

An Introduction to Green Infrastructure, CNT, and Tools for Valuation

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Center for Neighborhood Technology (CNT)

- 32 year old Chicago-based non-profit
- Creative “think-and-do-tank”
- Sustainable urban development strategies
 - research
 - advocacy
 - demonstration projects
 - scaling up; replication
- CNT works across disciplines & issues:
 - transportation & community development
 - sustainable energy
 - climate change
 - natural resources



What Is Green Infrastructure?

The interconnected network of open space, natural areas and landscape features that naturally manage stormwater, recharge aquifers, preserve water quality, and provide recreational opportunities and wildlife habitat.

Site-specific methods of restoring the natural hydrologic functions of infiltration, storage, and evapotranspiration of stormwater.

- Environmental protection
- Benefits to human health and well-being
- Monetary benefits

What Is Green Infrastructure?

Rain gardens



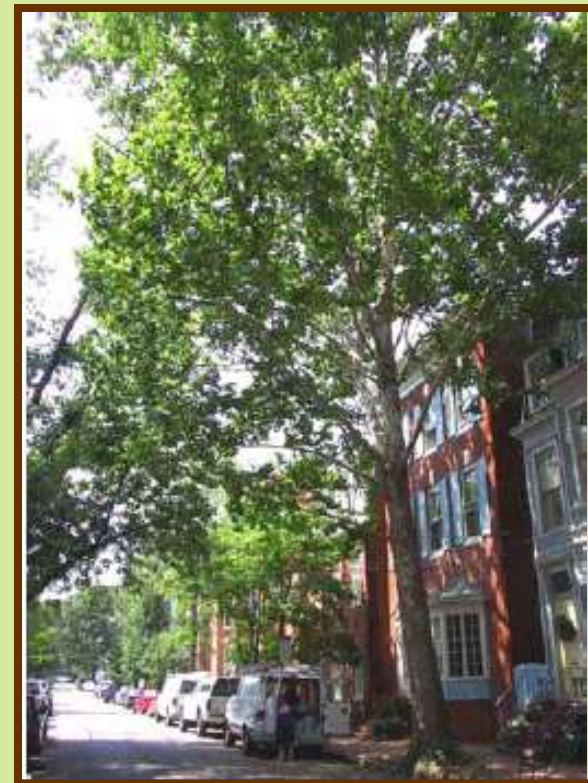
Vegetated swales



Permeable pavements

What Is Green Infrastructure?

Disconnecting downspouts



Urban tree canopy



Green roofs

Why Does Green Infrastructure Matter?



Autumn Trails, Moline, IL
Image: Stormwater magazine



Portland, OR



CNT Super Barrel

- Reduces Stormwater Runoff & Flooding
- Reduces Potable Water Use

Why Does Green Infrastructure Matter?



Image: www.cnr.vt.edu/urbanforestry/biblio/



Image: www.cnt.org

- Improves community health
- Fosters community cohesion & environmental stewardship
- Saves money & increases property values



