

The Climate Protection Agreement

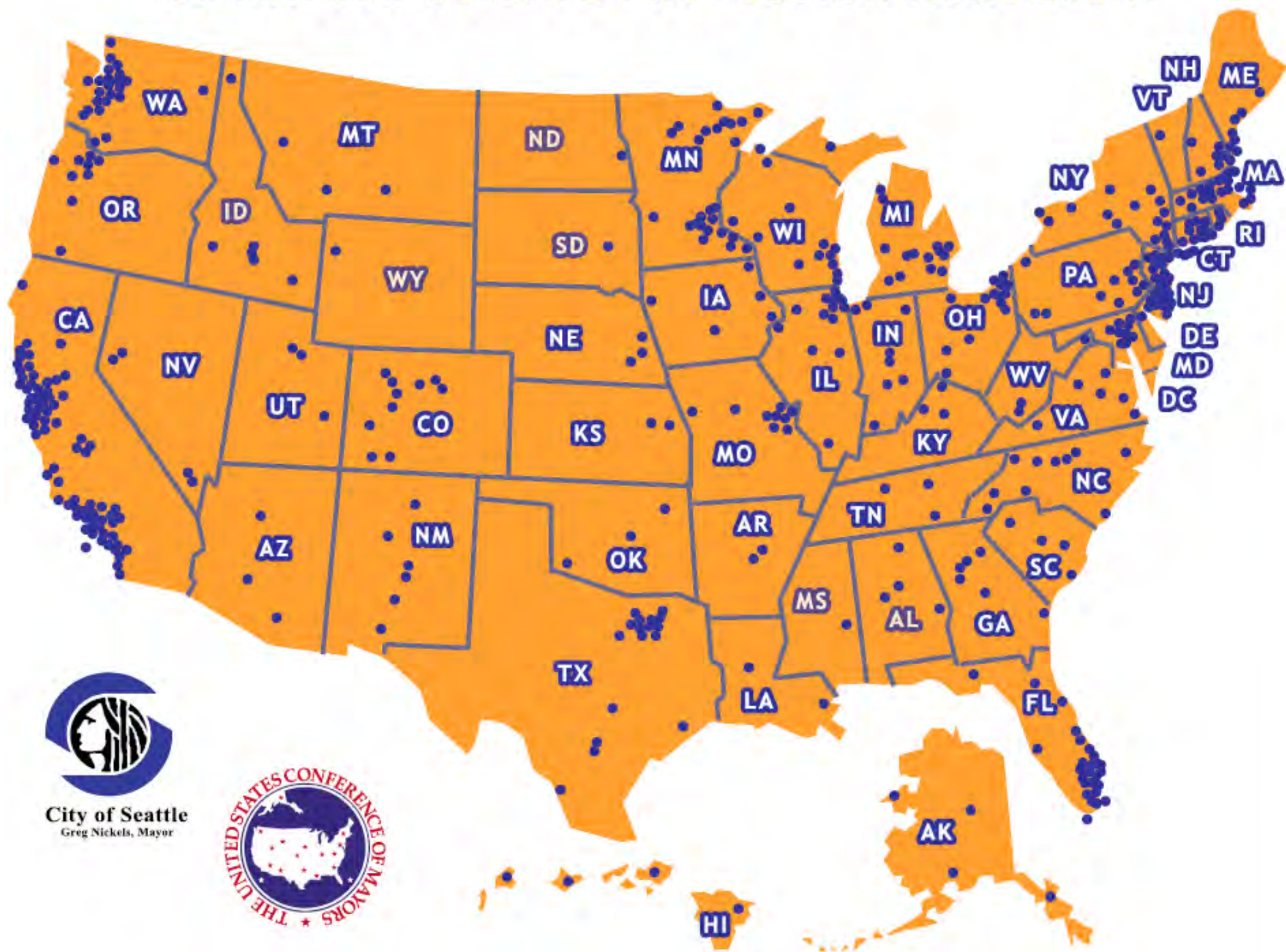


Origins of the Initiative



Greg Nickels,
Mayor of Seattle

US MAYORS CLIMATE PROTECTION AGREEMENT



Reasons for Signing

Cities have discovered that they can save money through operational changes that make sense both environmentally AND economically.

