

Carbon Footprint Data Walk

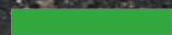
Stephanie Dykes, Phenix Tang





Do Trees Negate Our Carbon Footprint?

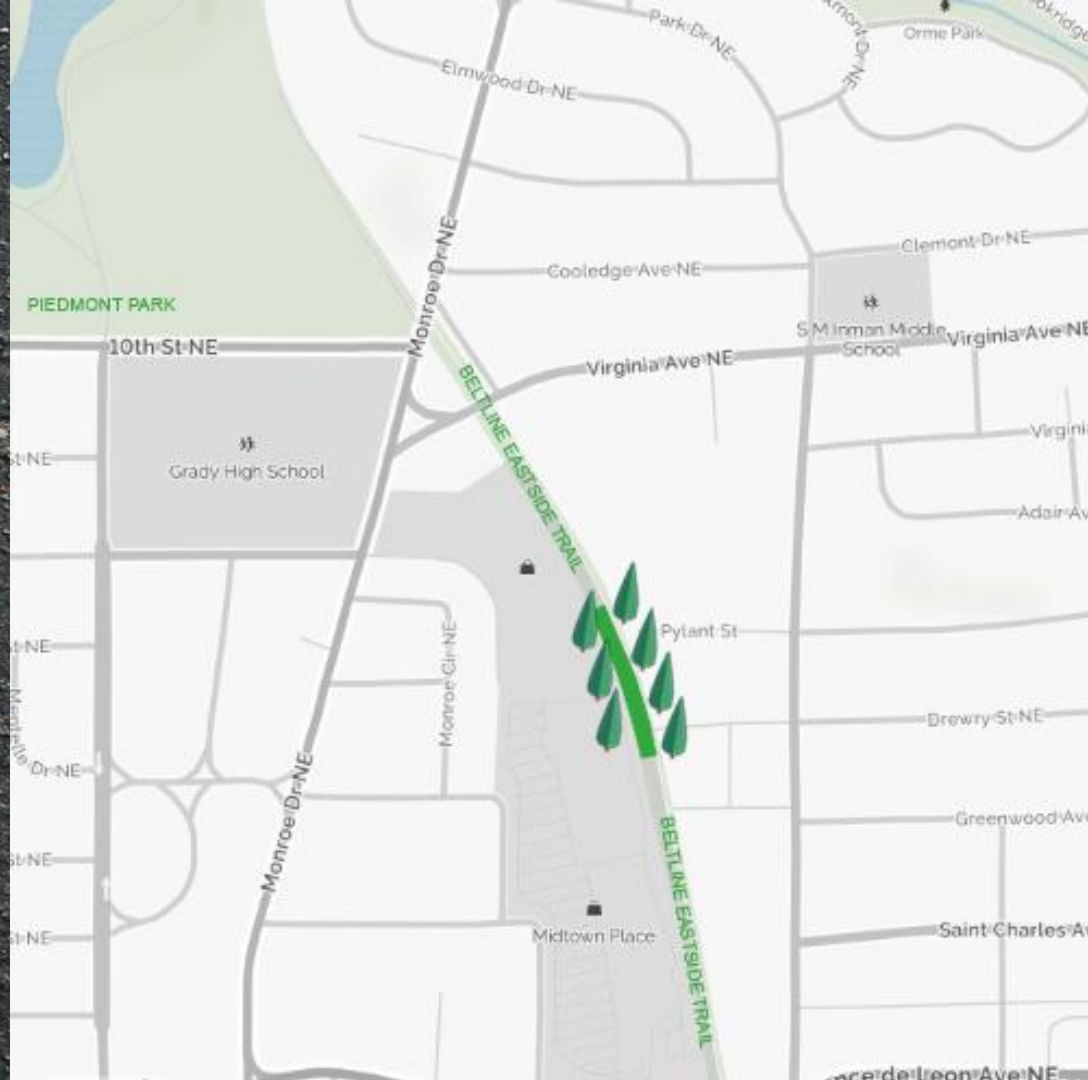
Data Walk 2D Map



Data for CO2 emissions on the sidewalk



Individual trees





Do Trees Negate Our Carbon Footprints?

CO2 Equivalent of...
The amount of CO2 that a tree can absorb over its lifetime is equivalent to the amount of CO2 that a car emits over its lifetime.

