



Sustainable Community Forest Program



The Sustainable Community Forestry Program seeks to provide the **educational resources** that community leaders need to develop and maintain sustainable community tree care and management programs.

This is accomplished through:

- the **technical knowledge** of our community foresters,
- the **financial assistance** of our grants program,
- information supplied in our **educational forums, materials and publications,**
- assistance with **wildland-interface** issues,
- the professional guidance offered by our **partner organizations.**



Tree ordinance history

A biologist, a chemist, and a statistician are out hunting.

The biologist shoots at a deer and misses five feet to the left.

The chemist takes a shot and misses five feet to the right.

The statistician yells "We got 'em!"



Issues with Tree Ordinances in Georgia



A brief history of tree ordinances (in Ga.)

- or -

It is ^(not)
^ what it is.

...because nobody ever really knew what it was.....



Issues with Tree Ordinances in Georgia

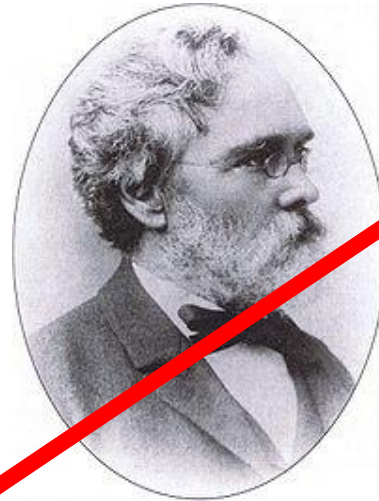
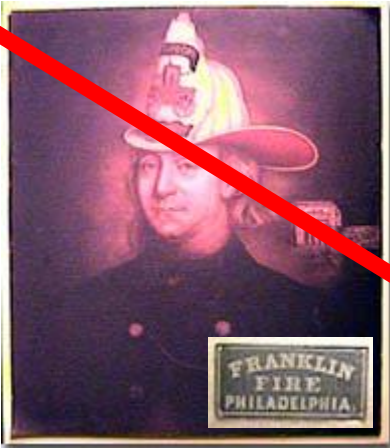
Wood is good ...

when you have it.