Many consider it both noble and patriotic to take steps to reduce our dependency on the importing of foreign oil, especially from countries that don't have our best interest at heart.

Such activity can foster economic development, such as the electric bus industry and cellulosic ethanol.

There are public health and economic benefits to be derived from cleaner air. Examples:

cleaner air means less respiratory problems for city residents.

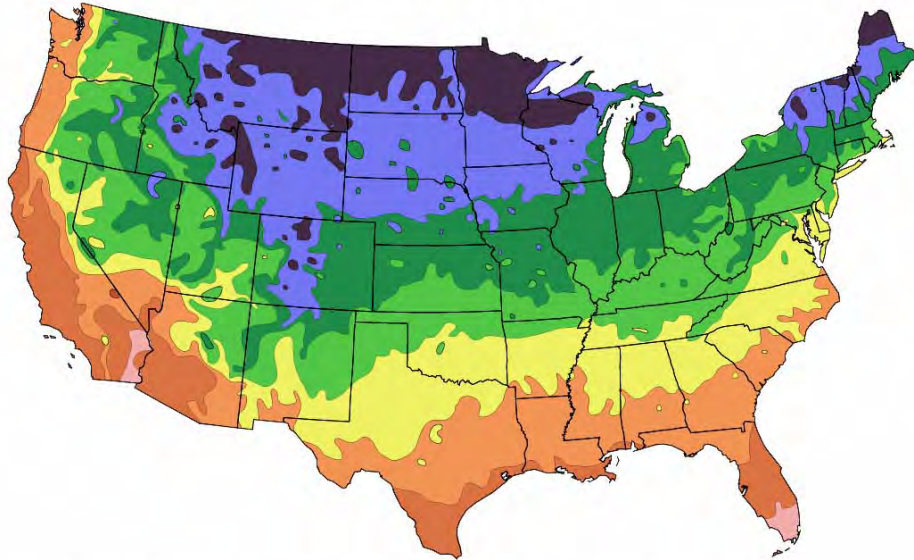
cleaner air can help us in our efforts to be "In attainment" with the EPA standards.

We are doing many of the activities anyway so why not get some national recognition and PR for our efforts.

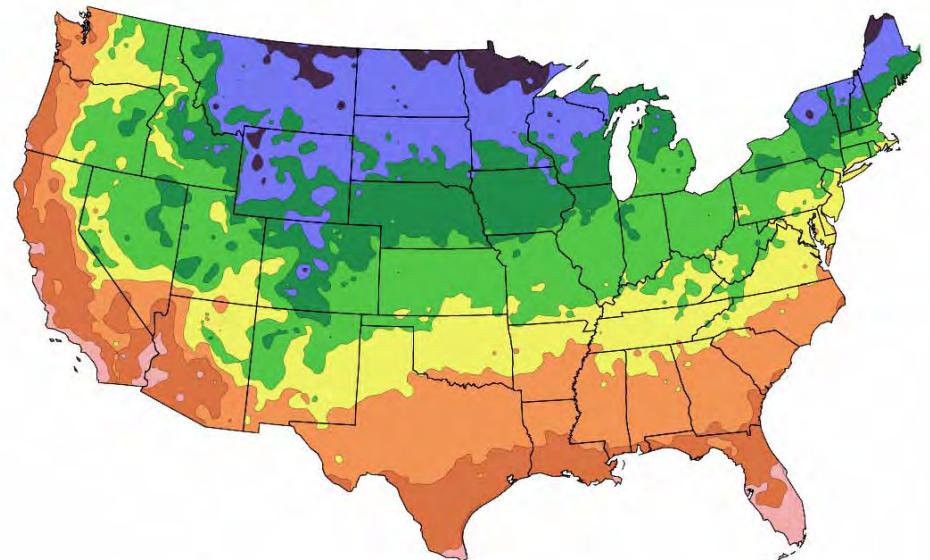
This helps Chattanooga maintain its image as a forward-thinking city.

