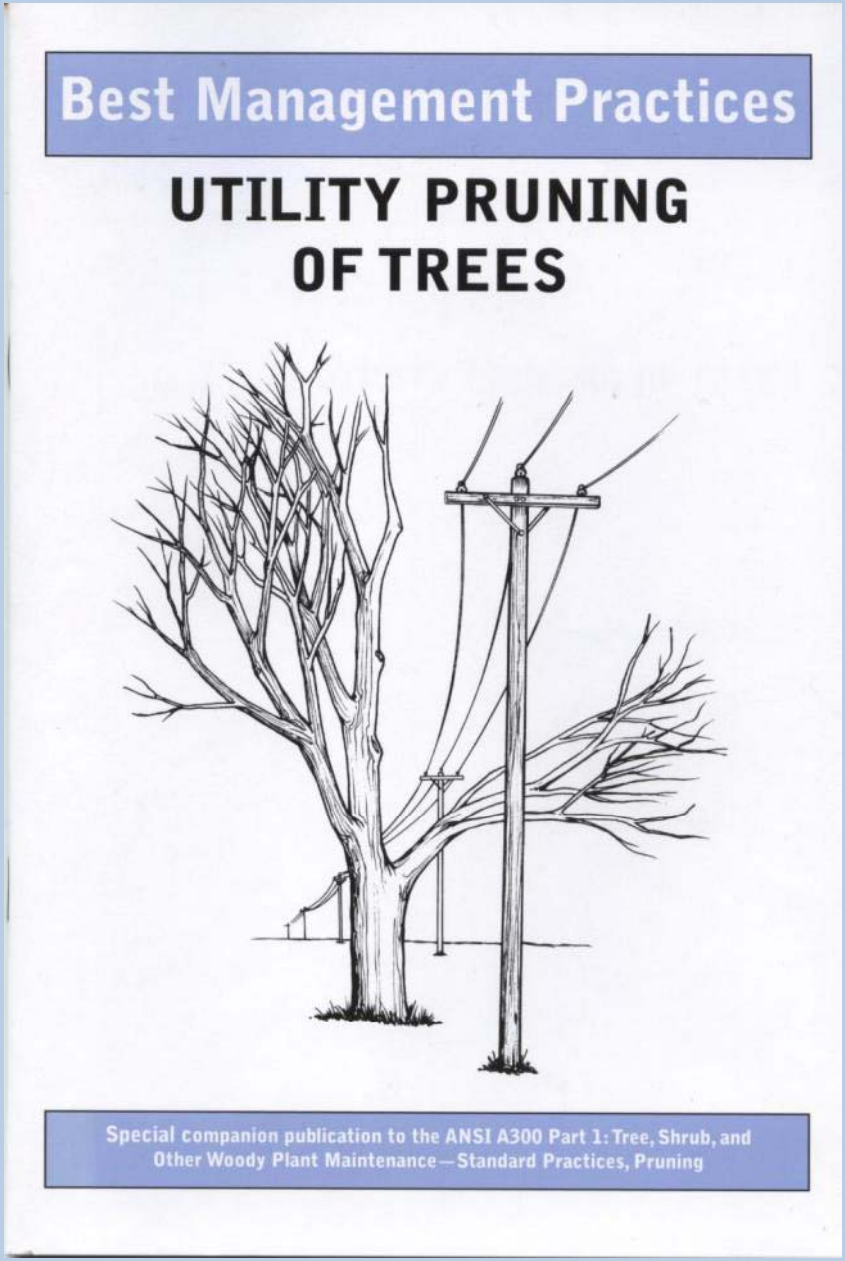
9.2 General

9.2.1 Only a qualified line-clearance arborist or line-clearance arborist trainee shall be assigned to line clearance work in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.

9.2.2 Utility pruning operations are exempt from requirements in 5.1, *Tree Inspection*, for conditions outside of the utility clearance scope of work.

9.2.3 Job briefings shall be performed as outlined in ANSI Z133.1, subclause 3.1.4.

Additional clauses describe the type of pruning that shall be done as a part of utility pruning and that, under emergency conditions, the requirements for proper pruning cuts can be suspended provided that the improper cuts are later corrected.



