

PLANTING THE SEEDS OF SUCCESS.



Point/Counterpoint: Role of Trees in Climate Change

Greg McPherson
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Center for Urban Forest Research

Today

- Tree Planting Initiatives
- Trees and Climate Change
- Seeds of Success
- Opportunities for Arborists



Tree Planting Initiatives



Other Initiatives

- UNEP
 - Billion Tree Campaign
 - UEA - Action 11
- US Mayors Climate Protection Agreement
- Energy Tree Act
- GREEN Act of 2008



Approximately 50% of the rise in near surface air temperatures since the 1960s is attributable to land use change.

Impact of urbanization and land-use change on climate

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The most important anthropogenic influences on climate are the emission of greenhouse gases¹ and changes in land use, such as urbanization and agriculture². But it has been difficult to separate these two influences because both tend to increase the daily mean surface temperature^{3,4}. The impact of urbanization has been estimated by comparing observations in cities with those in surrounding rural areas, but the results differ significantly depending on whether population data⁵ or satellite measurements of night light⁶⁻⁸ are used to classify urban and rural areas^{7,8}. Here we use the difference between trends in observed surface temperatures in the continental United States and the corresponding trends in a reconstruction of surface temperatures determined from a reanalysis of global weather over the past 50 years, which is insensitive to surface observations, to estimate the impact of land-use changes on surface warming. Our results suggest that half of the observed decrease in diurnal temperature range is due to urban and other land-use changes. Moreover, our estimate of 0.27 °C mean surface warming per century due to

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... absorbed by the ground warms it...
... per m²

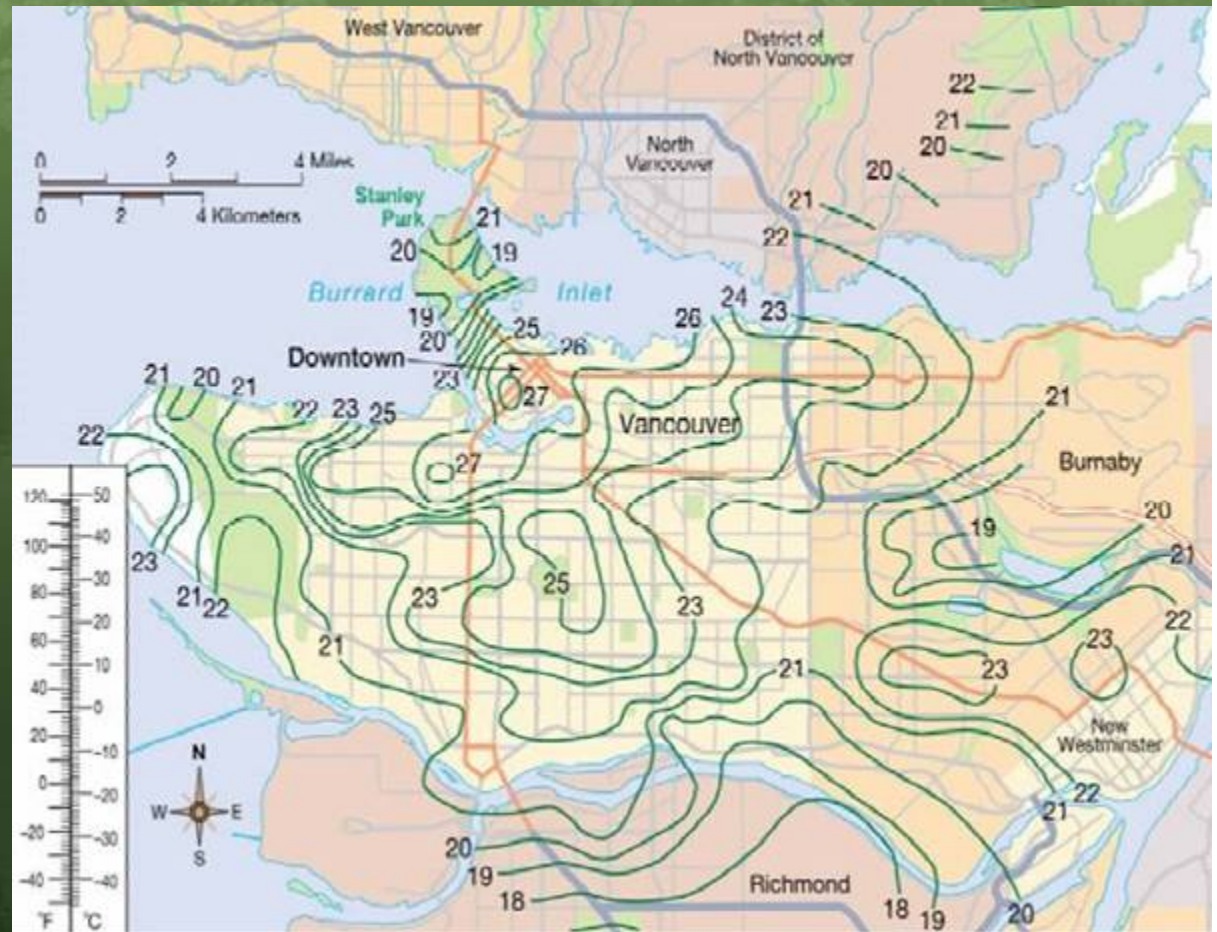
... and is converted into heat causing the emission of longwave (infrared) radiation back to the atmosphere



