

USDA Forest Service

URBANFOREST CONNECTIONS

webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

www.fs.fed.us/research/urban-webinars



Forest Service
Urban Natural Resources Stewardship

USDA is an equal opportunity provider and employer.



A NEW ROAD TO FUNDING URBAN FORESTRY CREDITS THROUGH CARBON CREDIT GENERATION



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The Problem

- Metropolitan tree canopy in decline
 - Nowak update, below
- Rapid urbanization of 80% of the population, and development
- Disadvantaged communities have fewer trees
- Lower 48 states: Adding urban land area size of Montana by 2050
 - Roads and rooftops?
 - Or healthy, green, equitable cities?

Puget Sound



Table 3. Change in urban/community tree cover by state

State	Years	Year 1		Year 2		Change between years		
		%	SE	%	SE	% ^a	%/yr ^b	Acres/yr ^c
Alabama	(2007-2014)	51.7	1.6	49.7	1.6	-2.0*	-0.32	-12,890
Alaska	(2006-2012)	48.8	2.3	48.8	2.3	0.0	0.00	0
Arizona	(2008-2014)	30.8	1.5	30.2	1.5	-0.6	-0.11	-6,190
Arkansas	(2009-2013)	47.3	1.6	46.9	1.6	-0.4	-0.08	-1,430
California	(2009-2014)	39.4	1.5	39.0	1.5	-0.4	-0.08	-7,890
Colorado	(2007-2013)	21.8	1.3	21.6	1.3	-0.2	-0.03	-610
Connecticut	(2008-2014)	63.0	1.5	62.7	1.5	-0.3	-0.05	-640
Delaware	(2006-2011)	35.8	1.5	35.3	1.5	-0.5	-0.10	-290
District of Columbia	(2010-2015)	36.1	1.5	33.9	1.5	-2.2*	-0.44	-170
Florida	(2009-2014)	49.0	1.6	47.6	1.6	-1.4*	-0.26	-18,060
Georgia	(2009-2014)	63.4	1.5	61.4	1.5	-2.0*	-0.40	-18,830
Hawaii	(2010-2015)	50.2	1.6	50.1	1.6	-0.1	-0.02	-150
Idaho	(2008-2014)	14.2	1.1	13.8	1.1	-0.4	-0.07	-420
Illinois	(2008-2013)	30.9	1.5	29.9	1.4	-1.0*	-0.20	-6,910
Indiana	(2008-2013)	30.8	1.5	30.1	1.5	-0.7*	-0.13	-2,790
Iowa	(2008-2013)	21.9	1.3	20.9	1.3	-1.0*	-0.20	-2,870
Kansas	(2009-2014)	31.0	1.5	30.3	1.5	-0.7*	-0.13	-1,450
Kentucky	(2008-2014)	39.8	1.5	38.9	1.5	-0.9*	-0.16	-2,500
Louisiana	(2009-2014)	47.6	1.6	47.3	1.6	-0.3	-0.06	-1,330
Maine	(2008-2013)	68.4	1.5	68.1	1.5	-0.3	-0.06	-510
Maryland	(2009-2014)	53.4	1.6	53.1	1.6	-0.3	-0.06	-1,020
Massachusetts	(2008-2014)	59.7	1.6	58.4	1.6	-1.3*	-0.23	-4,930
Michigan	(2008-2014)	46.7	1.6	45.9	1.6	-0.8*	-0.13	-3,810