1626 Plymouth No sale or transport out of the colony.

1681 Pennsylvania required that 1 acre of forest be left for every 5 acres cleared.

The Greats



Vaux



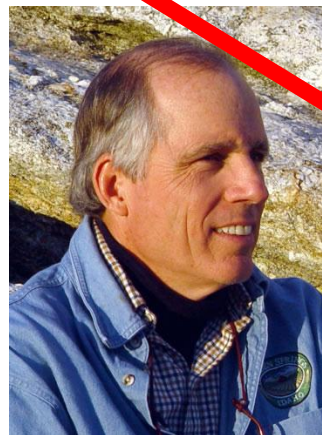
Olmsted



McHarg



Mumford



Arendt



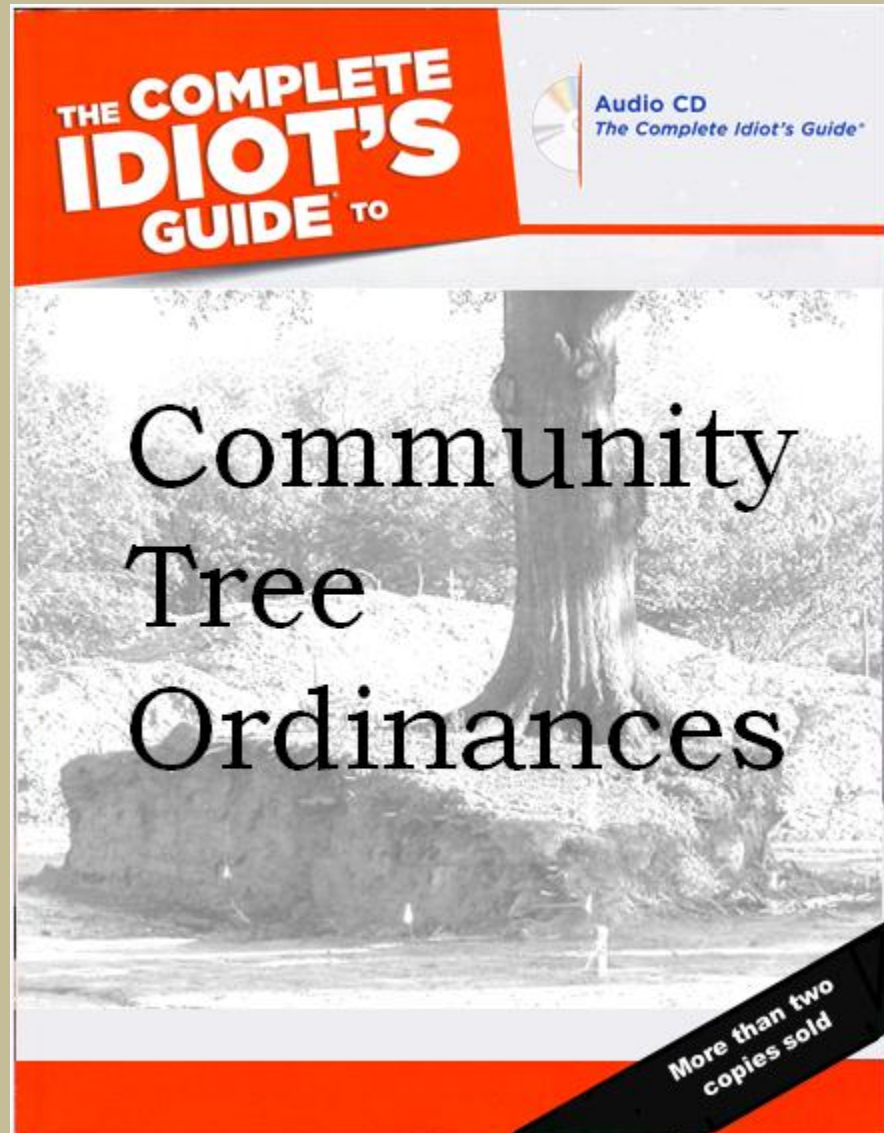
Cleveland

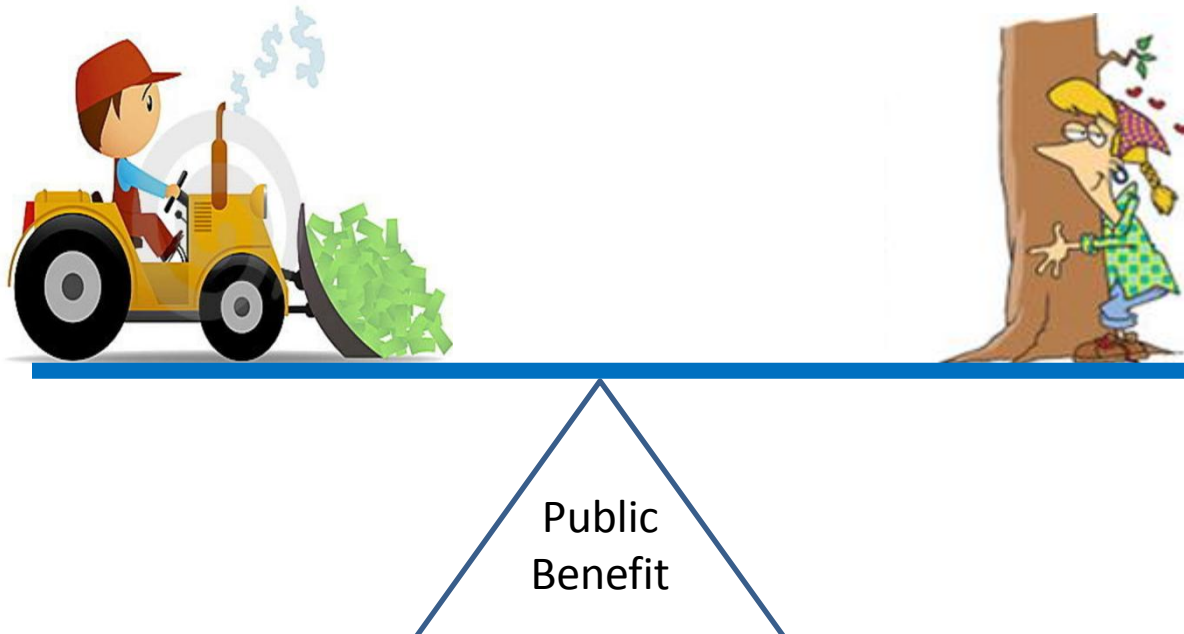
You can't have it – regardless of what you want.