1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

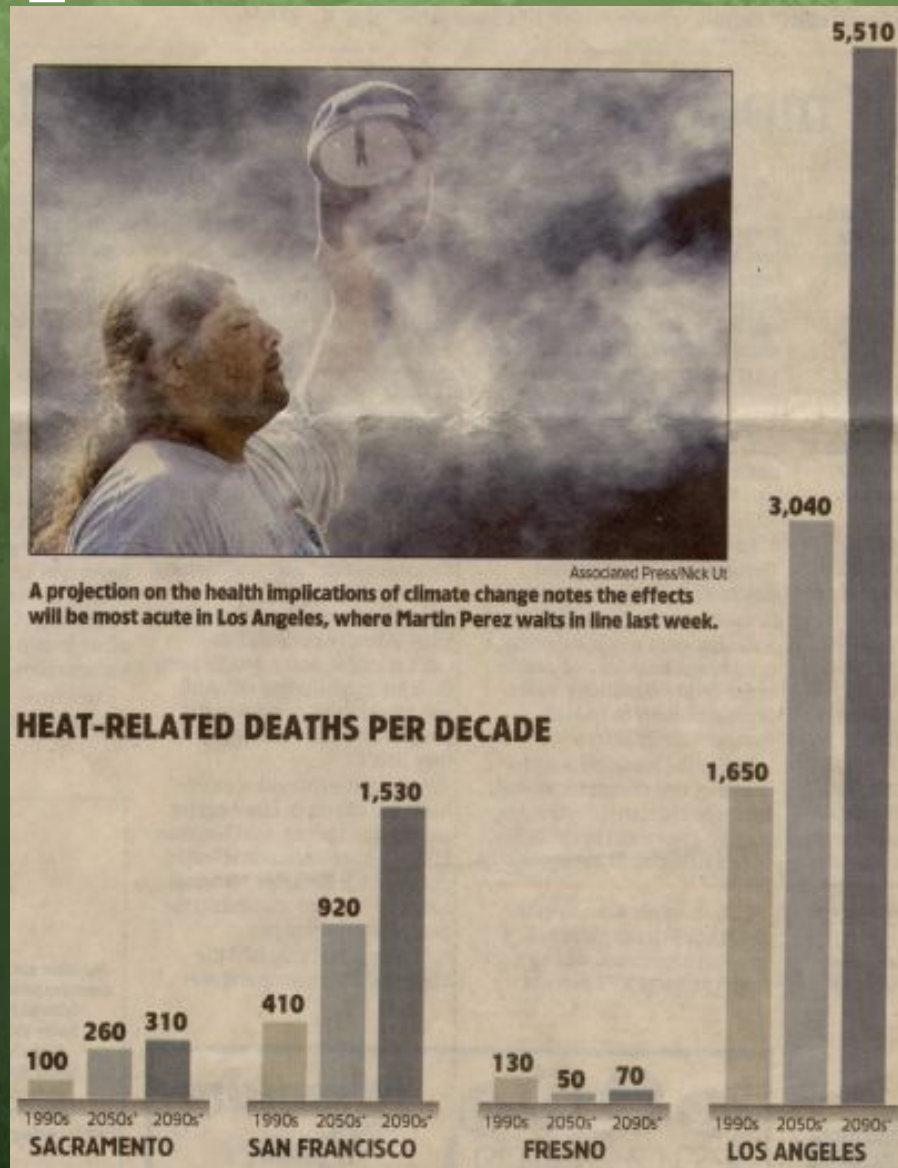
Urban Heat Islands

- Physical form
- Materials
- Urban activities

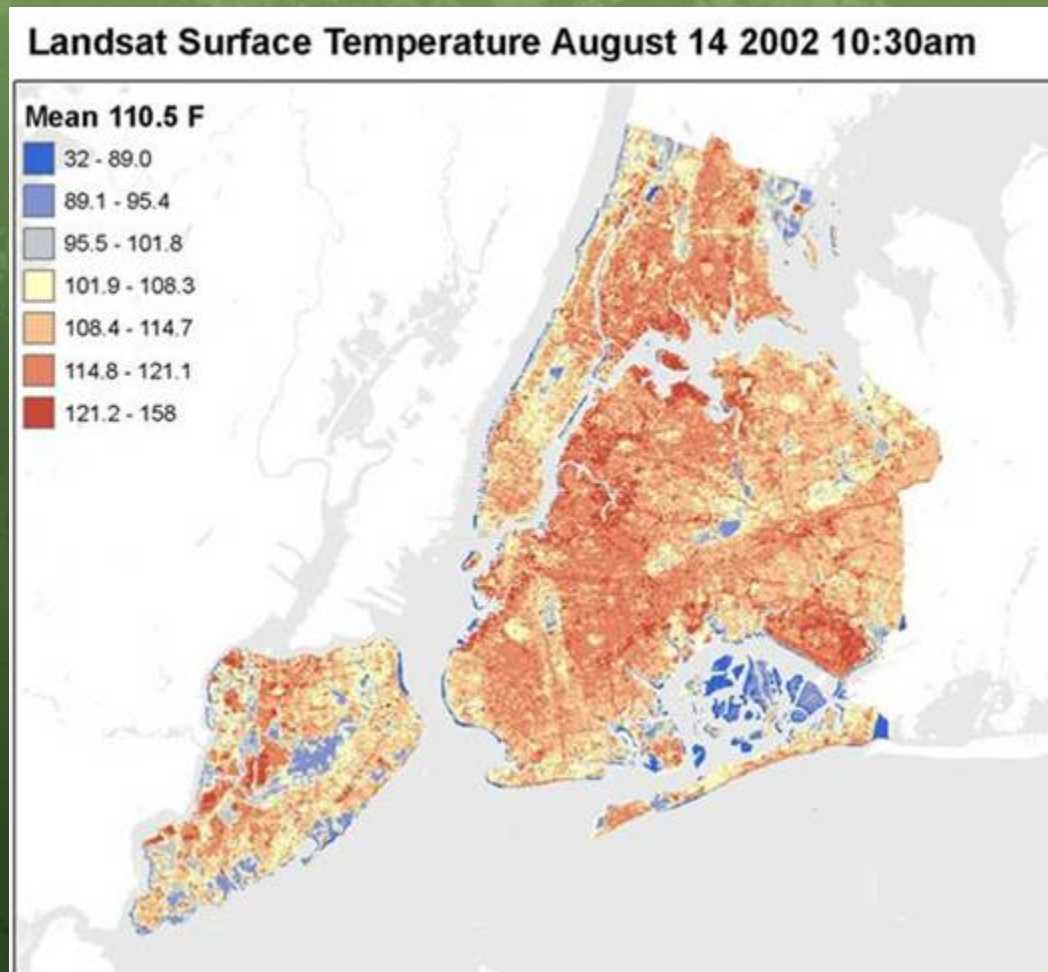


Impacts