Rhode Island	(2010-2015)	54.5	1.6	52.3	1.6	-2.2*	-0.44	-1,260
South Carolina	(2009-2014)	54.8	1.6	53.6	1.6	-1.2	-0.23	-5,190
South Dakota	(2008-2014)	13.9	1.1	13.6	1.1	-0.3	-0.05	-280
Tennessee	(2008-2013)	48.4	1.6	46.9	1.6	-1.5*	-0.27	-9,060
Texas	(2009-2015)	28.9	1.4	28.3	1.4	-0.6*	-0.11	-10,180
Utah	(2010-2015)	16.7	1.2	16.6	1.2	-0.1	-0.02	-360
Vermont	(2010-2015)	57.5	1.6	56.6	1.6	-0.9*	-0.18	-370
Virginia	(2009-2014)	51.5	1.6	51.0	1.6	-0.5	-0.10	-2,970
Washington	(2009-2014)	42.3	1.6	41.6	1.6	-0.7	-0.14	-3,350
West Virginia	(2008-2014)	61.9	1.5	61.3	1.5	-0.6	-0.11	-790
Wisconsin	(2009-2014)	38.8	1.5	38.3	1.5	-0.5*	-0.10	-2,340
Wyoming	(2009-2014)	15.8	1.2	15.8	1.2	0.0	0.00	0
Total US	(2009-2014)	42.9	0.4	42.2	0.4	-0.7*	-0.12	-174,940

The Problem, Part 2

- It's the Math:
 - “Urban tree is worth more dead than alive”
 - Accounting: cities book trees as an expense, not an asset

- Pervasive lack of funding:
 - City budgets strained with human and utility services
 - Almost no state funding
 - Very little federal funding – grants support state coordinators

- Private-sector funding is desperately needed

Triple Bottom Line of City Trees



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Urban Forests and People

- People live, breathe, recreate amidst our city trees
- Can promote equity
- With work force training, can deliver economic benefits

- Triple Bottom Line of Sustainability: Environmental, social, economic

The Opportunity

- Plenty is being contributed, spent on similar causes:
 - \$4.5 billion world-wide over the last decade on carbon purchases, \$700M in the U.S.
 - Watershed investments, including storm water reductions, totaled over \$600M in 2016
 - Sustainability and CSR spending exceeded \$15B in 2016
 - Consumer-facing companies spend billions on media to connect with local markets

- None of that for saving or restoring our cities' forests
 - No easy, certified way to do that, until now

Who Are We?

City Forest Credits

- 501(c)(3) non-profit incorporated in Seattle in 2015
- Formed to develop city forest protocols and serve as the certification registry
- We are of, by, and for urban forestry

Mark McPherson – Founder, Executive Director

- Urban Forestry Experience:
 - Significant legal experience in land use, property, and forest issues
 - Drafted first conservation easement for Seattle Heritage Tree Program
 - Founder's Award from largest tree preservation group in Seattle
 - 2013 work group at Climate Action Reserve developing Urban Forest Carbon Protocol
- Harvard J.D., Ph.D., UNC-Chapel Hill, B.A.
- Partner with law firm in Seattle for 15 years
- Managed a business and co-founded a website

Who Are We? (continued)

Our Board

- Skip Swenson** VP Policy with **Forterra**
- Ian Leahy** Director of Urban Forest Programs, **American Forests**
- Pete Smith** Urban Forest Program Manager, **Arbor Day Foundation**
- Gerry Gray** Co-Chair, **Sustainable Urban Forest Coalition**
- Ara Erickson** **Weyerhaeuser** Sustainability Senior Manager
- Rachel Holmes** Director of Forest Health, Urban Sustainability, **The Nature Conservancy**

Who Are We? (continued)

Our Protocol Drafting Group: Top scientists and stakeholders in this field

Skip Swenson

VP, Forterra, Seattle

Zach Baumer

Climate Prog. Mgr., City of Austin, TX

Rich Dolesh

VP, National Parks and Rec Assn., D.C.

Jenny McGarvey

Forests Prg. Mgr., Chesapeake Bay Alliance

Ian Leahy

Dir. Urban Forest Programs, American Forests

Scott Maco

Dir. of Research, Davey Institute

Greg McPherson

Research Scientist, US Forest Service

Mark McPherson

City Forest Credits

Walter Passmore

City Forester, Palo Alto, CA

Darren Morgan

Mgr., Seattle DOT

Shannon Ramsay

Founder, Trees Forever, IA and IL

Gordon Smith

Ecofor

Misha Sarkovich

Sacramento Muni. Utility Dist.