1990 Map

2006 Map

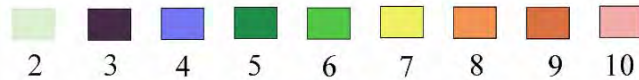


After USDA Plant Hardiness Zone Map, USDA Miscellaneous
Publication No. 1475, Issued January 1990



National Arbor Day Foundation Plant Hardiness Zone Map
published in 2006.

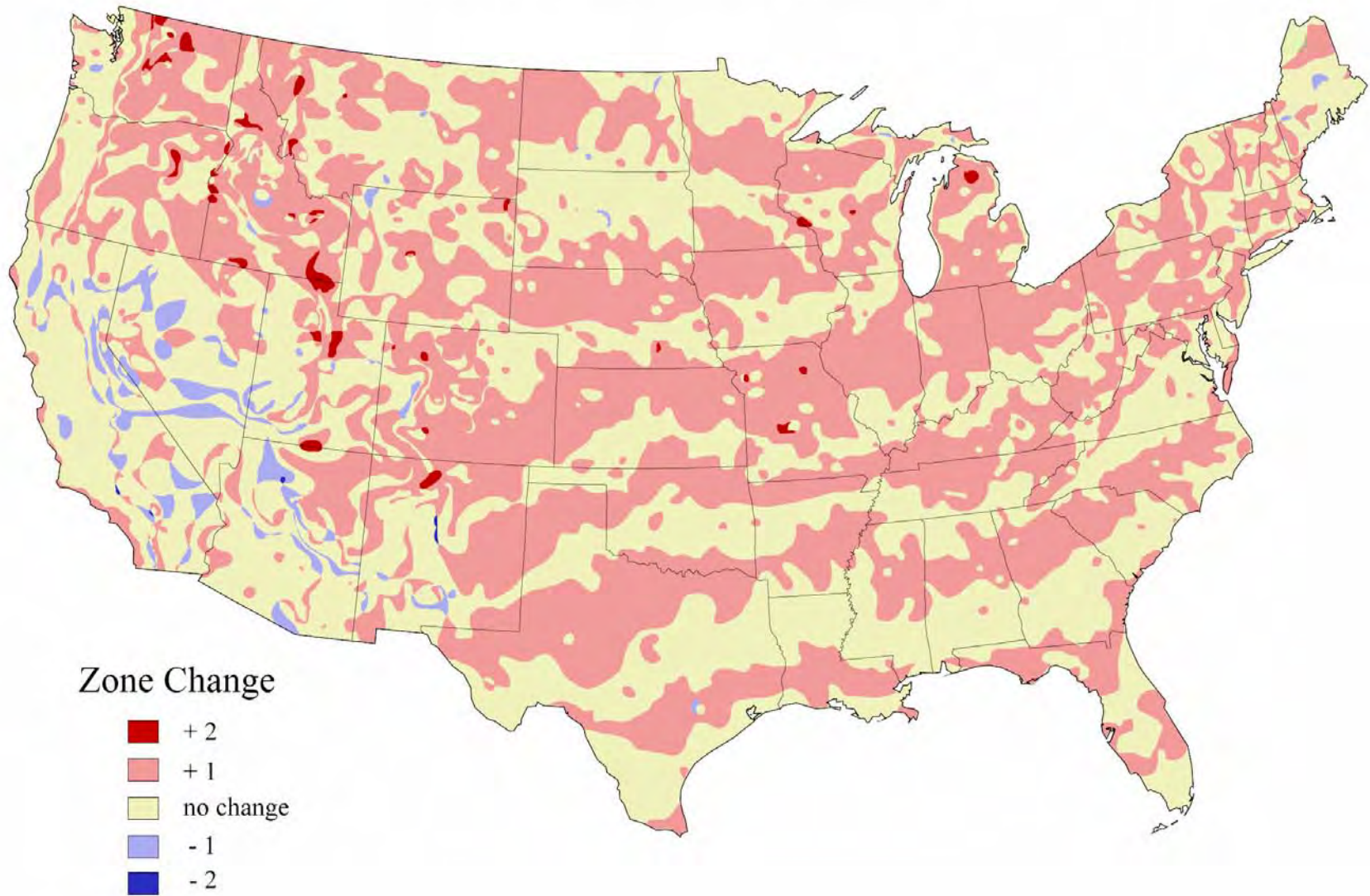
Zone



© 2006 by The National Arbor Day Foundation®

Changes in the Hardiness Zones

Differences between 1990 USDA hardiness zones and 2006 arborday.org hardiness zones reflect warmer climate



Carbon Sequestration by Urban Trees

Table ES7. Net Carbon Dioxide Sequestration from U.S. Land-Use Change and Forestry, 1990 and 1998-2004
(Million Metric Tons Carbon Dioxide Equivalent)

Component	1990	1998	1999	2000	2001	2002	2003	2004
Forest Land Remaining Forest Land: Changes in Forest Carbon Stocks	773.4	618.8	637.9	631.0	634.0	634.6	635.8	637.2
Cropland Remaining Cropland: Changes in Agricultural Soil Carbon Stocks and Liming Emissions	33.1	24.6	24.6	26.1	27.8	27.5	28.7	28.9
Land Converted to Cropland: Changes in Agricultural Soil Carbon Stocks . . .	-1.5	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Grassland Remaining Grassland: Changes in Agricultural Soil Carbon Stocks . . .	4.5	-7.5	-7.5	-7.4	-7.4	-7.4	-7.3	-7.3
Land Converted to Grassland: Changes in Agricultural Soil Carbon Stocks . . .	17.6	21.1	21.1	21.1	21.1	21.1	21.1	21.1
Settlements Remaining Settlements	83.2	84.2	86.8	85.9	89.7	89.9	93.8	97.3