- Energy
- Air Quality
- Health
- Water
- Tree Species & Health



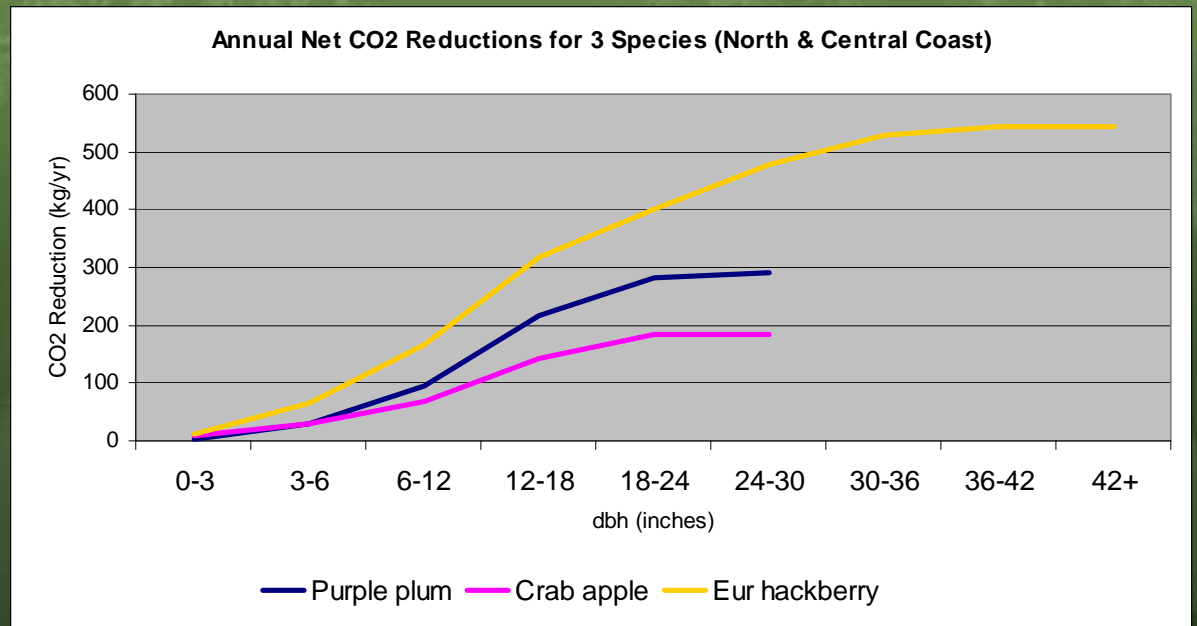
Mitigating NYC's Heat Island



“Street trees...have the largest cooling potential per unit area...”