Andy Trotter

VP of Field Ops., West Coast Arborists

Heather Sage

Pittsburgh Parks Conservancy

The Product

City Forest Carbon+ Credit

- Metric ton of CO₂, plus quantified storm water, air quality, energy savings (cooling)
- National credit, compliant with national standard, certified by national non-profit registry
- Planting and, for first time anywhere, preservation
- The missing link: An “app” to connect willing funders with urban greening projects

Benefits Beyond Carbon

- Locally sourced credits
 - Environmental benefits and dollars stay local, and where the people are
- Favorable media coverage for everyone:
 - Projects, elected and agency officials, community leaders, and NGOs implementing projects
 - Over many years as parks, streams, and neighborhoods are transformed
- Addresses a global problem while delivering local benefits, compliant with a national standard
- No losers – everyone wins

Pittsburgh – 300 acres

100,000 tons of CO₂

Table 2. Co-Benefits per year with tree canopy cover.

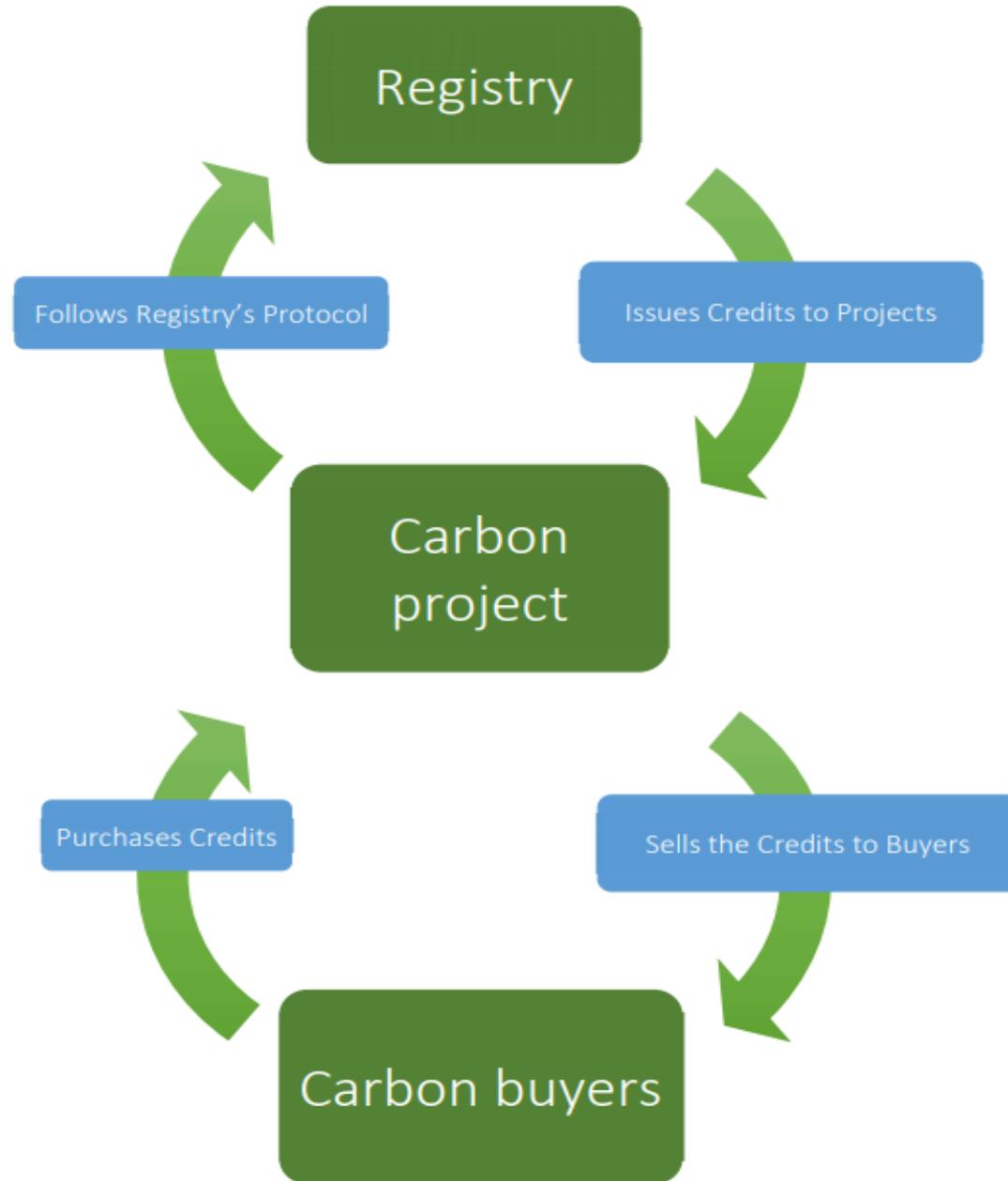
Ecosystem Services	Res Units Totals	Res Unit/Acre Tree Canopy	Total \$	\$/Acre Tree Canopy
Rain Interception (m³/yr)	143,676.6	529.7	\$303,675.72	\$ 1,119.50
CO₂ Avoided (t, \$20/t/yr)	582.5	2.1	\$11,650.87	\$ 42.95
Air Quality (t/yr)				
O₃	5.0666	0.0187	\$10,548.64	\$ 38.89
NO_x	2.1948	0.0081	\$4,569.60	\$ 16.85
PM₁₀	2.5586	0.0094	\$9,644.31	\$ 35.55
Net VOCs	0.3209	0.0012	\$336.19	\$ 1.24
Air Quality Total	10.1409	0.0374	\$25,098.75	\$92.53
Energy (kWh/yr & kBtu/yr)				
Cooling - Elec.	426,392	1,572	\$59,737.57	\$ 220.22
Heating - Nat. Gas	17,503,329	64,526	\$244,806.67	\$ 902.48
Energy Total (\$/yr)			\$304,544.24	\$1,122.70
Grand Total (\$/yr)			\$644,969.57	\$2,377.68