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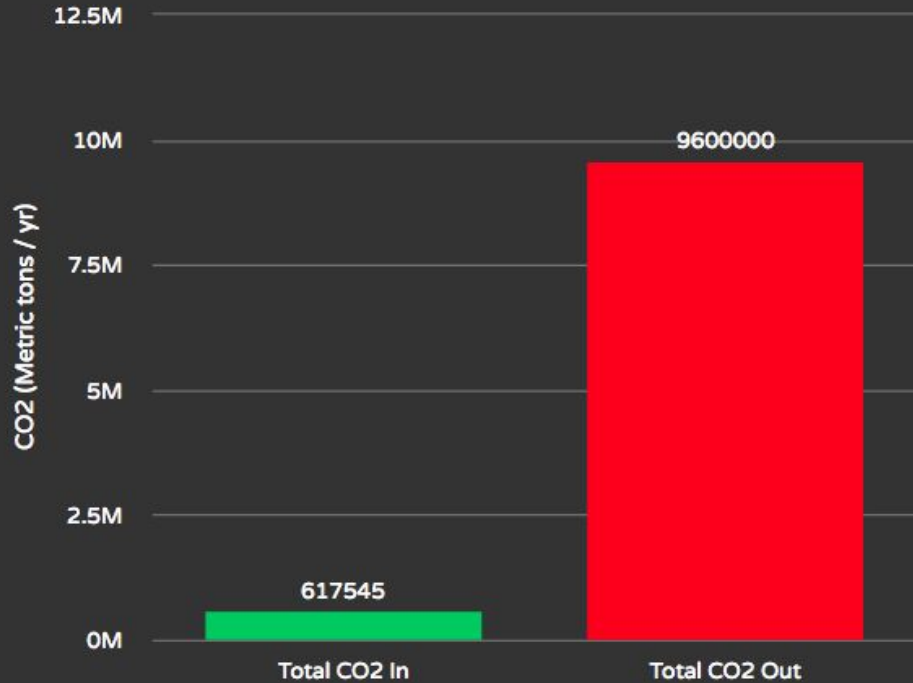
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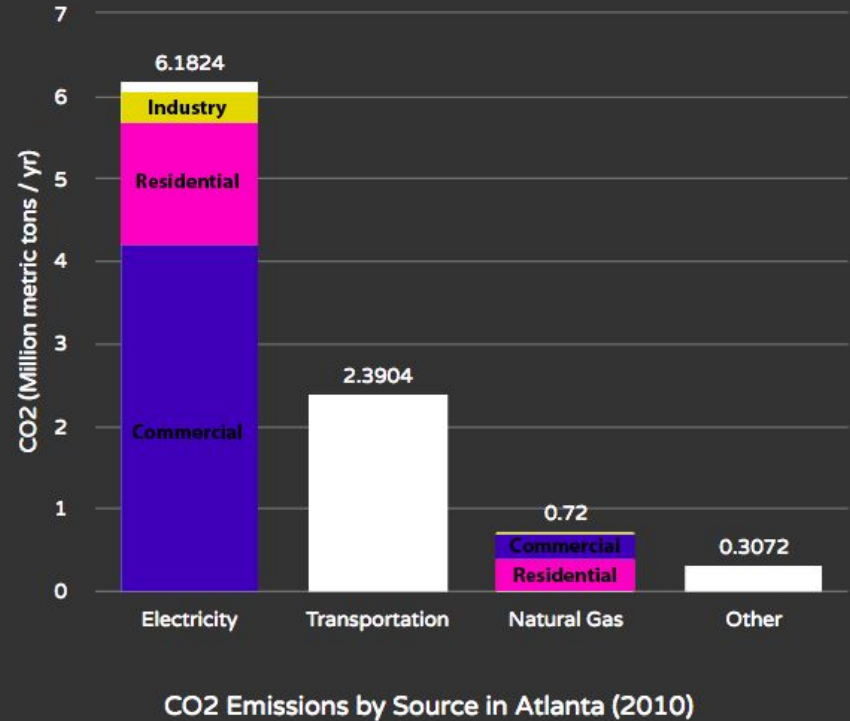
Tree genres by year, along the Eastside BeltLine Trail