<i>Urban Trees</i>	58.7	73.3	77.0	77.0	80.7	80.7	84.3	88.0
<i>Landfilled Yard Trimmings and Food Scraps</i> . .	24.5	10.9	9.8	8.9	9.0	9.3	9.4	9.3
Total Net Flux	910.4	744.0	765.7	759.5	768.0	768.6	774.8	780.1

Note: Totals may not equal sum of components due to independent rounding.

Source: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004*, EPA 430-R-06-002 (Washington, DC, April 2006), web site <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterPublicationsGHGEmissionsUSEmissionsInventory2006.html>.

The Climate Protection Agreement

Climate Protection Goals for Chattanooga

REDUCE GREENHOUSE GAS EMISSIONS to 7% below 1990 levels.

- Provide a Healthy Environment for Chattanoogaans
- Integrate Planning & Development
- Consider Adopting Policies and Codes
- Create a Network of Partners.
- Serve as a Community Model for the Southeast Region.

GREEN Plan 2012

The ABC's – Potential Plan Topics:

AIR - EMISSIONS AND CLEAN AIR ISSUES

Clean Fuels, Mass Transit, Development Patterns, Industry

BUILDINGS - BUILT ENVIRONMENT

LEED & Earthcraft/Energy Star, Pervious Paving, Stormwater, Management, Solar PV's, Green Roofs

ECOLOGY - URBAN FORESTRY & WATER

Trees and Landscaping, Open Space, Streetscape, Natural Systems, Ridges, Creeks & TN River

The Climate Protection Agreement

6 STEPS

1. SIGN THE CLIMATE PROTECTION AGREEMENT

August 2006

Gather Information from:

Conference of Mayors

Sierra Club

I.C.L.E.I.