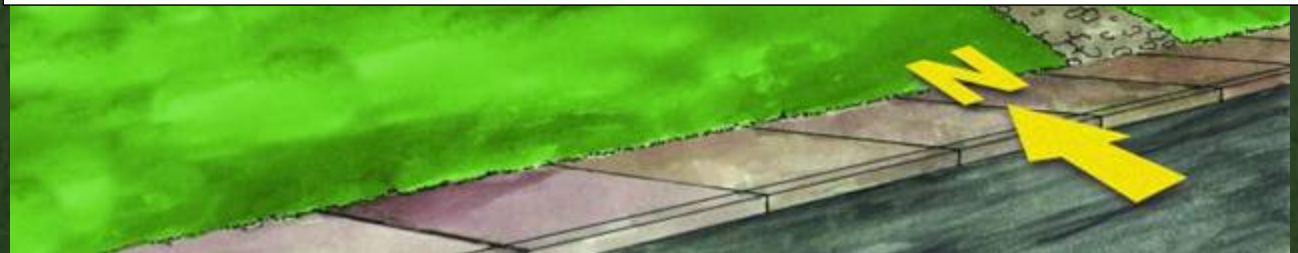
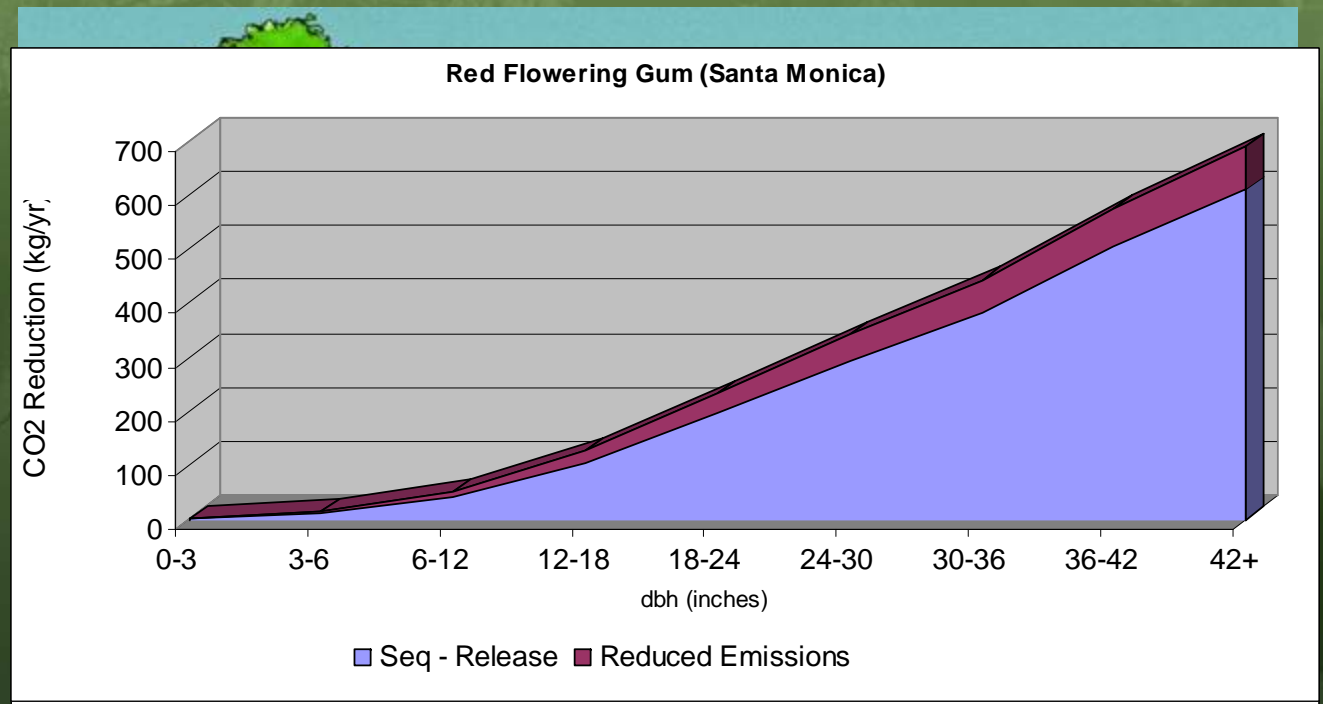
Carbon Storage

- Vary by species
- Vary by region
 - Mature size
 - Growth rate



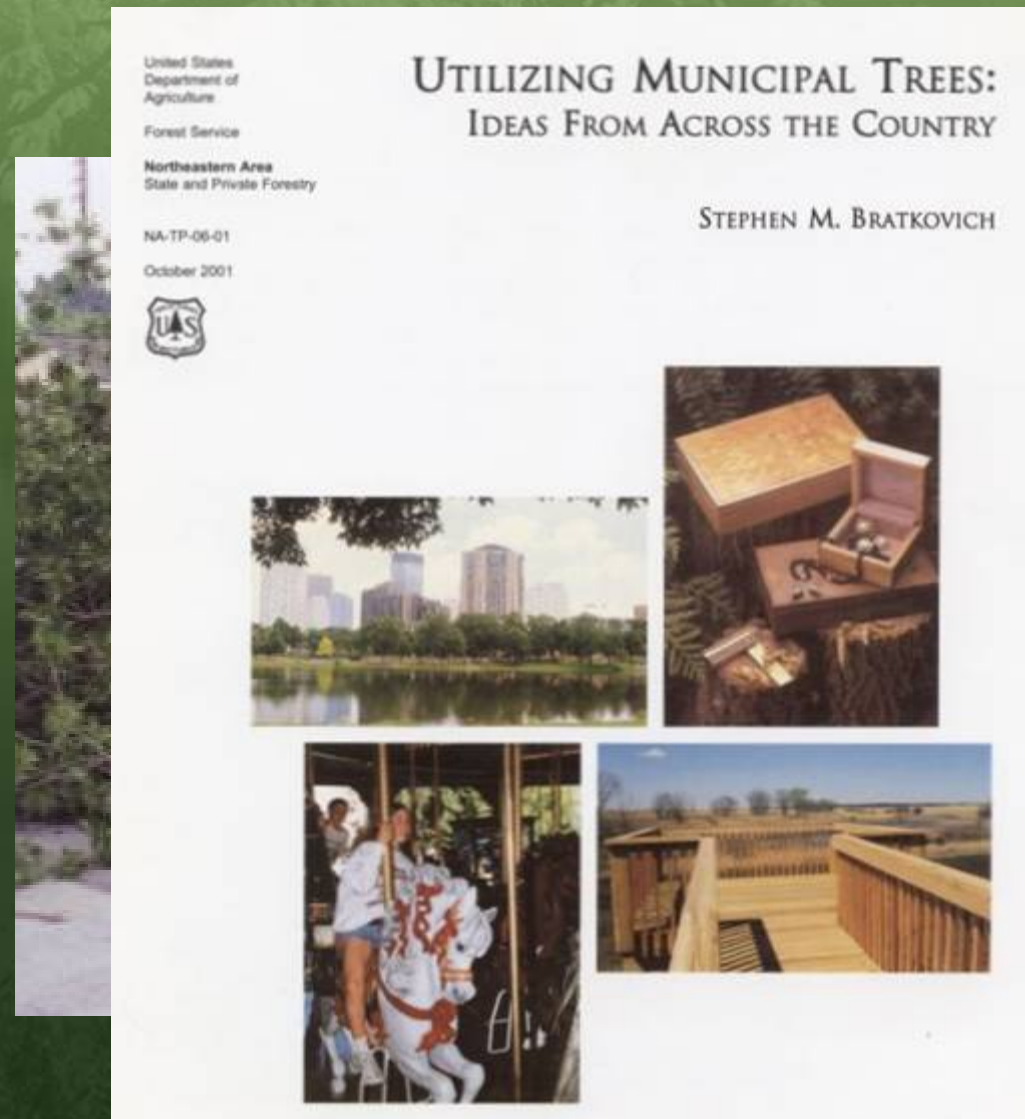
Energy Conservation Reduced GHG Emissions