Special companion publication to the ANSI A300 Part 1: Tree, Shrub, and other Woody Plant Maintenance – Standard Practices, Pruning

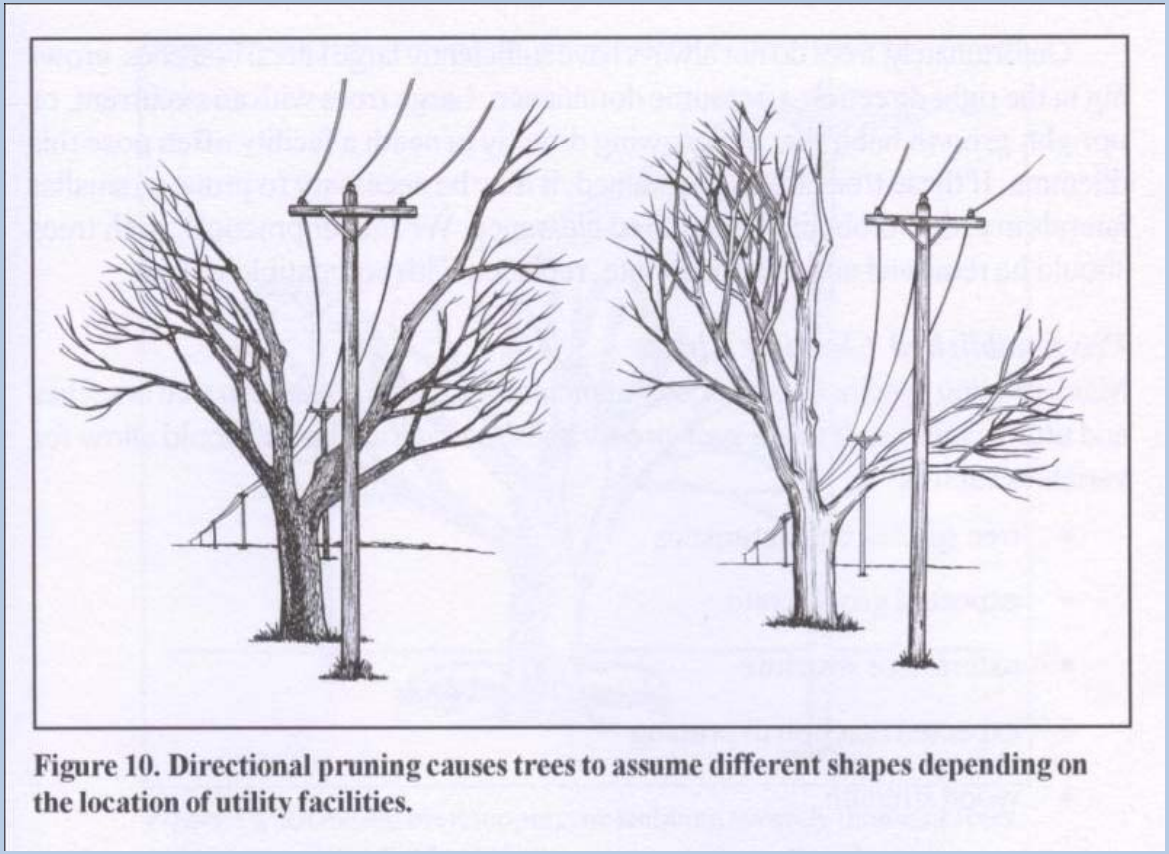


Figure 10. Directional pruning causes trees to assume different shapes depending on the location of utility facilities.

The Utility Pruning of Trees Best Management Practices publication for the most part describes techniques important to the proper pruning of trees in the utility right of way, such as Directional Pruning.