City Forest Projects and Programs

- 10 Early Adopters in 2018
 - Austin: water quality, storm water, flood control
 - King County, WA: Preservation of several thousands of acres of UF
 - Pittsburgh: Preservation project
 - San Francisco: Buyer recruitment for planting after Prop E
 - Dallas: preservation in GTF and planting
 - Shoreline: 3-acres of inaccessible open space; environmental justice
- Goal: creating programs. Recruited from our many urban forest stakeholders
- Data Center Cities: incorporate equity and work force training

The Demand: Buyers/Funders

- Companies really like the quantified, reportable values. New kinds of buyers
- Our stakeholders and their clients: American Forests, Arbor Day
- Early Adopter buyers/funders: Bank of America, Austin, Coca-Cola, FF, and local
- Large national carbon buyers
 - Carbon+ Credits should be the most valuable, always the first purchased
- Water buyers
 - Storm water regulated entities, Coca-Cola, Pepsi, Levi Strauss
- Local buyers
 - Sustainability, CSR, marketing, community outreach, employee engagement



Protocols

➤ Planting

- In metro areas (U.S. Census Bureau maps and city/town boundaries)
- 25-year project duration
- Our scientists developed spreadsheets for planting, sampling, and calculation of CO₂ and co-benefits

➤ Preservation

- Forested parcels – trees not specifically protected
- Tree protection added via easement, deed restrictions, or governmentally designated mgmt. plan or protection
- Quantification via 5 step process – forest carbon quant with tables

City Forest Credits

Incentivizing Triple Bottom Line Results

TRIPLE BOTTOM LINE

Environmental

Stormwater	Slope stability
Air quality	CO ₂
Cooling	Energy savings
Resilience	Birds, wildlife