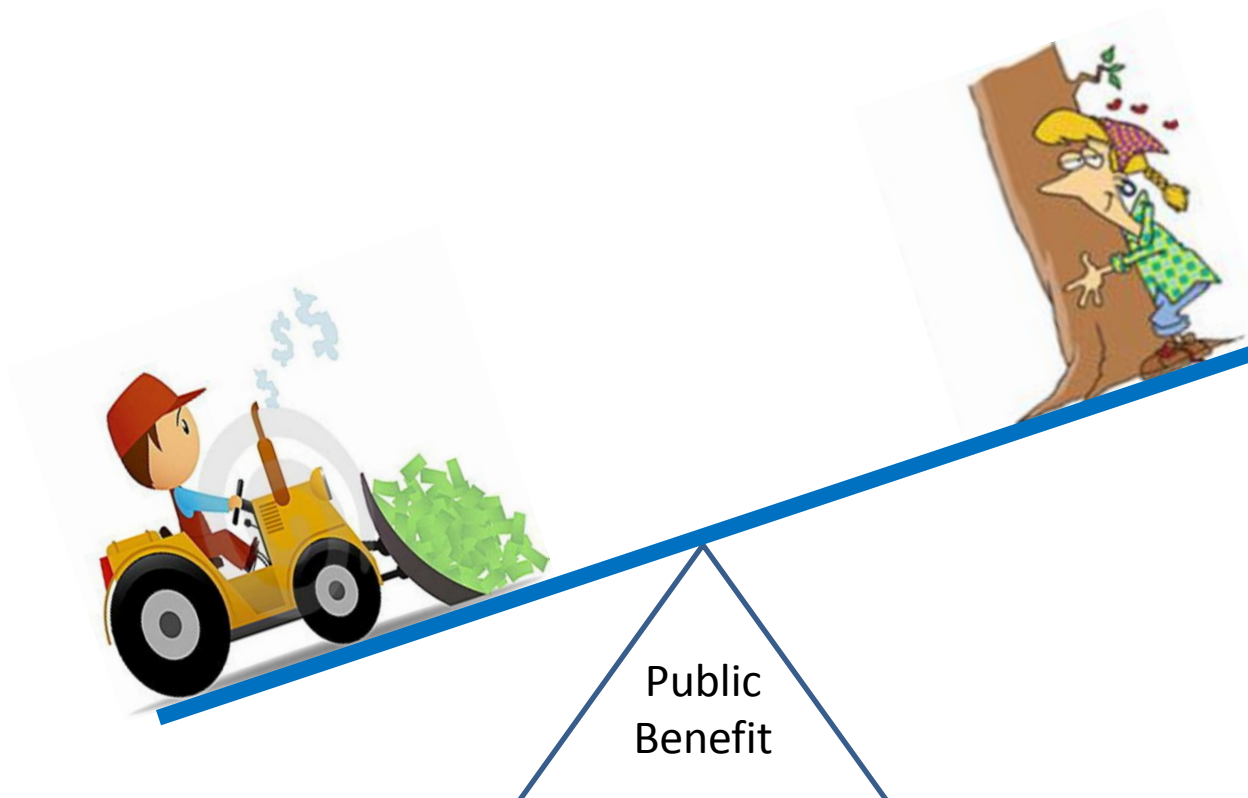
Tree Preservation

Webster def: to keep (something) in its original state





Community Tree Ordinances



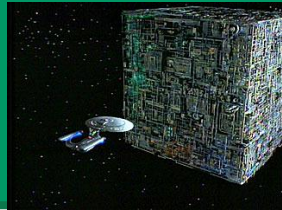
Community Tree Ordinances



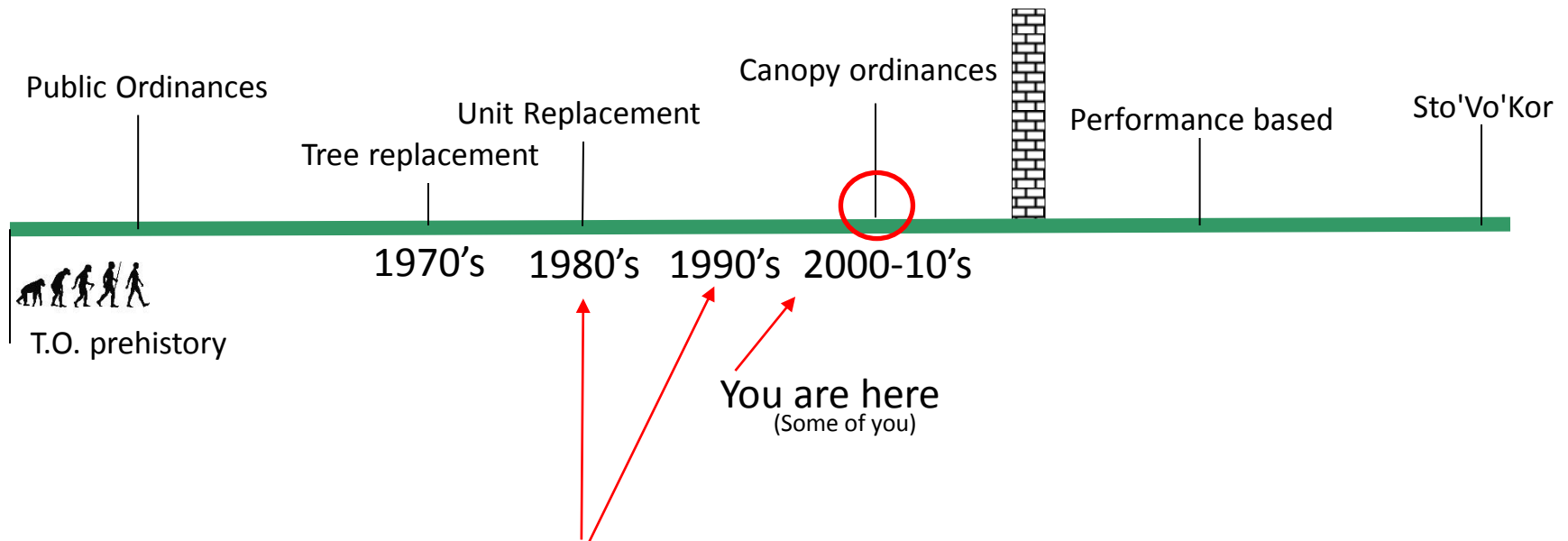
Tree Ordinances and Tree Conservation

- or -

Tree Ordinances vs. Tree Conservation



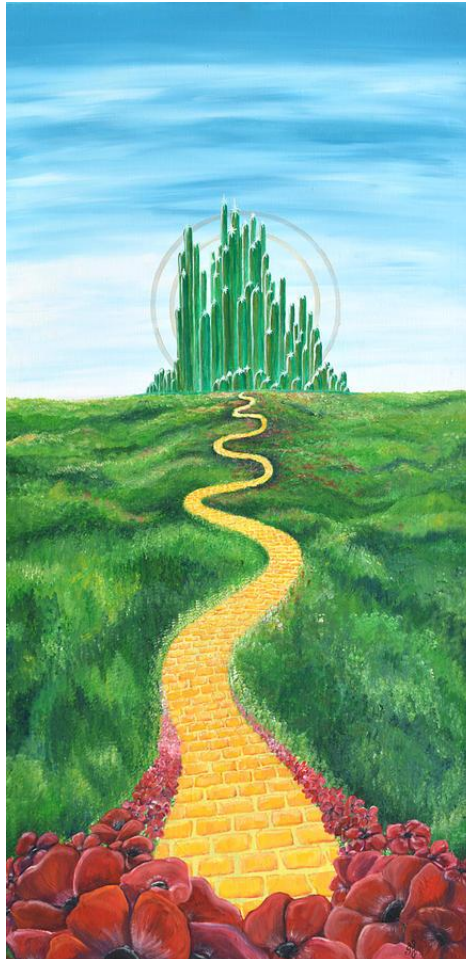
Tree ordinance continuum – for Georgia



What happened here changed how we did business or let us think we did



...and so it begins.....



SHADING OUR CITIES



1989

A RESOURCE GUIDE FOR URBAN AND COMMUNITY FORESTS

EDITED BY

