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36,000,000

# Puget Sound



175,000 per Year

New York City

Atlanta

Philadelphia

Miami

Boston

Cleveland, Pittsburgh, St. Louis, Portland,  
OR, San Francisco, Seattle, and Boise

# The Problem

- 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?

# 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
  
- Private-sector funding is desperately needed

\$700,000,000



\$600,000,000  
2016

\$15,000,000,000  
2016

# How Much of That to Our City Forests?

# Triple Bottom Line of City Trees



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# Did you know? Each year city forests around the USA:



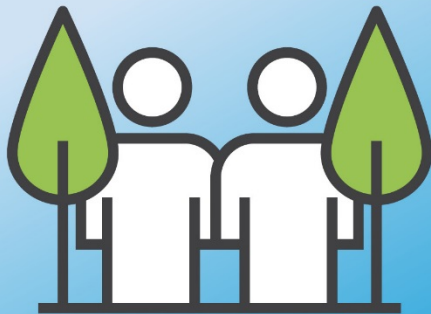
Sequester over 100M tons CO<sub>2</sub>  
and reduce heating use at \$3.1B



Reduce electricity use valued  
at \$4.7B and avoid emissions of  
pollutants at \$3.9B



Produce an average reduction in  
national residential energy use  
by 7.2 percent



Deliver social benefits like crime  
reduction and environmental equity



Deliver economic benefits like diverse career  
opportunities and work force training\*

\*For the full story on what trees can do for cities, go to Vibrant Cities Lab [www.vibrantcitieslab.com](http://www.vibrantcitieslab.com)

# The Product

## City Forest Carbon+ Credit

- Metric ton of CO<sub>2</sub>, plus quantified rainfall interception, air quality, energy savings
- Plus human health, bird and pollinator, slope stability, social and economic benefits – all for a **PUBLIC RESOURCE**
- National credit, national standard, certified by national non-profit registry
- Planting and, for first time anywhere, preservation

# Benefits Beyond Carbon

- Locally sourced credits
- Where the humans are: customers, employees
- Favorable media coverage for everyone
- Addresses global issue, delivers local benefits
- *No losers – everyone wins*

# 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
- Scientists and core served on work group at Climate Action Reserve