Social

Public health	Community building
Human health	Green R _x
Environmental justice	Crime reduction

Economic

Jobs and work force development	Media for buyers
Dollars delivered locally	Customer engagement
Green Bond Repayment	Employee engagement

BENEFICIARIES

People

Jobs
Community building
Health
Green R_x
Livability

Communities

Healthier
Safer
Greener
Economic opportunities

Cities

Triple Bottom Line
Resilience
Green infrastructure
CO₂ reduction goals
Livability

Companies

Dollars + Benefits Local
SDG
Media
Customer engagement
Employee engagement

Utilities

MS4 requirements
Stormwater
Air quality
Reduced street maintenance

Media

Good stories
Everyone wins

Global

Global cities
Global buyers and TBL
US AID
World Bank
Green bonds

Impact and Social Investors

Local dollars + benefits
ESG
TBL results

The tree in front of my
home is a **word**



The trees on my street are a
sentence



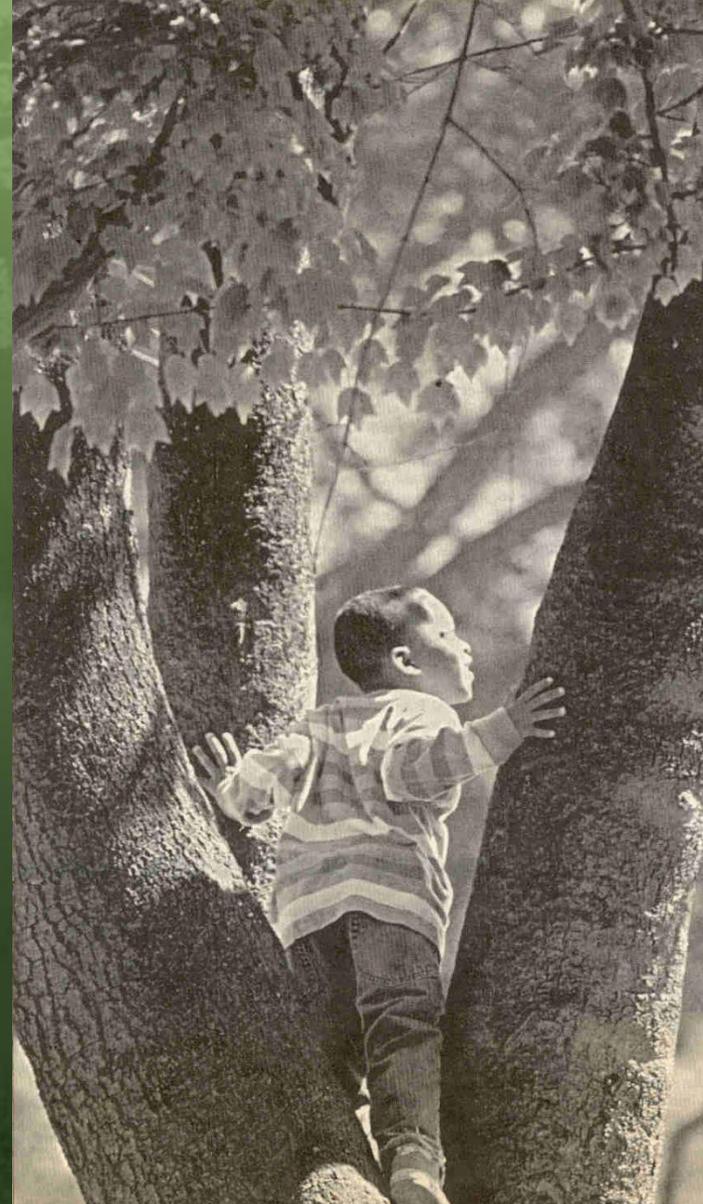
The trees in my neighborhood
are a **paragraph**



All the trees in my community
are a **story**



What will our story be?





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