CO2 Totals for Atlanta



Amount of carbon dioxide produced vs negated by trees

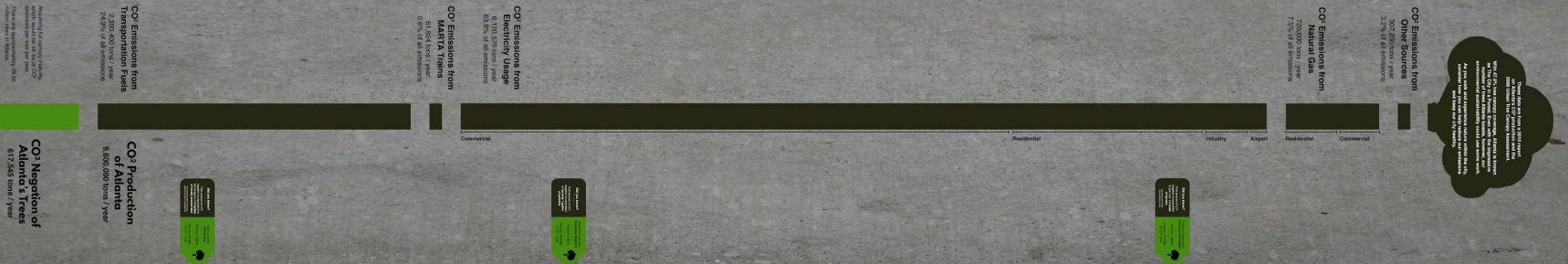
CO2 Totals for Atlanta



Sources for carbon dioxide production



Visualization



Do Trees Negate Our Carbon Footprint?

Carpinus caroliniana
American Hornbeam

Planted in 2012

Absorbs **11.2 lbs**
of CO² / year

Carpinus caroliniana
American Hornbeam

Planted in 2012

Absorbs **11.2 lbs**
of CO² / year

Magnolia virginiana
Sweetbay Magnolia

Planted in 2012

Absorbs **19.3 lbs**
of CO² / year

Quercus phellos
Willow Oak

Planted in 2012

Absorbs **11.2 lbs**
of CO² / year

Quercus nuttallii
Nuttall Oak

Planted in 2012

Absorbs **11.2 lbs**
of CO² / year

Quercus alba
White Oak

Planted in 2012

Absorbs **5.5 lbs**
of CO² / year



2D



+

-

Did you know?

That amount of CO² negation is equivalent to the footprint of **5 bottles of locally brewed beer**

The carbon footprint becomes higher if the beer is transported

Quercus alba
White Oak

Planted in 2012

Absorbs **5.5 lbs** of CO² / year



Did you know?

That amount of CO² negation is equivalent to **burning 1 gallon of gasoline**

Magnolia virginiana
Sweetbay Magnolia

Planted in 2012

Absorbs **19.3 lbs** of CO² / year



Did you know?

That amount of CO² negation is equivalent to the carbon footprint of **1 pound of coffee**

That is about 36 8-oz cups of coffee

Quercus nuttallii
Nuttall Oak

Planted in 2012

Absorbs **11.2 lbs** of CO² / year



Did you know?

That amount of CO² negation is equivalent to **running the average dishwasher 5 times**

Assuming the wash temperature is 65°F

Quercus phellos
Willow Oak

Planted in 2012

Absorbs **11.2 lbs** of CO² / year



Did you know?

That amount of CO² negation is equivalent to just over **1.5 loads of laundry**

Assuming warm water then tumbling on low

Carpinus caroliniana
American Hornbeam

Planted in 2012

Absorbs **11.2 lbs** of CO² / year



User Flow Diagram

Carbon Footprint Data Walk - Flow Diagram

Stephanie Dykes & Phenix Tang



Walkers encounter a message prompting them to consider how trees relate to their carbon footprint.

An illustration along the trail allows walkers to traverse a scaled representation of CO₂ emissions in the city vs what the city's trees negate.

Trees along the way are indicated by markers, stating their age, species, and average yearly CO₂ negation. The tree info is paired with a carbon emitting activity that is equivalent to the tree's yearly negation.

Viewers encounter CO₂ production bar graphs broken down by category and, where possible, listed as commercial vs residential vs industrial sources.

At the end walkers are met with an excerpt about the data sources, background on Atlanta's tree canopy, and a call to action about reducing emissions.

Do Trees Negate Our Carbon Footprint?

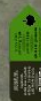


CO₂ Negation of Atlanta's Trees
617,348,109 lbs / year

Atlanta's tree canopy is estimated to be 23% of the city's total area. This means that for every 100 square feet of city area, there are 23 square feet of trees.