- Climate
- Building
- Tree
- Utility



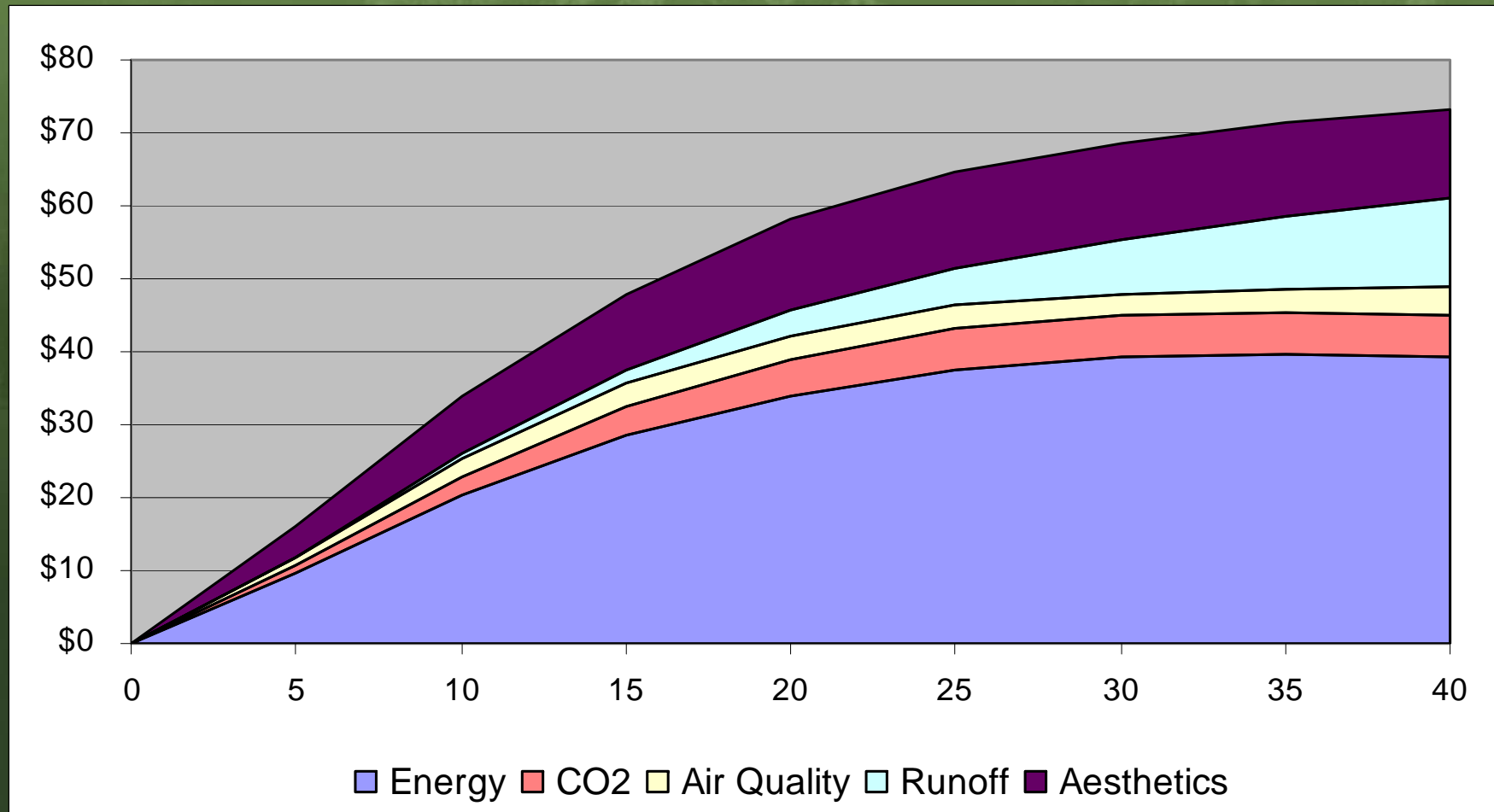
Other GHG Benefits

- Fuel for biopower
- Wood products



Tree Benefits

Red Oak, West Yard



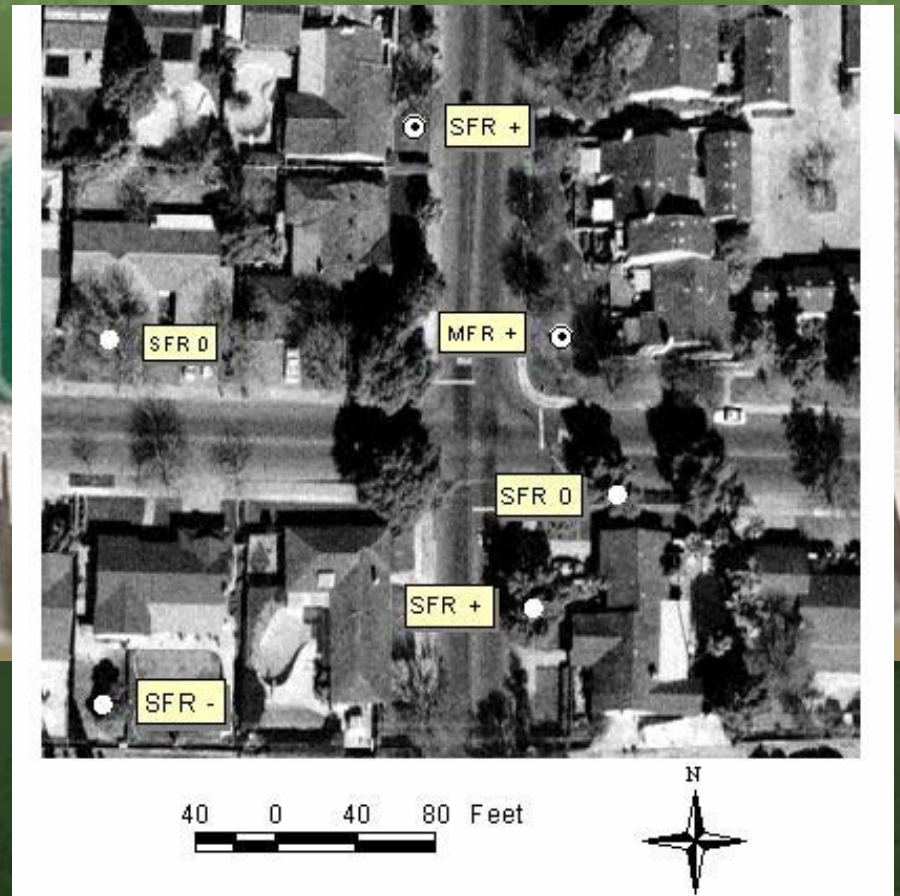
50 Million Trees in California