# Who Are We? (continued)

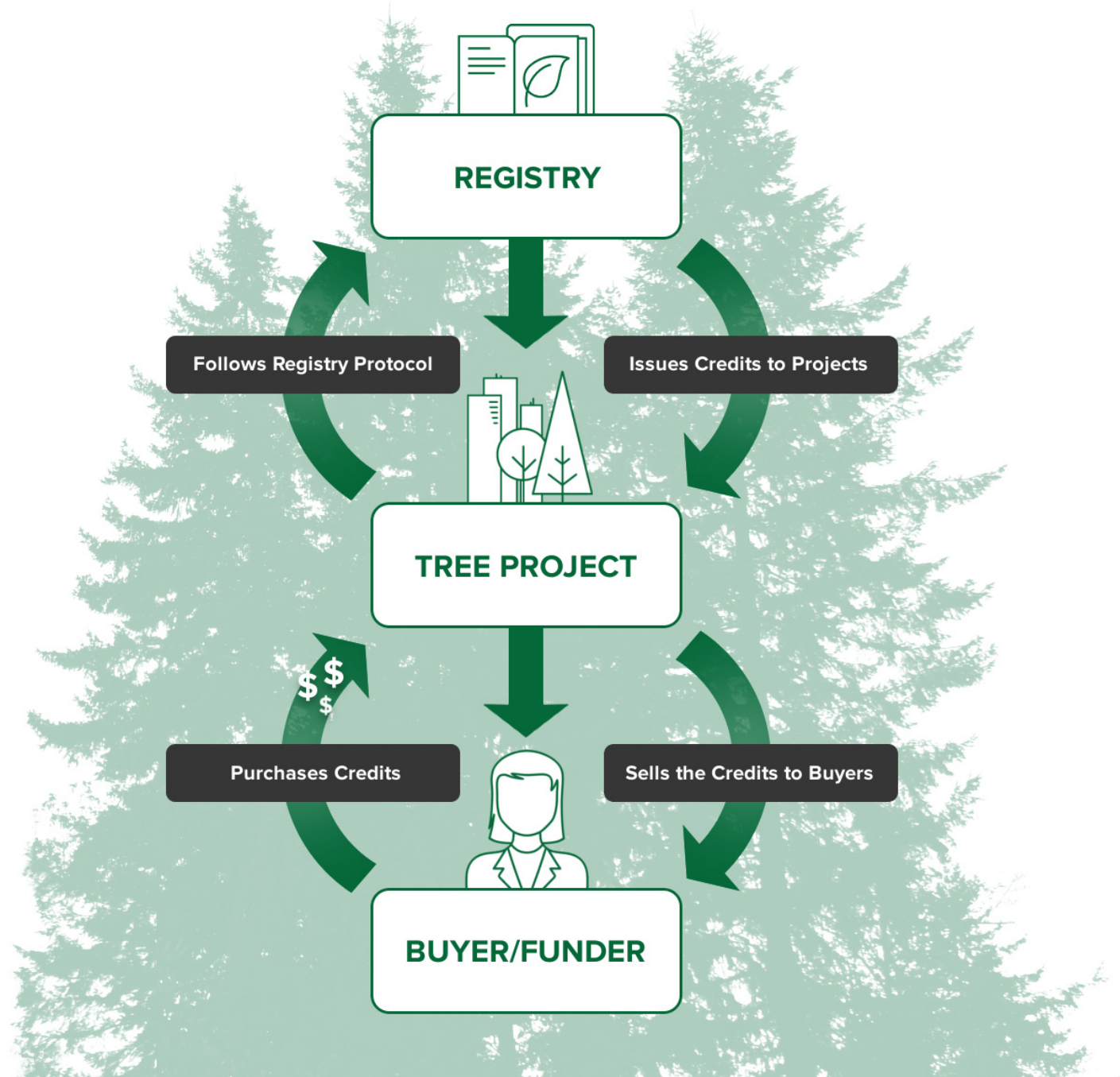
## Our Board

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

# Who Are We? (continued)

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

<b>Skip Swenson</b>	VP, Forterra, Seattle
<b>Zach Baumer</b>	Climate Prog. Mgr., City of Austin, TX
<b>Rich Dolesh</b>	VP, National Parks and Rec Assn., D.C.
<b>Jenny McGarvey</b>	Forests Prg. Mgr., Chesapeake Bay Alliance
<b>Ian Leahy</b>	Dir. Urban Forest Programs, American Forests
<b>Scott Maco</b>	Dir. of Research, Davey Institute
<b>Greg McPherson</b>	Research Scientist, US Forest Service
<b>Mark McPherson</b>	City Forest Credits
<b>Walter Passmore</b>	City Forester, Palo Alto, CA
<b>Darren Morgan</b>	Mgr., Seattle DOT
<b>Shannon Ramsay</b>	Founder, Trees Forever, IA and IL
<b>Gordon Smith</b>	Ecofor
<b>Misha Sarkovich</b>	Sacramento Muni. Utility Dist.
<b>Andy Trotter</b>	VP of Field Ops., West Coast Arborists
<b>Heather Sage</b>	Pittsburgh Parks Conservancy



# Protocols

- Planting
  - In metro areas (U.S. Census Bureau maps and city/town boundaries)
  - Our scientists developed spreadsheets for planting, sampling, and calculation of CO<sub>2</sub> and co-benefits
  
- Preservation
  - Forested parcels – trees not specifically protected
  - Tree protection added via easement, deed restrictions, or governmentally designated protection
  - Quantification via 5 step process – forest carbon quant with tables

# City Forest Projects and Programs

- Austin: 10,000 acres riparian re-forest
  - Buyer/funder: City of Austin
- King County, WA: Preservation of 1,500 acres
  - Buyer of first credits: commercial fishing company
- Shoreline, WA: restoration and environmental justice
  - Buyer/funder: Bank of America
- Des Moines: quintuple bottom line
  - Funder: Microsoft for social license to operate

Others: Boise, Dallas, Palo Alto, San Francisco, and Conservation Districts, Land Trusts, regional planning bodies

# Shoreline, WA

**CO2(t): 1,900**

**Total Estimated Value of Quantified Co-Benefits through Year 51:  
\$1,340,575**

**Table 10. Co-Benefits per year after 25 years (all live trees, includes tree losses)**

<b>Ecosystem Services</b>	<b>Resource Units Totals</b>	<b>Res Unit/site</b>	<b>Total \$</b>	<b>\$/site</b>
<b>Rain Interception (m3/yr)</b>	6,069.43	3.03	\$44,557.78	\$22.279
<b>CO2 Avoided (t, \$20/t/yr)</b>	70.43	0.04	\$1,408.67	\$0.704
<b>Air Quality (t/yr)</b>				
<b>O3</b>	0.1905	0.0001	\$394.87	\$0.197
<b>NOx</b>	0.0628	0.0000	\$130.05	\$0.065
<b>PM10</b>	0.0861	0.0000	\$317.07	\$0.159
<b>Net VOCs</b>	-0.4849	-0.0002	-\$374.19	-\$0.187
<b>Air Quality Total</b>	-0.1455	-0.0001	\$467.80	\$0.23
<b>Energy (kWh/yr &amp; kBtu/yr)</b>				
<b>Cooling - Elec.</b>	76,916.99	38.46	\$3,938.15	\$1.97
<b>Heating - Nat. Gas</b>	285,629.18	142.81	\$3,251.51	\$1.63
<b>Energy Total (\$/yr)</b>			\$7,189.66	\$3.59
<b>Grand Total (\$/yr)</b>			\$53,623.91	\$26.81