CO₂ Production of Atlanta
9,900,000,000 lbs / year

CO₂ Emissions from Transportation Fuels
2,200,000,000 lbs / year
2,200,000,000 lbs / year
2,200,000,000 lbs / year



CO₂ Emissions from Electricity Usage
10,000,000,000 lbs / year
10,000,000,000 lbs / year
10,000,000,000 lbs / year

Commercial

CO₂ Emissions from MARTA Transit
1,000,000,000 lbs / year
1,000,000,000 lbs / year
1,000,000,000 lbs / year

Residential

Industry

Airport

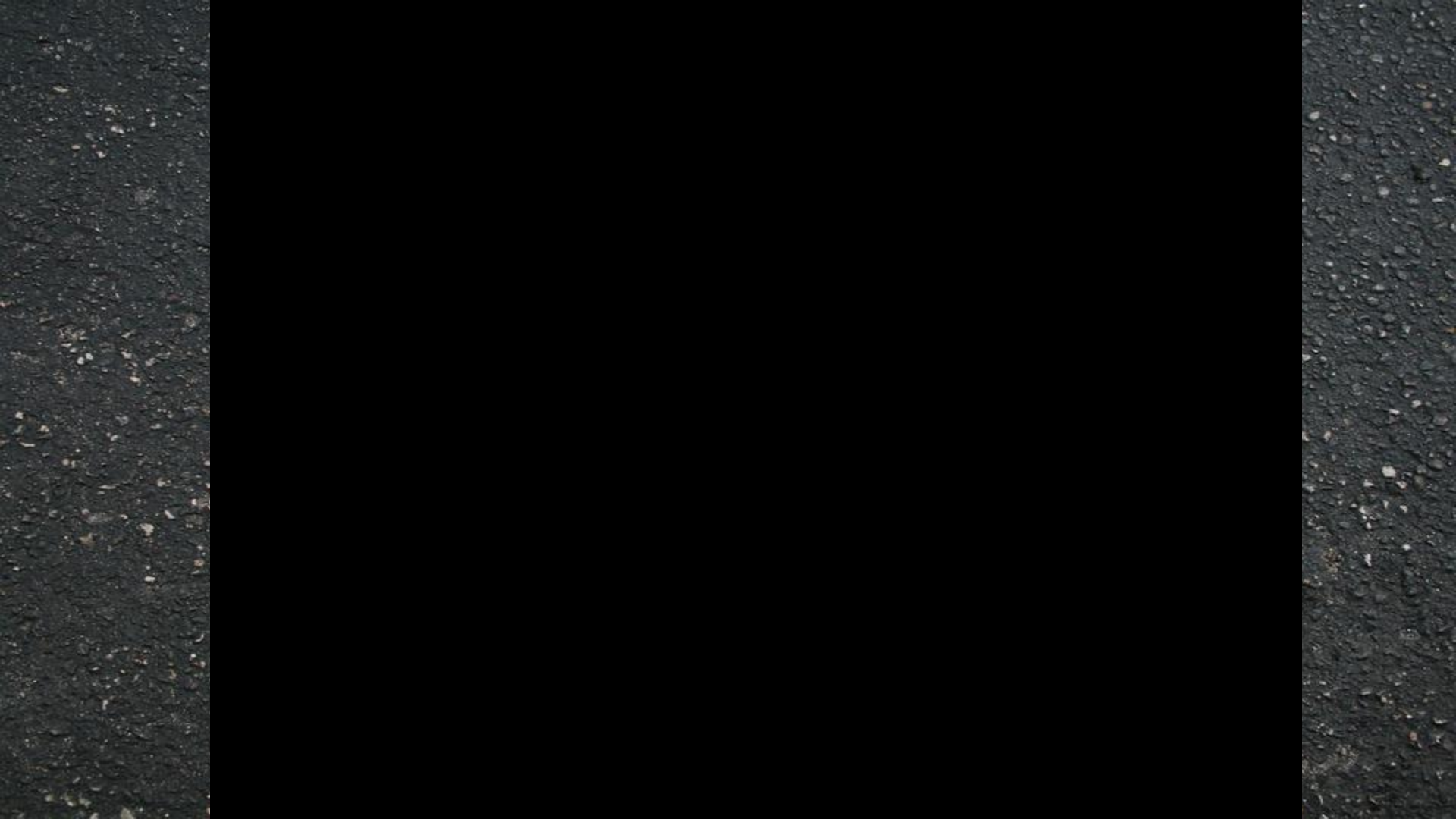
Residential

Commercial

CO₂ Emissions from Natural Gas
1,000,000,000 lbs / year
1,000,000,000 lbs / year
1,000,000,000 lbs / year

CO₂ Emissions from Other Sources
1,000,000,000 lbs / year
1,000,000,000 lbs / year
1,000,000,000 lbs / year







Do Trees Negate Our Carbon Footprint?