Gary Moll and Sara Ebenreck

Introduction by R. Neil Sampson
American Forestry Association

Foreword by E. Dale Robertson
Chief, U.S.D.A. Forest Service

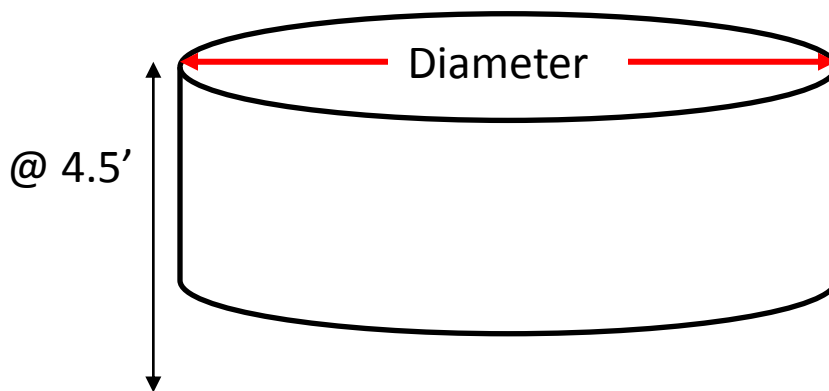
In Fairfax **County**, Virginia, a development **ordinance** that affects all new property slated for development has been in effect for about ten years. Sediment and erosion requirements are the strongest element of the law, and **tree** protection is part of this solution. A **county** arborist office has been established and staffed. The **county** arborist must sign off on each plan, showing that forestry requirements have been met.