Other Cities:

St. Paul-Minneapolis

Albuquerque

Conference of Mayors

Summit on Energy & the

Environment

U.S. Green Building

Council

2. JOIN I.C.L.E.I. & OBTAIN SOFTWARE

November 2006

Software Training

3. PERFORM THE CO₂ AUDIT

Who does this?

UTC Environmental
Science Department
(Jen Sexton)

To be completed by
June 2007

4. FORM A PLANNING COMMITTEE For Setting Reduction Targets & Recommendations For Achieving Them

UTK & UTC
Urban Forestry
Air Pollution Control Bureau
Public Works - City Engineer,
Regional Planning Agency
Architects - AIA, USGBC,
EPB, TVA, Other Utilities (Chatt. Gas)
Chamber of Commerce
Health Professionals
CARTA, ATTI
Builders/Developers/AGC
Global Warming Task Force
Chattanooga Manufacturers Assoc.
and Others

Summer/Fall 2007

5. MONITOR PROGRESS FOR THE PLAN

Committee decides how best
to do this

6. REPORT PROGRESS TO I.C.L.E.I. CONFERENCE OF MAYOR'S MEDIA Compliance by 2012



The Climate Protection Agreement - COMPONENTS

COMMUNITY PARTICIPATION AND EDUCATION

- Include Citizens and Businesses
- Form a Community Task Force to work with Planning Committee
- Develop a program for participation :
 - Education Series
 - Incentives
 - PR campaign
 - Workshops



Public Relations –

Awards to businesses & buildings

Progress reports to the media

City website

Climate Code/Weather Channel

Public Education –

USGBC educational opportunities

Partners -

support groups, networking

ICLEI conference in late 2010



The Climate Protection Agreement - COMPONENTS

LEED Leadership in Energy and Environmental Design and GREEN GLOBES

Sustainable Design
Natural Day lighting
Recycled Materials
Energy Efficiency
Urban Design Elements
Transit Oriented
Green Space
Native Species
Solar Design & PV's
Storm Water BMP's