Offset of one ton
of CO₂ (approximately 100 lbs. of CO₂)
BY TREES
817,435 trees / year

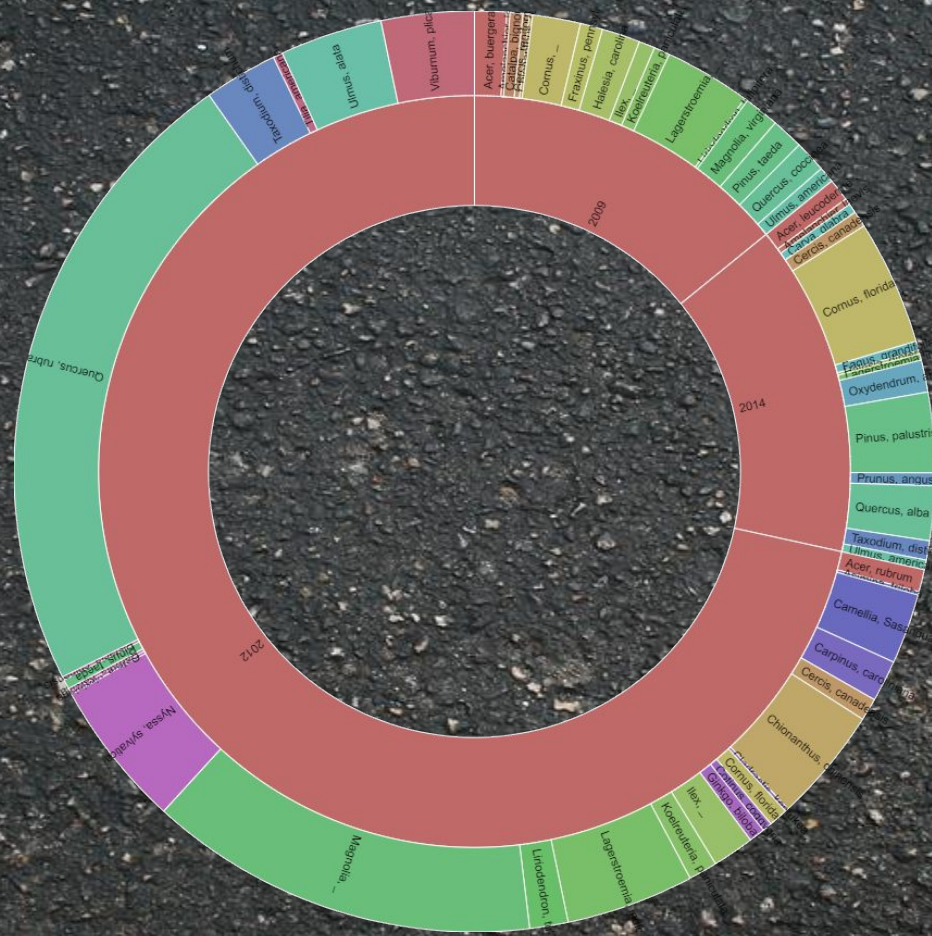
Atlanta's CO₂
Negation
817,435 trees / year