In 1985, **Fulton County**, Georgia, developed a strong **ordinance**, taking a lesson in part from Fairfax. The **Fulton County tree** preservation **ordinance** and its strong enforcement are now considered models by many urban foresters. The **ordinance** applies to all properties subject to development within unincorporated portions of the **county**, although single-family home construction was excepted. The **county** followed the **ordinance** by hiring a full-time arborist to enforce it and work with developers. Every application for a land development permit in the **county** must be accompanied by a **tree** protection plan, which is reviewed with a site inspection by the arborist.

In 1988, the **Fulton ordinance** resulted in active protection of over 700 acres of trees and the planting of over 39,000 trees. That represented an 11 percent reforestation of land developed in the **county** since 1985. On the average, developers have exceeded the requirements of **tree** protection and planting by 50 percent.

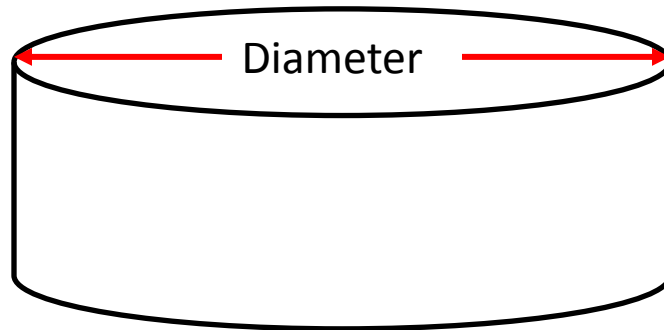


Where it begins.....Basal area.



$$ba = \pi(r)^2$$

Late 1970's USFS pub says that forest begins to modify the environs when basal area reaches 12 to 20 units ba. depending on species.



$$ba = \pi(r)^2$$

A 13.54" dbh (diameter breast height) tree will have 144 sq.in. of basal area –or 1 sq.ft.

A 24" dbh tree will have a ba of 3.4 sq.ft.

1 sq.ft. of ba for every 640 sq.ft of open soil surface area (ossa) or 960 cubic ft.

2.5 ft of canopy for every 1 sq.ft. of ossa



1984 Fulton County tree ord. had a density requirement of 10 units.

Replacement tree credit

caliper in.	density credit	actual ba (in.)	actual ba (ft.)
2	0.3	3.1	0.022
3	0.4	7.1	0.049
4	0.5	12.6	0.087
5	0.6	19.6	0.136
6	0.7	28.3	0.196

DBH	basal area (in)	basal area (sq.ft.)
5	19.6	0.1
6	28.3	0.2
7	38.5	0.3
8	50.3	0.3
9	63.6	0.4
10	78.5	0.5
11	95.0	0.7
12	113.1	0.8
13.54	144.0	1.0
14	153.9	1.1
15	176.7	1.2
16	201.1	1.4
17	227.0	1.6
18	254.5	1.8
19	283.5	2.0
20	314.2	2.2
21	346.4	2.4
22	380.1	2.6
23	415.5	2.9
24	452.4	3.1
25	490.9	3.4
26	530.9	3.7
27	572.5	4.0
28	615.7	4.3
29	660.5	4.6
30	706.8	4.9
31	754.7	5.2
32	804.2	5.6
33	855.3	5.9
34	907.9	6.3
35	962.1	6.7
36	1017.8	7.1

2005

Conversion Tables

TABLE 1.0 – EXISTING TREES TO REMAIN

Conversion from D.B.H. to density factor units for trees remaining on the site.

D.B.H.	Units	D.B.H.	Units	D.B.H.	Units
4	0.4	36	21.3	59	55.9
5-7	1.2	37	22.5	60	58.9
8-9	2.0	38	23.7	61	60.9
10	2.4	39	24.9	62	62.8
11	2.8	40	26.1	63	64.9
12	3.2	41	27.3	64	67.0
13-15	3.6	42	28.8	65	69.1
16-20	4.0	43	30.3	66	71.2
21	4.8	44	31.8	67	73.3
22	5.2	45	33.0	68	75.6
23	8.7	46	34.5	69	77.9
24	9.3	47	36.0	70	80.1
25	10.2	48	37.8	71	82.4
26	11.1	49	39.3	72	84.8
27	12.0	50	40.8	73	87.1
28	12.9	51	42.7	74	89.6
29	13.8	52	44.2	75	92.0
30	14.7	53	45.9	76	94.5
31	15.6	54	47.7	77	97.0
32	16.8	55	49.4	78	99.5
33	17.7	56	51.3	79	102.1
34	18.9	57	53.1	80	104.7
35	20.1	58	55.0		

TABLE 2.0 – REPLACEMENT TREES

Conversion from caliper to density factor units for replacement trees.