# King County: 1,500 Acres Preservation

CO2: 70,000 tons; Co-benefits to Year 41: **\$84,736,360**

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

Ecosystem Services	Resource Units Totals	Res Unit/Acre Tree Canopy	Total \$	\$/Acre Tree Canopy
Rain Interception (m3/yr)	276,505.4	184.3	\$2,030,142	\$ 1,353.43
CO2 Avoided (t, \$20/t/yr)	774.0	0.5	\$15,479	\$ 10.32
<b>Air Quality (t/yr)</b>				
O3	13.4922	0.0090	\$5,753	\$ 3.84
NOx	4.3264	0.0029	\$1,845	\$ 1.23
PM10	8.0649	0.0054	\$6,109	\$ 4.07
Net VOCs	-58.6112	-0.0391	-\$9,305	\$ (6.20)
<b>Air Quality Total</b>	-32.7277	-0.0218	\$4,402	\$2.93
<b>Energy (kWh/yr &amp; kBtu/yr)</b>				
Cooling - Elec.	845,211	563	\$43,275	\$ 28.85
Heating - Nat. Gas	2,205,919	1,471	\$25,112	\$ 16.74
<b>Energy Total (\$/yr)</b>			\$68,386	\$45.59
<b>Grand Total (\$/yr)</b>			\$2,118,409	\$1,412.27

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





The trees on my street are a  
**sentence**



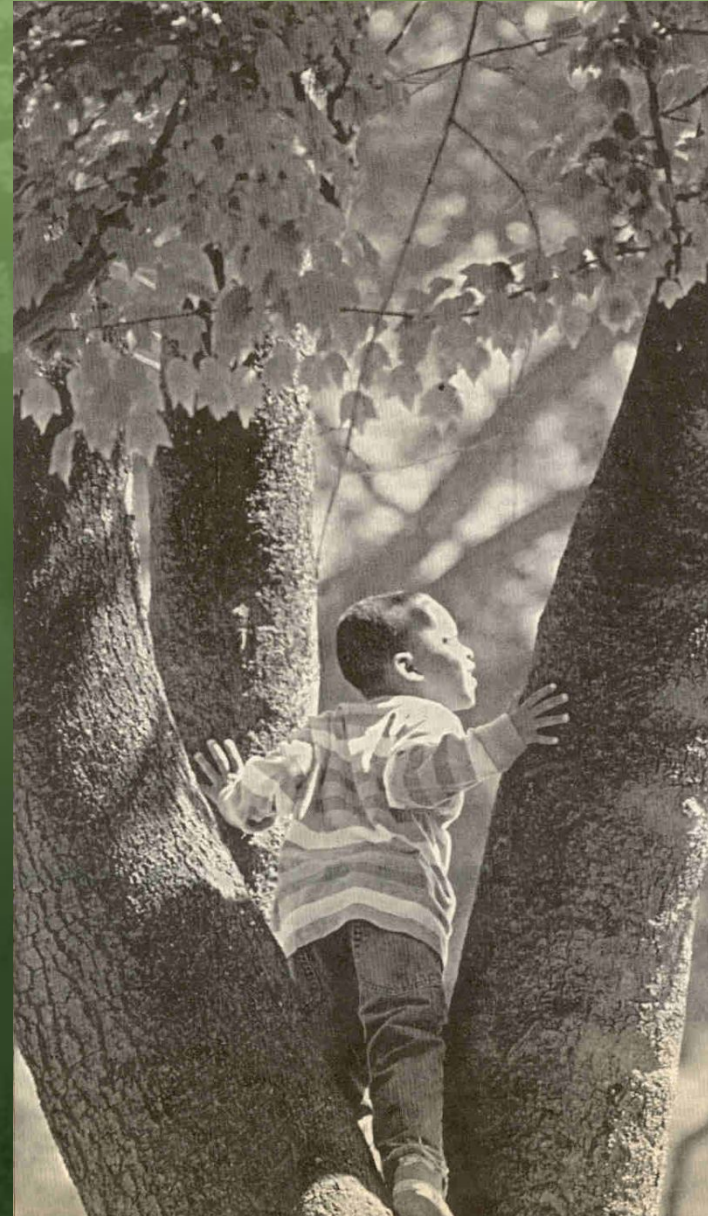
The trees in my neighborhood  
are a **paragraph**



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



What will our story be?





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