Green Home Building Methods

Energy Star/Earthcraft



The Climate Protection Agreement - COMPONENTS

Existing Plans and Programs

Hamilton County Comprehensive Plan 2030

Community & Neighborhood Plans

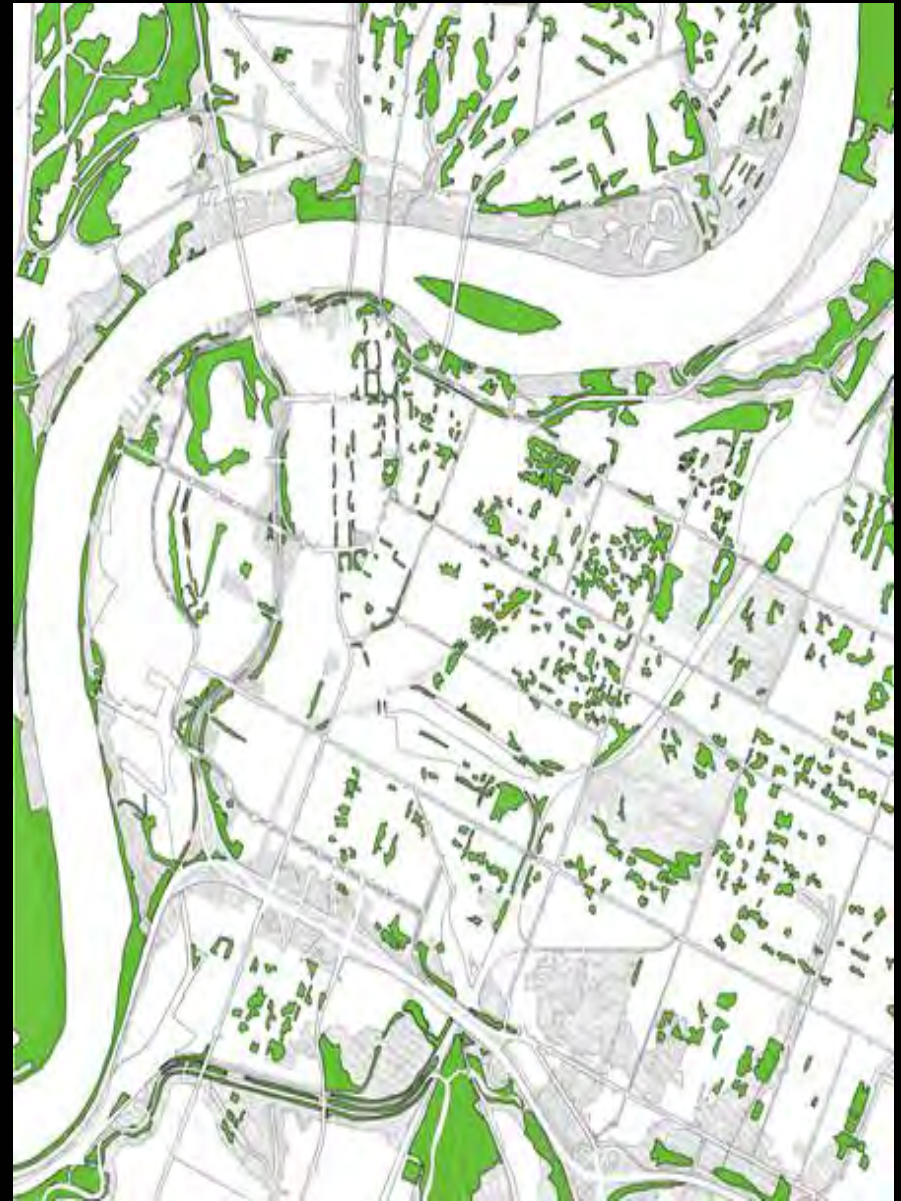
The Downtown Plan 2025

TPO – Long Range Transportation Plan

The Green Center UTK study for
Chattanooga

The Tree Commission

Stormwater Best Management Practices



What does climate change mean for urban foresters/arborists?

- More droughts and intense storms.
- Longer growing season means more maintenance.
- More insect generations per year.
- Shifting of species. More vegetative species coming in from the south. Not all are native – some are very invasive.
- More tree stress means more insects and diseases.

Why to Get Involved:

- In early April The Supreme Court of the United States ruled that the EPA has the authority to regulate carbon dioxide.
- Over 650 Cities have signed on to the Climate Protection Agreement.
- Cities are looking for ways to solve air pollution problems. Trees can help!

How do I get involved?

Assessing Street Tree Populations

STRATUM assesses:

- Structure
- Function
 - Energy
 - Air pollution
 - Stormwater
 - Carbon
 - Property Value
- Value
- Management needs



	Total (\$)	\$/capita	\$/tree
Benefit	501,064	11.31	93.64
Cost	94,000	2.12	17.57
Net Benefits	407,064	9.19	76.07
Benefit-Cost Ratio	5.33	5.33	5.33

Carbon Dioxide (CO₂)