CALIPER	UNITS	CALIPER	UNITS
1	0.4	8	1.3
2	0.5	9	1.5
3	0.6	10	1.7
4	0.7	11	1.9
5	0.9	12	2.1
6	1.0	13	2.3
7	1.2	14	2.5

DBH

basal area (in)

basal area (sq.ft.)

5	19.6	0.1
6	28.3	0.2
7	38.5	0.3
8	50.3	0.3
9	63.6	0.4
10	78.5	0.5
11	95.0	0.7
12	113.1	0.8
13.54	144.0	1.0
14	153.9	1.1
15	176.7	1.2
16	201.1	1.4
17	227.0	1.6
18	254.5	1.8
19	283.5	2.0
20	314.2	2.2
21	346.4	2.4
22	380.1	2.6
23	415.5	2.9
24	452.4	3.1
25	490.9	3.4
26	530.9	3.7
27	572.5	4.0
28	615.7	4.3
29	660.5	4.6
30	706.8	4.9
31	754.7	5.2
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34	907.9	6.3
35	962.1	6.7
36	1017.8	7.1

2005

2. Procedures for Calculating the Required Tree Replacement Density Factors (The Tree Density Factor Requirement for property located within Agricultural Districts is 15 units per acre.)

Step 1

Calculate the density factor for the site (DFS) by multiplying the number of site acres by 15.

EXAMPLE: A 2.2 acre site has a DFS of $2.2 \times 15 = 33$.

Step 2

Calculate the existing density factor (EDF) of trees which will remain on the site to be protected during construction. EDF is determined by converting the D.B.H. of individual existing trees to density factor units, using Table 1.0. These units are then totaled to determine the EDF for the site.

EXAMPLE: A total of 5 trees will remain on the 2.2 acre site in Step 1. These trees include:

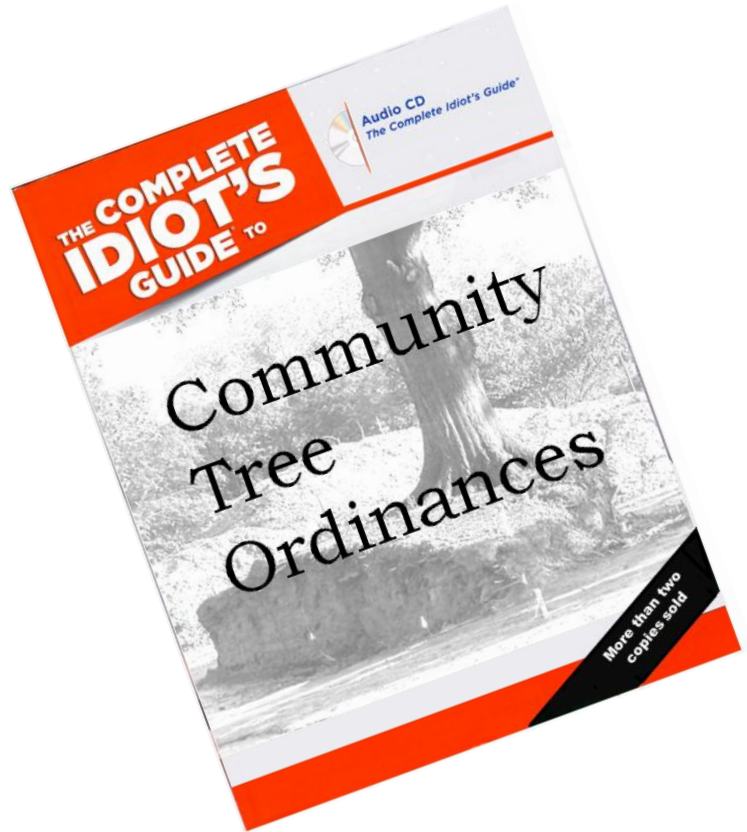
Quantity	Size	Tree type
3	18"	Oak
1	20"	Hickory
1	30"	Oak

When converted to density factor units using Table 1.0, we arrive at the following values:

D.B.H.	Units		# Trees		
18"	4.0	X	3	=	12.0
20"	4.0	X	1	=	4.0
30"	14.7	X	1	=	14.7
EDF total					30.7

The sum total of units, 30.7, is the EDF, existing density factor.

1980's



-meets- CRISPR



....and we wound up with a lot of things that seemed to make sense at the time....