- You're wrong, and I'll prove it
- You're right, but doesn't matter
- You're right, but too late



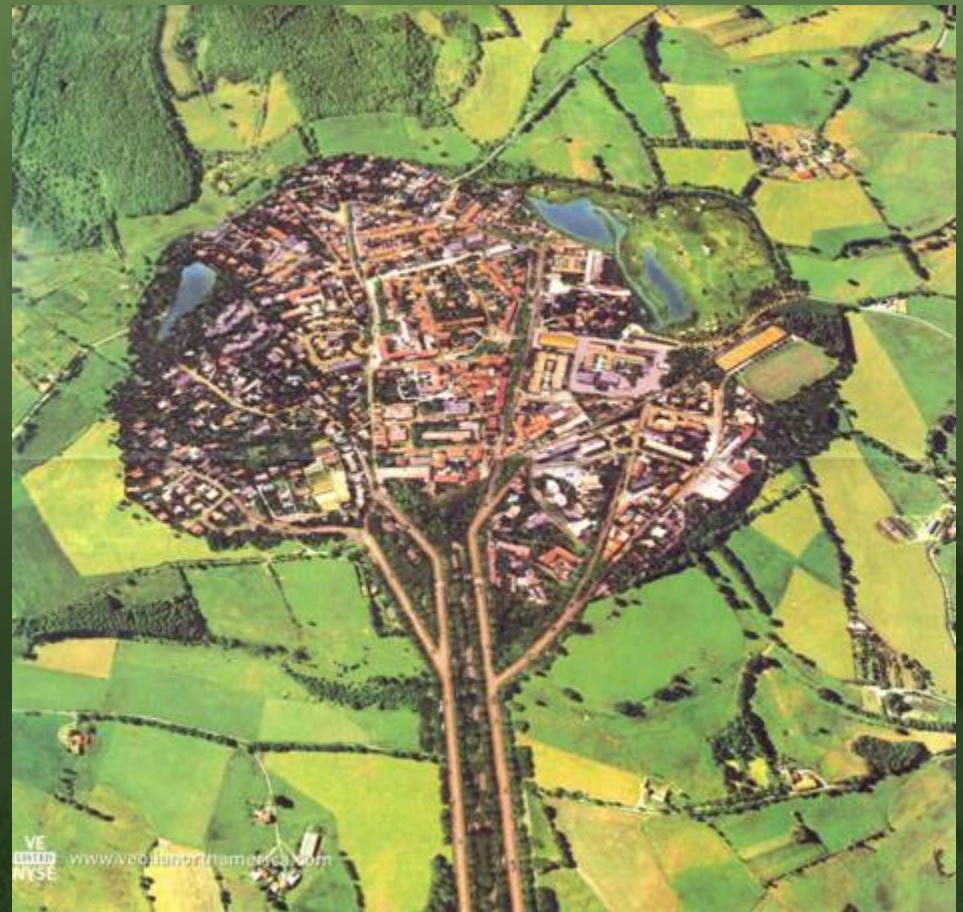
You're Wrong, No Room

- 177 million trees
- 5 trees per capita
- 242 million empty sites
- 120 million plantable