TRANSPORTATION
5,500,000 trees / year

Atlanta's CO₂
Production
5,500,000 trees / year

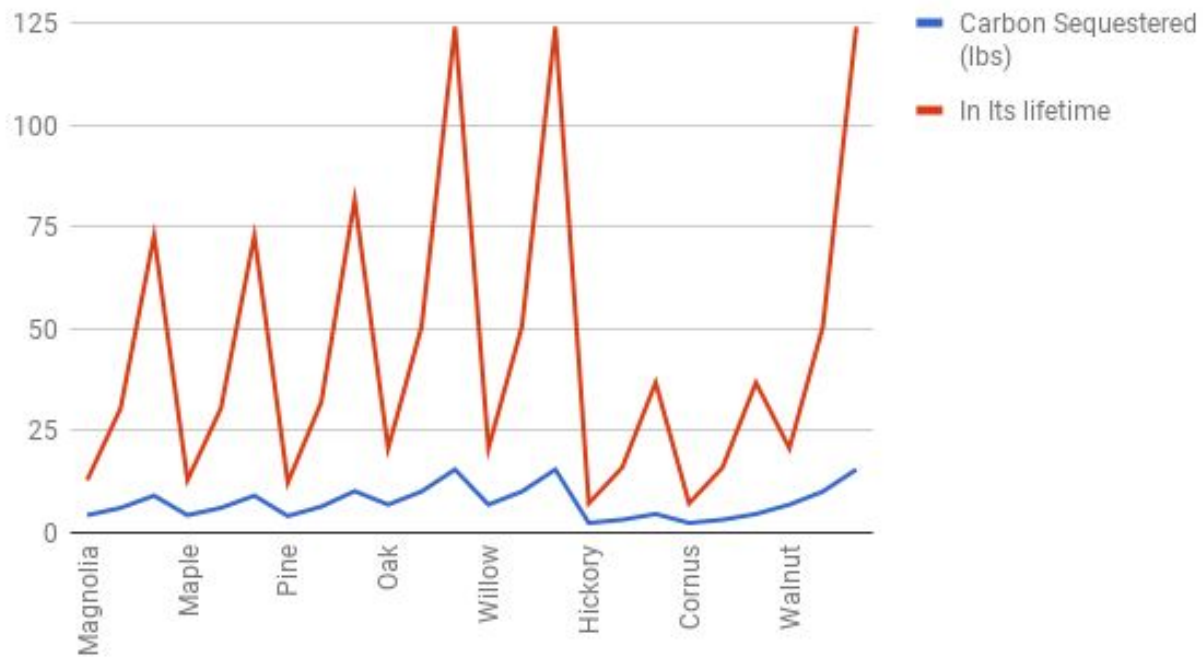


Do Trees Negate Our Carbon Footprint?



Tree genres by year, along the Eastside BeltLine Trail

Tree Age, Carbon Sequestered (lbs) and In Its lifetime



Amount of carbon dioxide negated by individual trees based on its species and age.

A large, textured tree trunk is the central focus. A green and red data display is attached to it. The background is a soft-focus landscape with grass and a distant horizon.

Carbon Footprint Data Walk Tree Data Displays

Stephanie Dykes & Phenix Tang

Trees contained within the Trees Atlanta planting dataset and along the path of the installation will be tagged with data displays.

These displays will relate the trees to CO₂ negation indirectly by listing factors that affect their oxygen conversion rate, as well as directly stating how much CO₂ they negate in a year's time.

This will be paired with an activity that produces an equivalent amount of CO₂, allowing viewers to relate the tree's work to the context of their lives.