...but had little or no biological mechanisms to support the ecological premise

i.e. 50 % canopy cover in a parking lot will provide significant environmental benefit even if you plant them in 10 x 10 islands and their dead in three years



1990's

The Science based approach to “Prove what trees are worth” Making trees work in cities

5 themes

American Forest – City Green

Dr. Nowak

Forests on the edge

Dr. Wolf

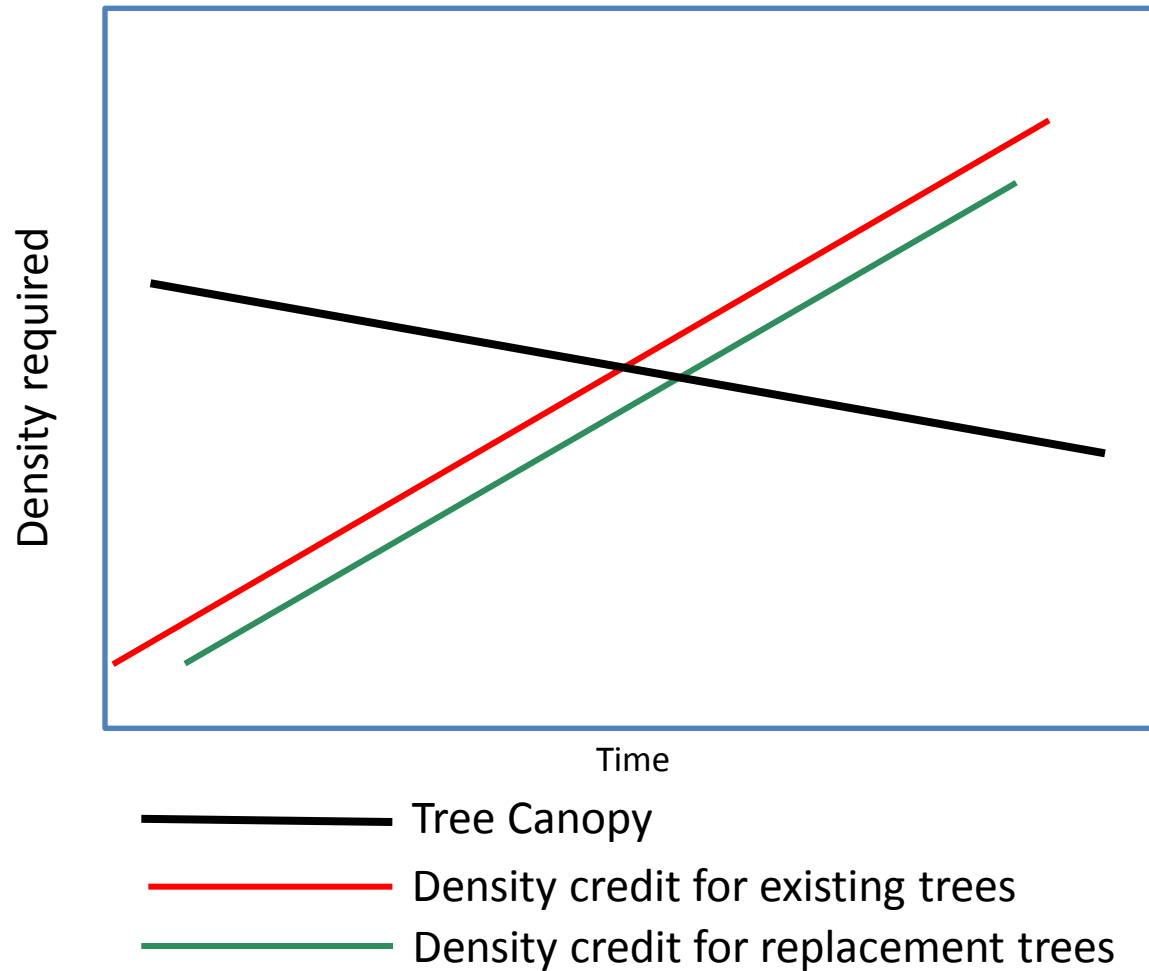
Greg McPherson

Nina Bassuk

Kim Coder

Jim Urban

Ed Gilman – how things work in sand



None of which had anything to do with the biology of what trees need to have to be sustainable in the landscape



...and we told ourselves things like.....