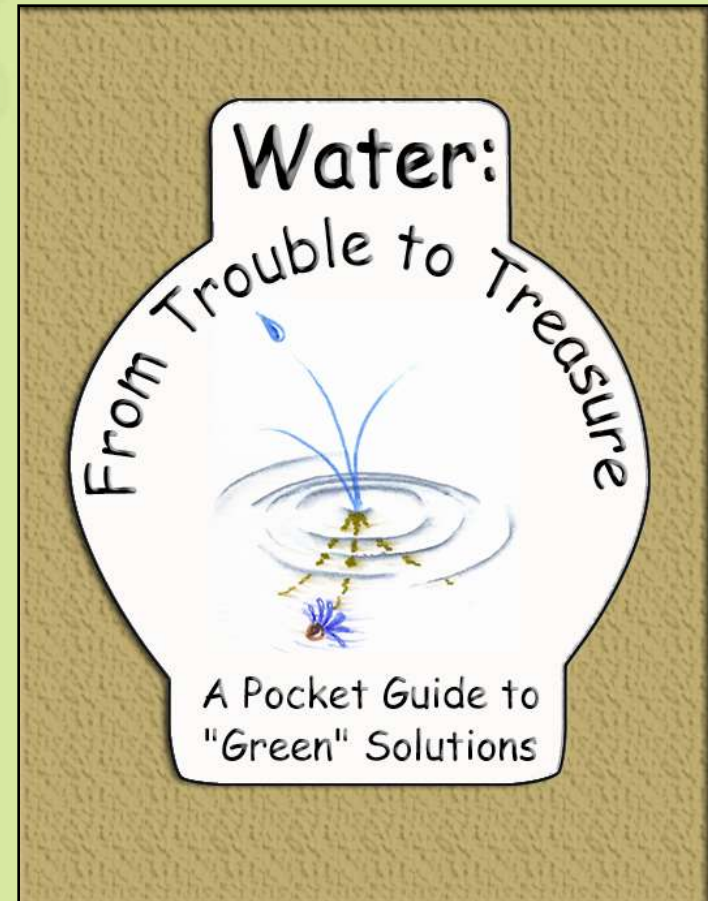
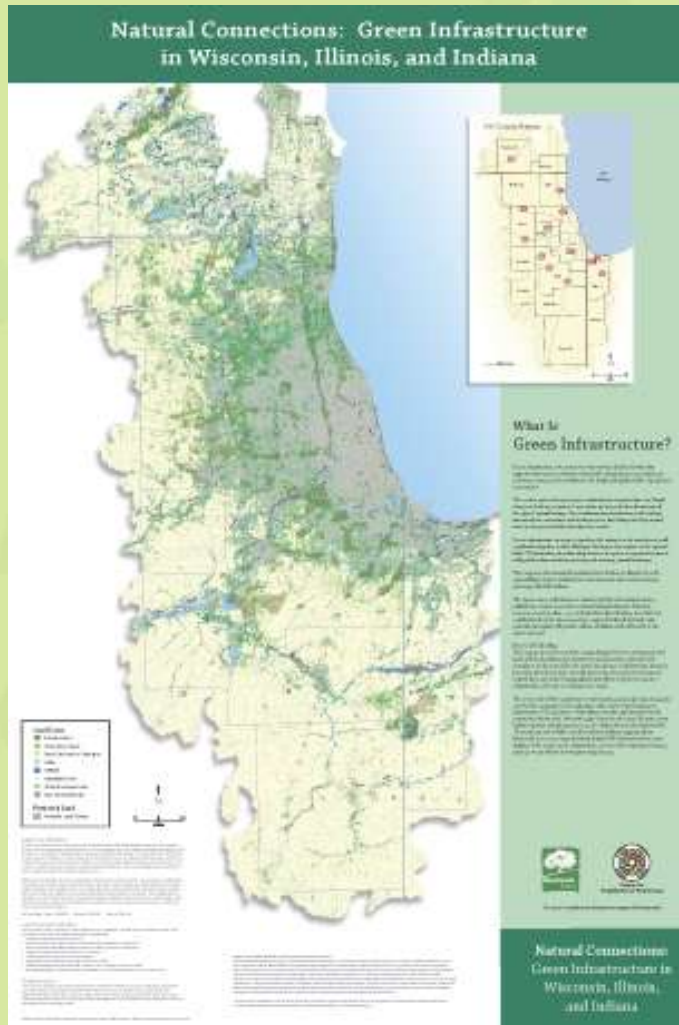
Los Angeles – Urban Heat Island Effect

CNT Natural Resources Group

Focus on improving the urban relationship with water by

- Developing tools to map and analyze the values of green infrastructure
- Researching and demonstrating stormwater BMPs, water resource management efficiency & conservation
- Promoting changes in local, regional and national policy

CNT Green Infrastructure Tools



Outreach


greenmapping.org

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CNT Green Infrastructure Tools

- Overall statement of runoff reduction and a cost/benefit analysis
- Detailed analysis of hydraulic results
- Financial breakout of the costs & benefits of BMP implementation relevant to each stakeholder



**GREEN
INFRASTRUCTURE
VALUATION**

- What is Green Infrastructure?
- How Landscapes Work
- About This Site
- Resources



**GREEN
INFRASTRUCTURE
CALCULATOR**

Calculator

Green Interventions:

- Roof Drains to Raingardens at All Downspouts:
- Half of Lawn Replaced by Garden with Native Landscaping:
- Porous Pavement used on Driveway, Sidewalk and other non-street pavement:
- Green Roofs:
- Provide Tree Cover for an Additional 25% of Lot:
- Use Drainage Swales Instead of Stormwater Pipes:

Site Statistics:

- Select a scenario:
Dense Urban Neighborhood
- Is this an existing site:
- Total size of site: 5 acres
- Number of lots: 44
- Average Roof Size, including Garage: 1000 ft.²

Results

The difference between the conventional system and the green intervention(s) you chose **decreases** the total 100 year life cycle costs and **increases** benefits by \$46,286! This strategy reduces peak discharge by 44%.

Hydrologic
Financial
Financial Detail
Scenario Detail

Hydrologic Results

Lot Level Improvements:	Conventional	Green	Reduction
Lot Discharge (cf)	547	258	52.8%
Lot Peak Discharge (cfs)	0.16	0.07	55.5%


















Total Site Improvements:	Conventional	Green	Reduction
Total Peak Discharge (cfs)	9.63	5.40	43.9%