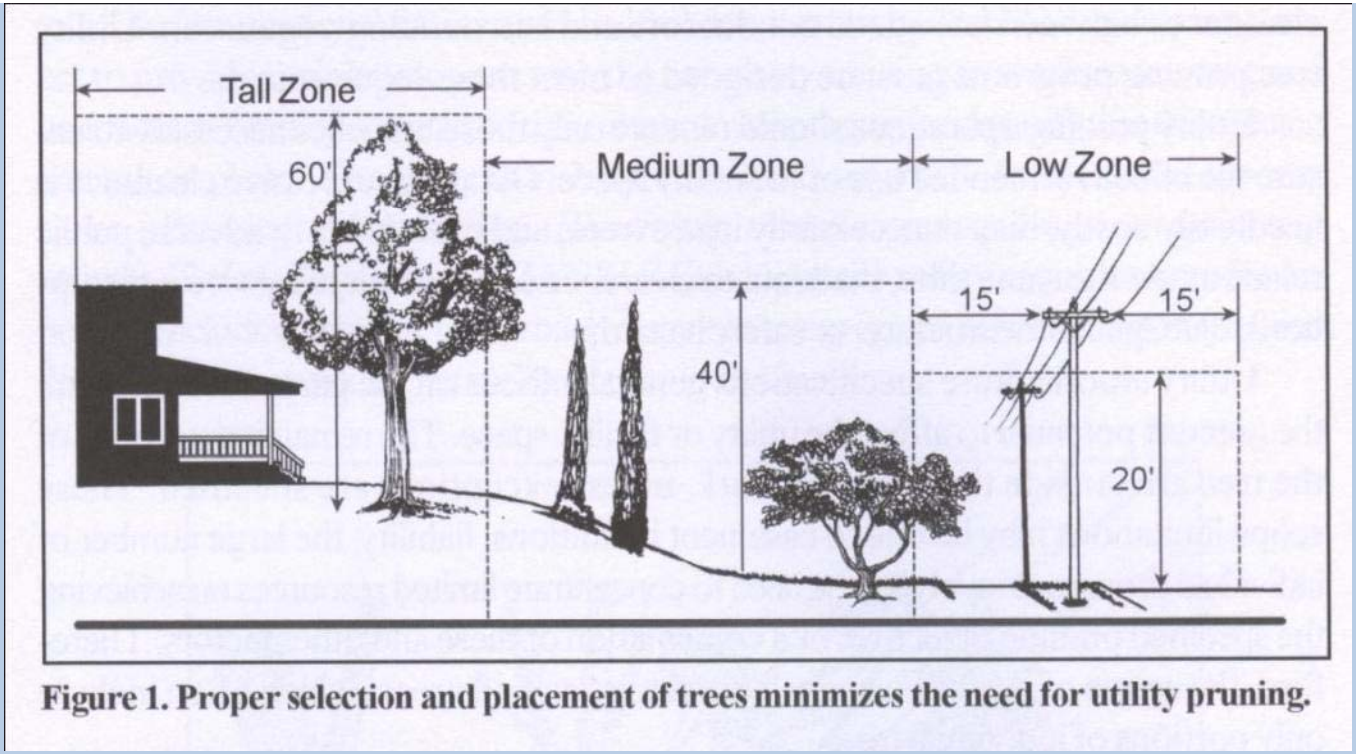


Figure 1. Proper selection and placement of trees minimizes the need for utility pruning.

This figure is included in the Introduction to the Utility Pruning BMP but, as I read it, is intended as an illustration and is not intended to be considered as a standard.

In the document, the figure comes with a mention that: "By far, the best way to maximize the many benefits provided by trees is to plant them where they will not outgrow their space (Figure 1). However, trees that threaten the integrity of utility or other vital infrastructure must be pruned or removed." The figure is not referenced in the publication beyond that comment.


Right Tree, Right Place


Right Tree, Right Place


Is this Right Tree, Right Place?