Future Growth

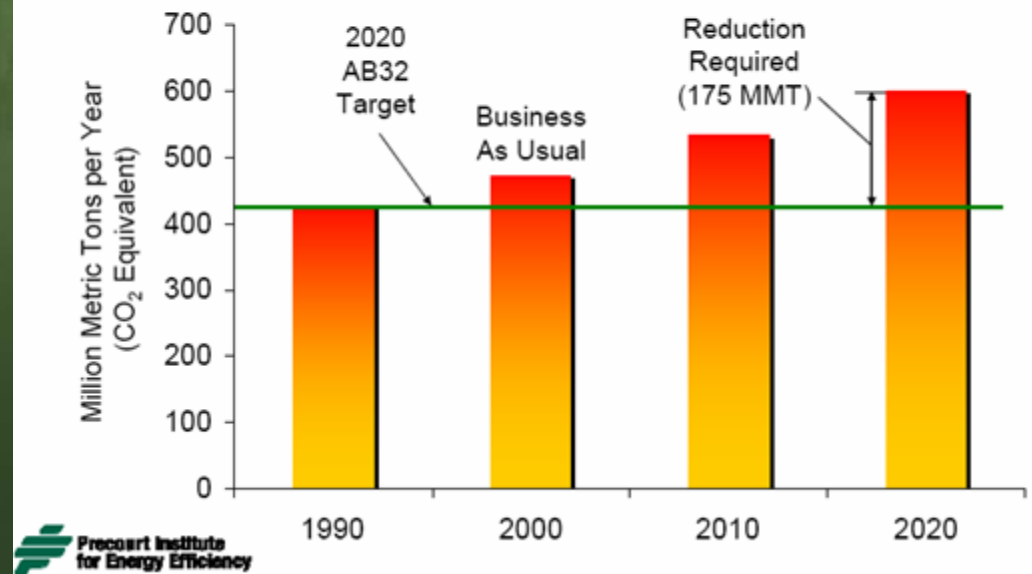
- 48 million people 2030
 - 50 million more trees
- 50% of built environment we will see in 2025 did not exist in 2000 (Nelson, 2005)
- New template
 - Only 25% with children
 - Compact



You're Right, But No Effect

- 50 million trees, 15 yr
- 6,400 GWh/yr,
\$485M
- Reduced emissions
1.8 Mt/yr
- Sequester 4.5 Mt/yr
- Total 6.3 Mt/yr
- 4% of CAT target

The Challenge



You're Right, But Too Late



Planting Seeds of Success

- Persuasion
- Protocols
- Practices
- Partnerships



Persuasion

- Relative advantage
- Convenient
- Comfortable
- Immediacy



Urban Forest GHG Protocol

- Credible, Standardized Accounting and Reporting
- Investment in Offsets
- Permanence
- Additionality
- www.climateregistry.org/tools



Practices

- Planning
- Quality Stock
- Strategic Location
- Tree Selection
- Planting
- Maintenance
- Monitoring
- Reporting



Partnerships

- Growers
- Retailers
- Arborists
- Contractors
- Developers
- Governments
- Consultants
- Corporate
- Non-profits



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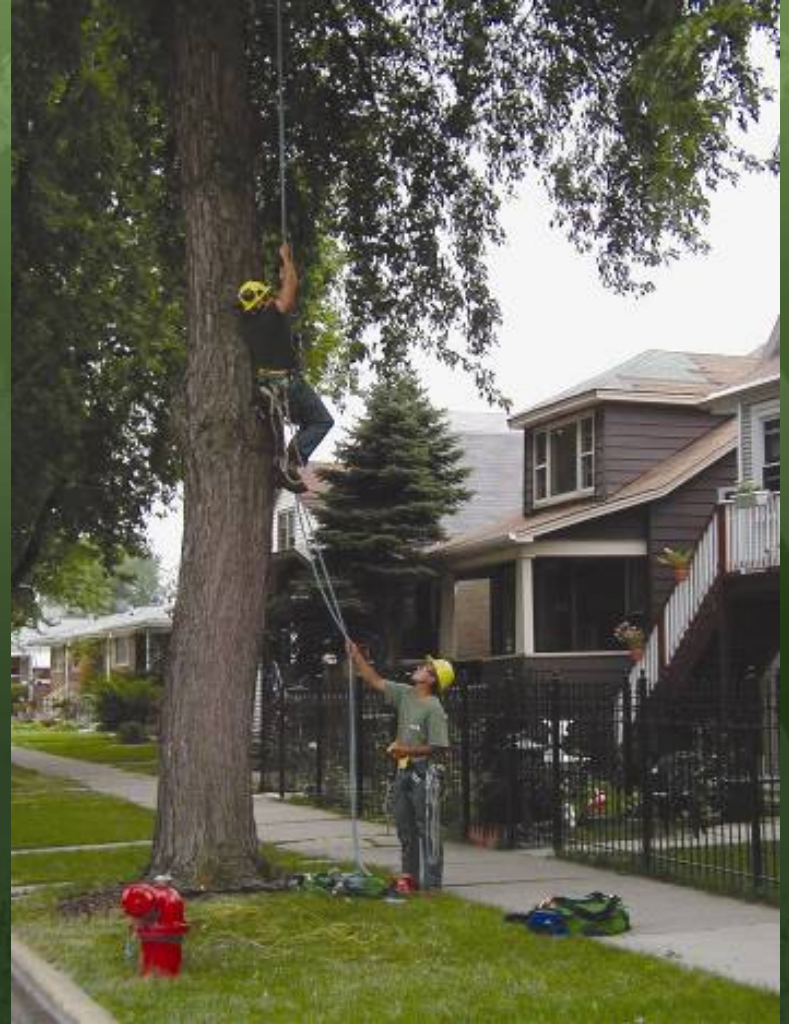
**AIR HERE
IS FREE**