Detention Size Improvements:	Conventional	Green	Reduction
Total Detention Required (ft ³)	24,090	11,151	54%

greenvalues.cnt.org

CNT Green Infrastructure Tools

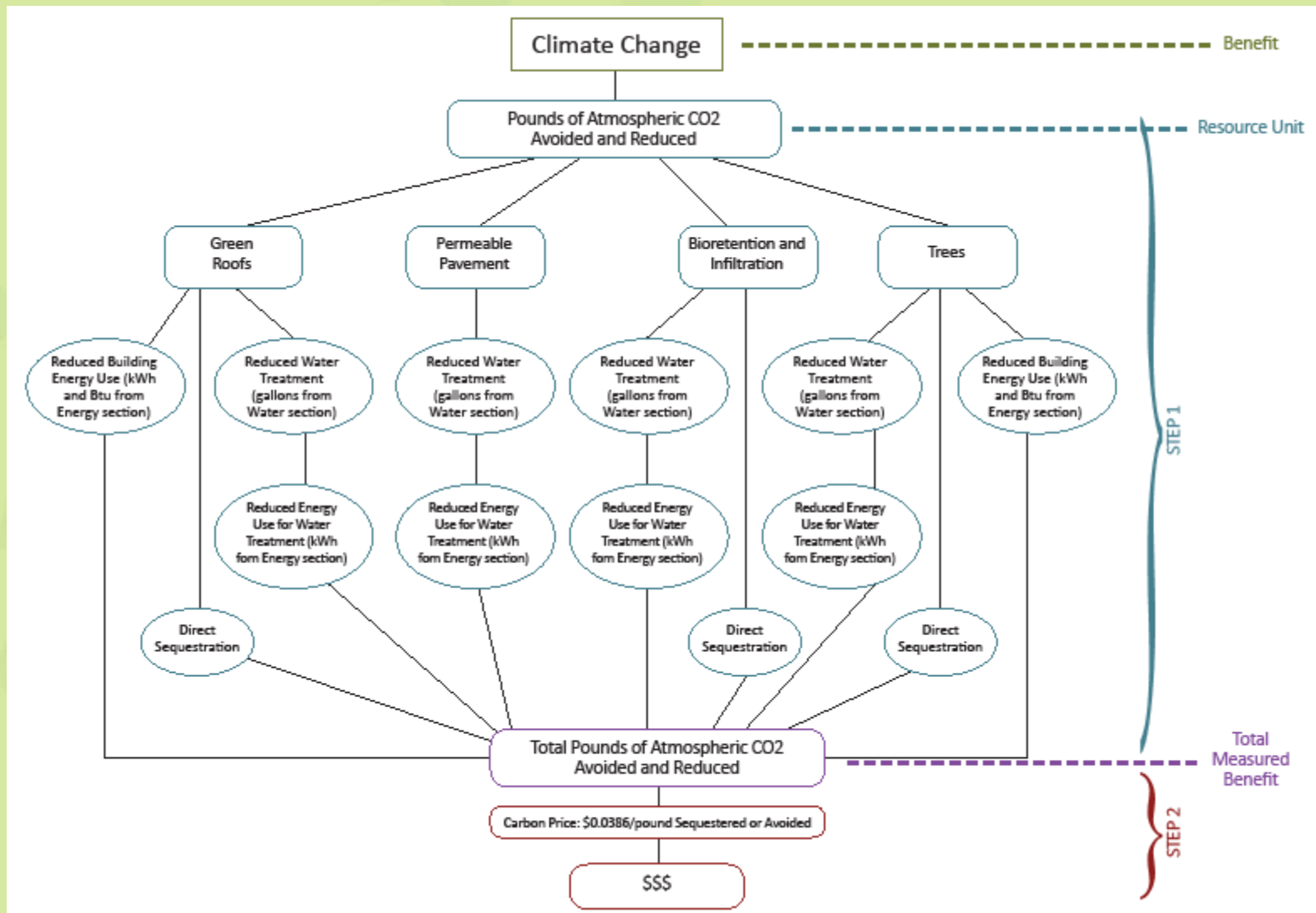
Green Infrastructure Benefit / Practice Matrix

Benefit	Reduces Stormwater Runoff				Increases Available Water Supply	Increases Groundwater Recharge	Reduced Salt Use	Reduces Building Energy Use	Improves Air Quality	Reduces Atmospheric CO ₂	Reduces Urban Heat Island	Improves Community Livability				Improves Habitat	Valuable Public Education Opportunity
	Reduces Water Treatment Needs	Improves Water Quality	Reduces Grey Infrastructure Needs	Reduces Flooding								Improves Aesthetics	Increases Recreational Opportunity	Reduces Noise Pollution	Improves Community Cohesion		
Practice																	
Green Roofs	●	●	●	●	◐	○	○	●	●	●	●	●	◐	●	◐	●	●
Trees	●	●	●	●	◐	●	○	●	●	●	●	●	●	●	●	●	●
Bioretention & Infiltration	●	●	●	●	○	●	○	○	●	●	●	●	●	◐	◐	●	●
Permeable Pavement	●	●	●	●	○	●	●	○	●	◐	●	○	○	●	○	○	●
Water Harvesting	●	●	●	●	●	●	○	○	○	◐	◐	◐	○	○	○	○	●

*The Benefits of Green Infrastructure:
A Guide to Valuing the Economic, Ecologic, &
Social Benefits of Green Infrastructure*

- No
- ◐ Maybe
- Yes

CNT Green Infrastructure Tools



*The Benefits of Green Infrastructure:
A Guide to Valuing the Economic, Ecologic, & Social
Benefits of Green Infrastructure*

Thank you !

For more information, please visit our website at

www.cnt.org

or

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