- 4 components:
 - Sequestered
 - Avoided
 - Decomposition
 - Maintenance

Davis Workshop Example

Annual CO₂ Benefits of Public Trees by Species

3/21/2005

Spec	Sequestered (lb)	Decomposition Release (lb)	Maintenance Release (lb)	Avoided (lb)	Net Total (lb)	Total (\$)	Standard Error	% of Total Trees	% of Total \$	Avg. \$/tree
Sycamore, London Plane	656,632	26,165	18,896	280,853	892,423	7,139	(±1,093)	12.2	14.3	2.48
Pistache, Chinese	122,176	8,067	9,378	123,243	227,973	1,824	(±328)	7.3	3.6	1.06
Hackberry, Chinese	278,640	36,203	16,326	259,732	485,844	3,887	(±810)	6.0	7.8	2.73
Crape Myrtle	13,973	676	3,617	68,132	77,811	622	(±132)	5.9	1.2	0.44
Chinese Tallow	271,142	18,017	11,742	251,119	492,503	3,940	(±1,204)	5.0	7.9	3.36
Pear, Bradford	93,908	7,991	7,313	84,371	162,975	1,304	(±313)	4.7	2.6	1.18
Walnut, Black	88,994	67,909	13,740	167,516	174,860	1,399	(±893)	3.4	2.8	1.72
Ash, Moraine	508,169	20,219	10,072	162,056	639,933	5,119	(±1,675)	3.4	10.2	6.43
Ash, Raywood	51,234	845	1,763	32,034	80,660	645	(±185)	2.9	1.3	0.94
Zelkova	57,835	10,072	5,355	102,176	144,584	1,157	(±296)	2.4	2.3	2.04
Locust, Honey	256,927	12,559	7,092	69,663	306,940	2,456	(±818)	2.4	4.9	4.41
Pear, Aristocrat	44,541	1,505	2,570	28,534	69,000	552	(±153)	2.1	1.1	1.11
Magnolia, Southern	9,400	1,394	1,495	27,519	34,031	272	(±148)	1.7	0.5	0.67
Ash, Modesto	74,980	15,928	7,198	114,742	166,597	1,333	(±491)	1.6	2.7	3.53
Redwood, Coast	28,228	951	1,857	35,715	61,134	489	(±119)	1.6	1.0	1.29
Pine, Canary Island	44,320	1,714	2,816	59,578	99,369	795	(±237)	1.5	1.6	2.22
Hackberry, European	61,559	3,941	2,792	57,175	112,000	896	(±222)	1.5	1.8	2.57
Walnut, English	81,658	2,570	2,828	44,568	120,829	967	(±862)	1.5	1.9	2.78
Ash, Arizona	83,471	11,124	5,428	100,868	167,787	1,342	(±841)	1.4	2.7	3.97
Japanese Pagoda	15,947	11,122	5,212	52,402	52,015	416	(±246)	1.4	0.8	1.27
Plum, Flowering	2,217	201	794	12,850	14,073	113	(±33)	1.3	0.2	0.37
Birch, White Birch	26,992	2,055	2,255	43,704	66,385	531	(±233)	1.2	1.1	1.84
Pear, Ornamental	23,048	1,054	1,495	16,929	37,427	299	(±87)	1.2	0.6	1.08
Ginkgo, Female	79,491	3,556	2,336	23,300	96,899	775	(±281)	1.1	1.6	2.89
Oak, Cork	89,971	8,136	2,398	29,724	109,161	873	(±278)	1.1	1.7	3.38
African Sumac	25,017	4,385	1,016	37,623	57,240	458	(±146)	1.1	0.9	1.77
Purple robe tree	42,269	340	993	18,248	59,185	473	(±187)	1.1	0.9	1.83
Oak, Valley	29,797	1,839	1,460	20,515	47,012	376	(±120)	1.1	0.8	1.51
Oak, Southern Live	14,235	515	852	4,668	17,536	140	(±55)	1.0	0.3	0.59
Other street trees	692,757	62,620	36,940	595,963	1,189,159	9,513	(±941)	20.3	19.0	1.98
Citywide total	3,869,527	343,673	188,029	2,925,519	6,263,344	50,107	(±2,219)	100.0	100.0	2.11

Last Thoughts:

The hot dry days we struggled through in August gave us the opportunity to experience the weather that we will bequeath to our children and grandchildren.

The Climate Protection Agreement

City of Chattanooga

Gene Hyde

Climate Protection Coordinator

City Forester

Department of Public Works

900 East 11th Street

Chattanooga, TN 37403

423-757-7283

hyde_gene@mail.chattanooga.gov