Quercus rubra
Red oak

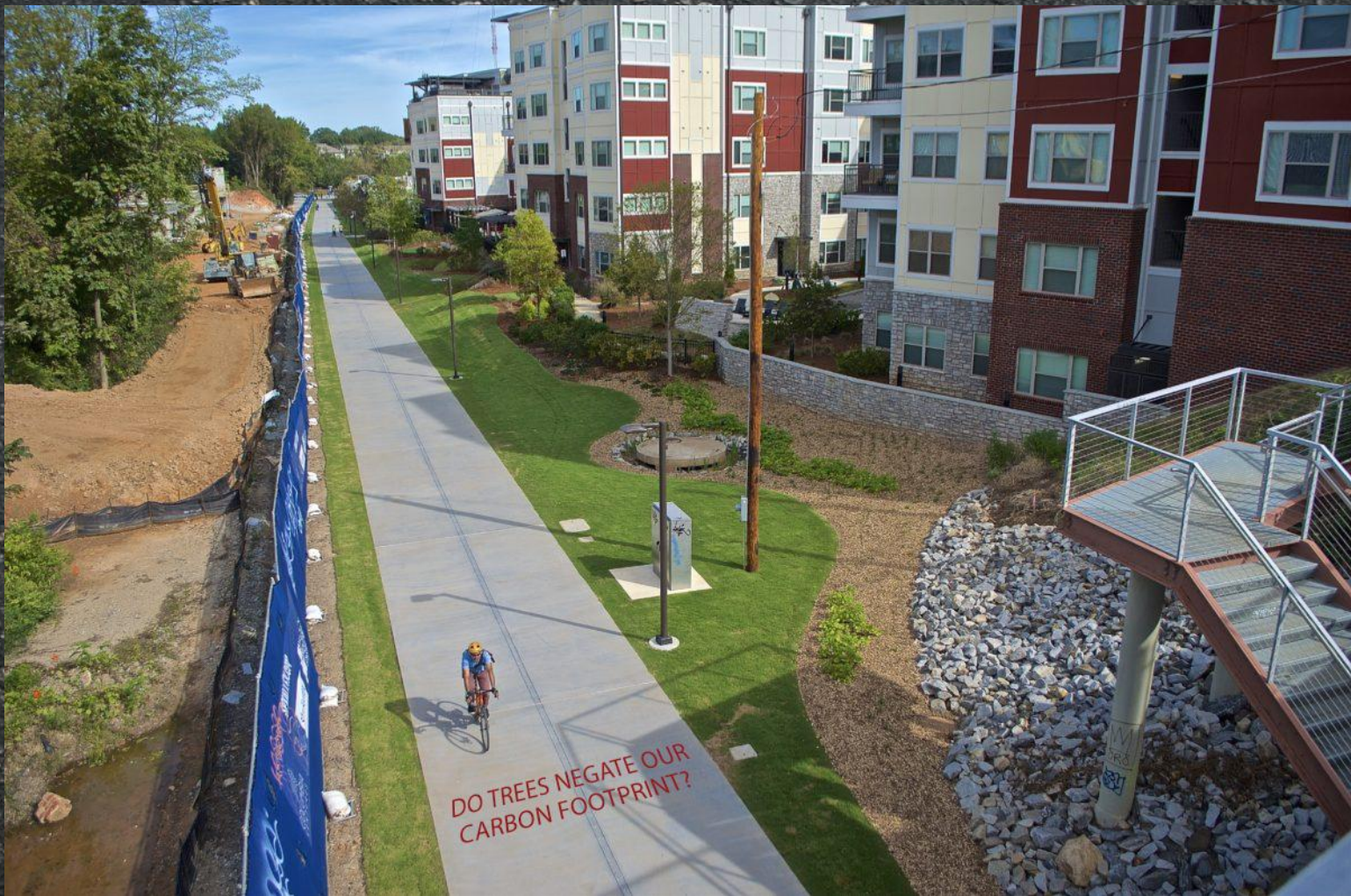
Planted in
2012

Absorbs **26 lbs**
of CO₂ / year

Did you know?

That amount of
CO₂ negation is
equivalent to just
over **3 1/2 loads**
of laundry

Assuming warm water
then tumbling on low



Carbon Footprint Data Walk - Flow Diagram

Stephanie Dykes & Phenix Tang



Walkers encounter a message prompting them to consider how trees relate to our carbon footprint.

An illustration along the trail allows walkers to traverse a scaled representation of CO2 emissions in the city.

Trees along the way are tagged with data about their age, species, and average yearly CO2 negation. Walkers can stop to examine and contemplate how these specific trees relate to the overall welfare of the city.

An illustration on the sidewalk depicts how much the surrounding trees on this section of the BeltLine negate vs what one walker produces.

The starting message is displayed again for anyone who approaches from the opposite direction, as well as to provoke walkers to reconsider their earlier answers.

DO TREES NEGATE OUR
CARBON FOOTPRINT?

**Total CO2
Negation
of Atlanta
Trees**

617,545
tons / year

**Total CO2
Production
of Atlanta**

9,600,000
tons / year

**CO2 Negation
of the 890
Eastside Belt-
Line Trail Trees**

10.5 tons / year

**CO2 Production
of 1 Atlanta
Resident**

22.7 tons / year

DO TREES NEGATE OUR
CARBON FOOTPRINT?

A large, textured tree trunk stands in a grassy field. A green horizontal band with white text is wrapped around the trunk. To the right of the tree, there is a white text area with a title, authors, and two paragraphs of text. At the bottom of the image, a green horizontal band contains three pieces of information: planting date, CO2 absorption rate, and tree species.