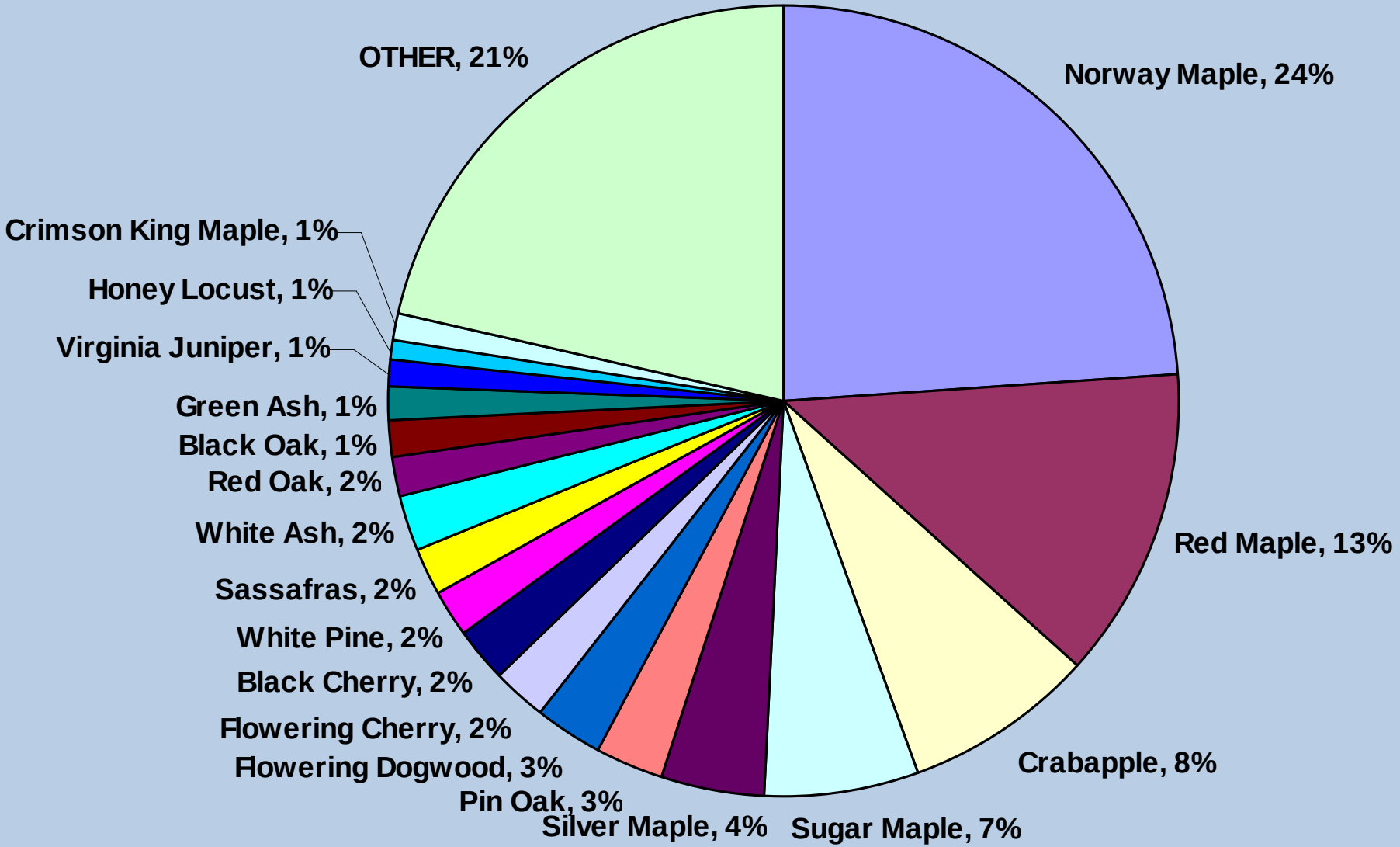
Are these Right Trees, Right Place?

Two Ways to View the Urban Forest

- Structural Properties:
  - How many trees, where they are, what kind of trees are they, what kind of condition are they in, and so on

- Functional Properties:
  - What do these trees do, in terms of benefits they provide to people, essential environmental services they provide, and overall contribution to the lives we live