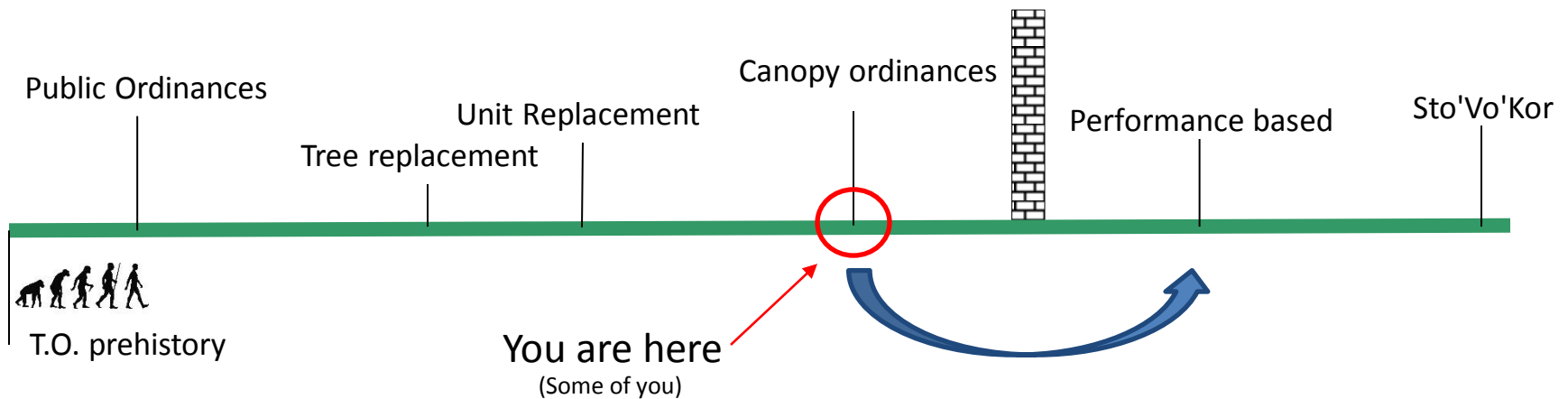


1. Trees are a renewable urban resource.
2. Large trees are replaceable by small trees...its just numbers
3. A tree's natural resource \$ value can compete with land values.
4. We can have no net loss of trees
5. Community forests are replaceable without sacrifice. (Win-Win)
6. More is better – “Fill it up”.
7. Big trees are Specimen trees and should always be conserved.
8. Tree banks work.
9. Parking lot ordinances are about the trees.
10. Tree ordinances are the law.

Where do we go from here...



Tree ordinance continuum



Create ordinances that require that the land perform the same environmental function that it did prior to development i.e meet performance standards for air and water quality and quantity using Green Infrastructure tools and tenets.

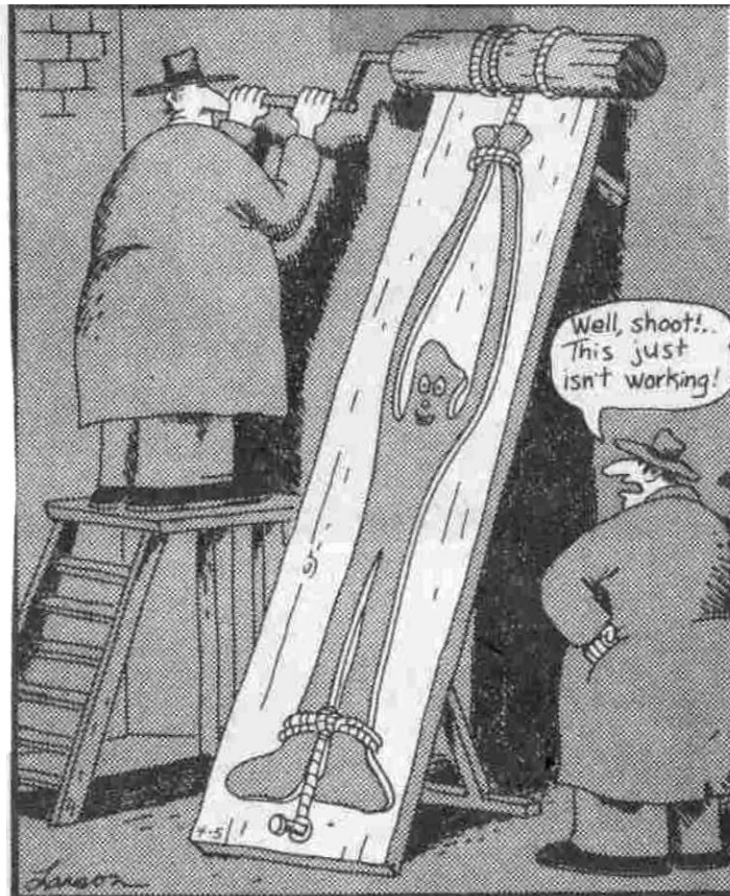


The Key

Knowing what you have....

Assessing Your Canopy

So what works?



Special Agent Gumby falls into the frustrated hands of the enemy.

SUSTAINABLE
COMMUNITY FORESTRY
P R O G R A M



**Recommended Community
Tree Ordinance Tree
Conservation Standards**



So what do we do now?

... begin making
sustainable spaces.



.....and planting
“long term trees”
appropriate to the
space





Sustainable Community Forest Program



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