The Least You
Can Do Is Roll
The Damn Hose.

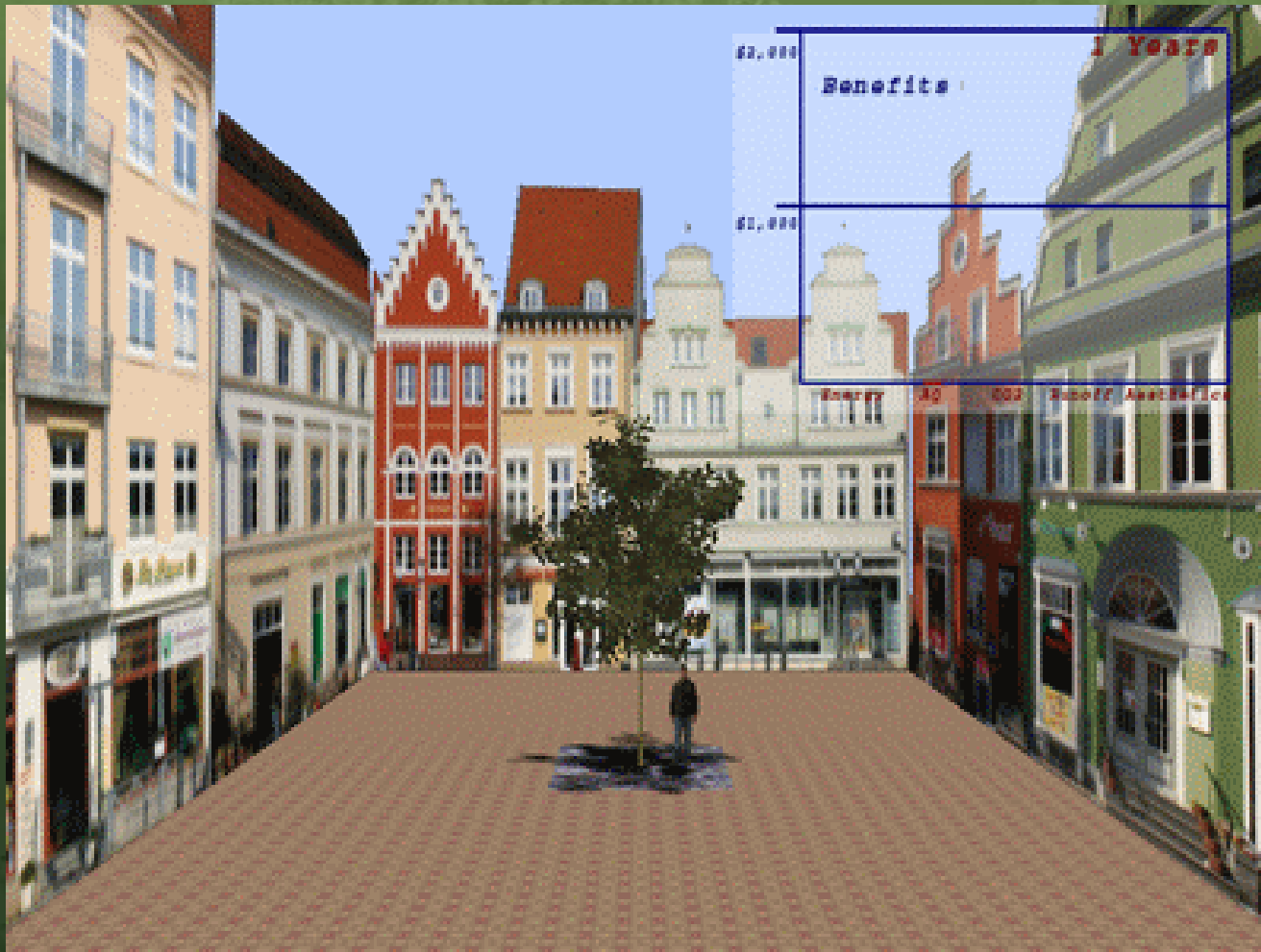


Opportunities for Arborists

- Business
 - Project developer
 - Verifier
- Operations
 - Vehicle fuel efficiency
 - Equipment
 - Tree selection
 - Tree care practices



Sustainability: Meeting needs of present without sacrificing the future



- Trees Matter
 - Mitigation
 - Adaptation
 - Sustainability Now
- Professionalism Matters
 - Tree Performance Pays
- Leadership Matters
 - Not where you've been, but where you're going
 - Your knowledge and skills are part of the solution

Resources

www.fs.fed.us/psw/programs/cufr