Milford Street Trees - Species Distribution



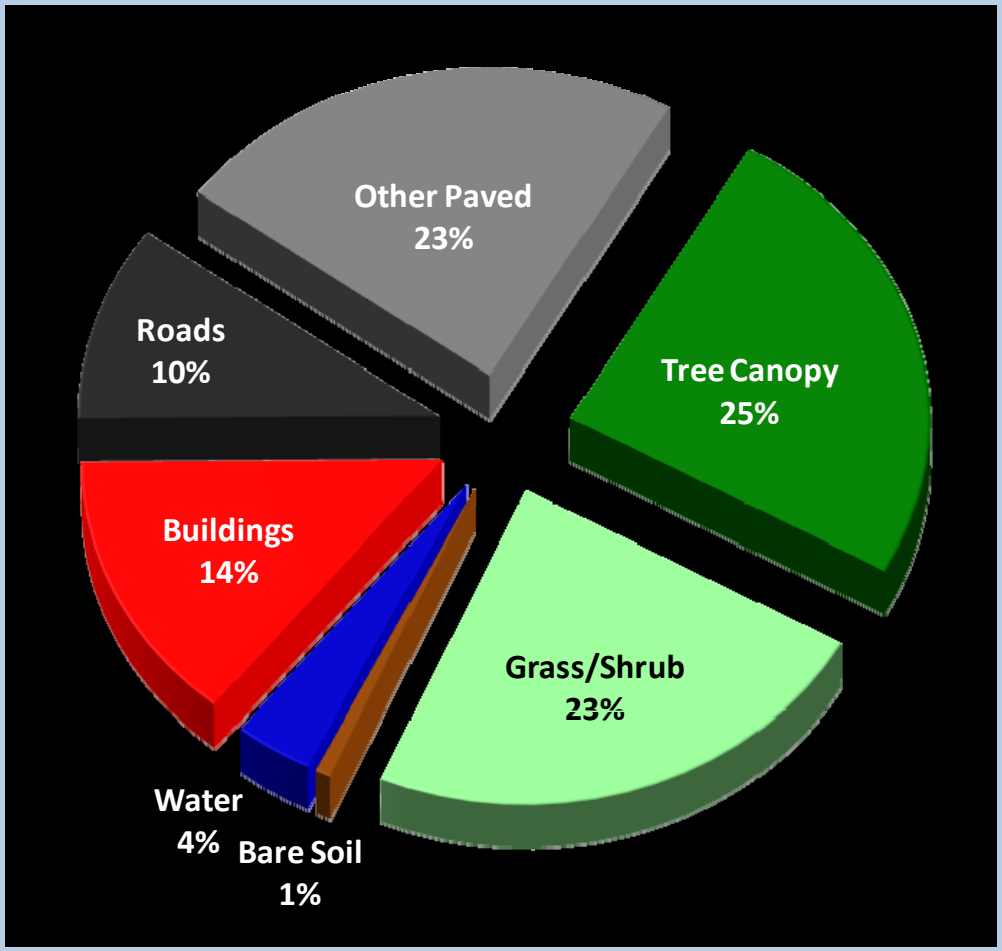
Milford Street Scene

Total Annual Benefits and Net Benefits for Public Trees
Milford, CT

Benefits	Total	Per Tree	Per Capita
Energy	$918,979.00	$57.90	$18.38
CO2	$22,820.00	$1.44	$0.46
Air Quality	$166,089.00	$10.46	$3.32
Storm Water	$219,991.00	$13.86	$4.40
Aesthetic /Other	$762,869.00	$48.07	$15.26
Total Benefits	**$2,090,748.00**	**$131.73**	**$41.81**

Hartford, CT

Land Cover Metrics



Hartford's Urban Forest - a Summary

Number of Trees: 568,000

Number of Larger Trees (over 20" in diameter): 55,000

Most Common Trees: red maple, tree of heaven, black cherry, American elm and red oak

Tree Canopy Cover: 26%

Amount of Carbon Removed by Hartford's Trees Annually: 2,440 tons

Amount of Major Air Pollutants Removed Annually: 73 tons

Oil Saved due to Energy Reduction by These Trees: 2,400 barrels a year

Replacement Cost for These Trees:

$590 million dollars

The Concept of Green Infrastructure

Urban trees, and roadside trees, are working trees with functional values, of benefit to society. These values can be quantified, and these functions defined and incorporated into plans, such as plans to mitigate storm water run-off, improve air quality, reduce the heat island effect and reduce electrical consumption, all while also allowing trees to make those other desirable contributions that are valued by society as a whole.

Worcester Street Before

Worcester Street After – demonstrating the visual impact of tree loss

Burncoat Neighborhood Tree Removal Study
Worcester, MA

Emma Morzuch, Ben Weil, Simi Hoque
University of Massachusetts, Amherst

Block (N = 6)	Number of homes (108 total)	Percentage Increase (kWh/CDD usage) after tree removal
1	15	87
2	23	79
3	19	99.6
4	18	116
5	23	140
6	9	67

Table 1: Differences in cooling energy usage between the summers of 2008 and 2009.

Block (N = 6)	Number of homes (108 total)	Dollar Increase ($) in cooling energy costs after tree removal
1	15	$1,130
2	23	$2,287
3	19	$1,519
4	18	$1,447
5	23	$2,478
6	9	$334

Table 2: Differences in cooling energy costs between the summers of 2008 and 2009.

American Elm – West Hartford – before the storms of 2011

Same Tree as seen on October 31, 2011

Thank You

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