Carbon Footprint Data Walk Tree Data Displays

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Planted in
2012

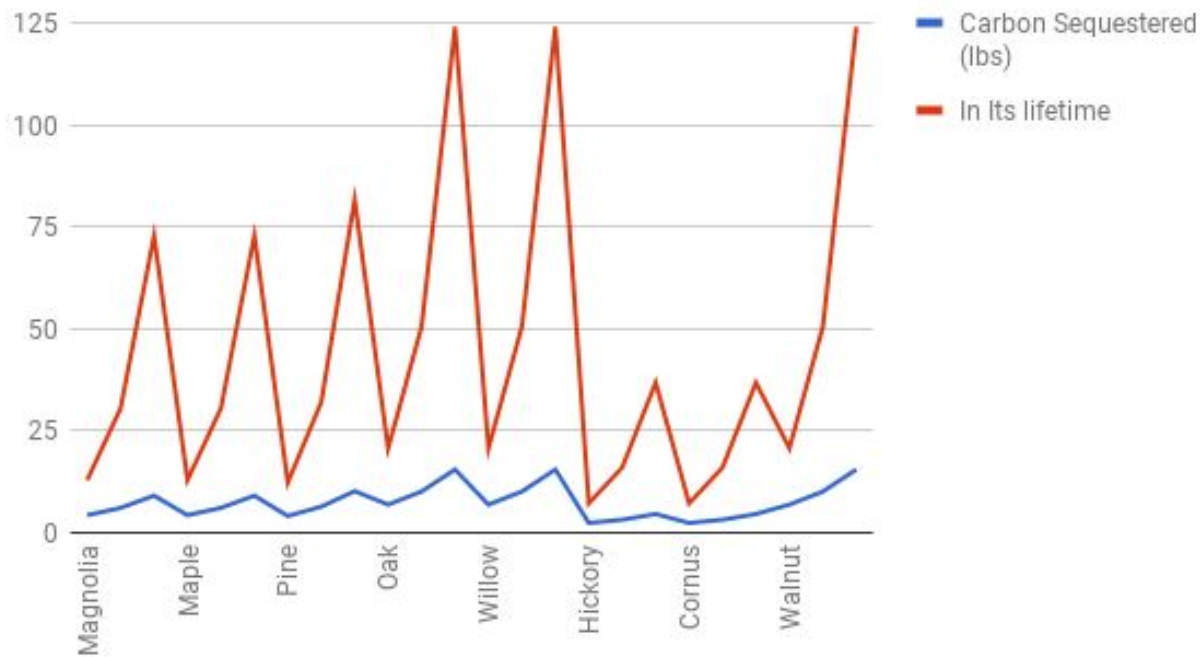
Absorbs **26 lbs** of CO₂
per year

Planted in
2012

Absorbs **26 lbs** of CO₂
per year

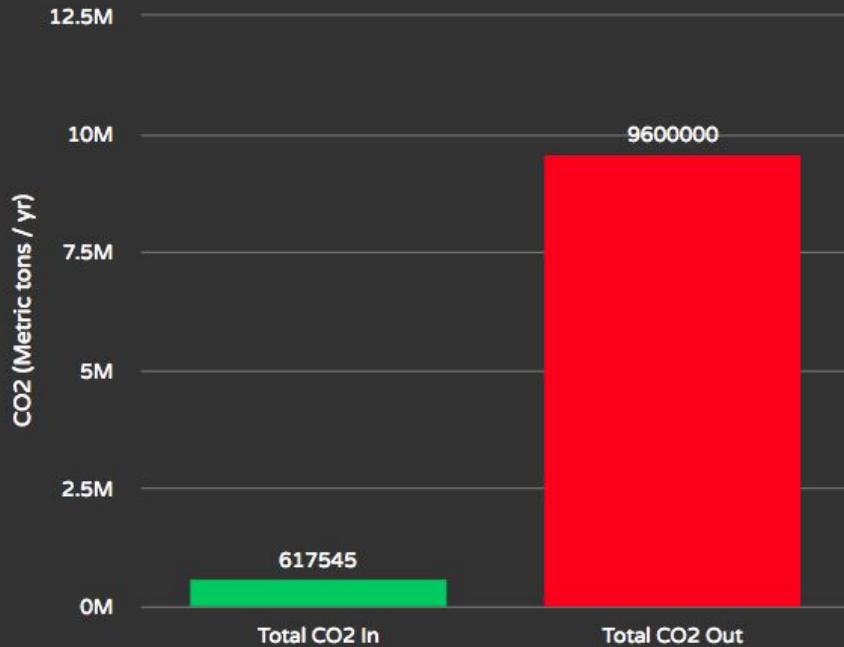
Quercus rubra
Red oak

Tree Age, Carbon Sequestered (lbs) and In Its lifetime

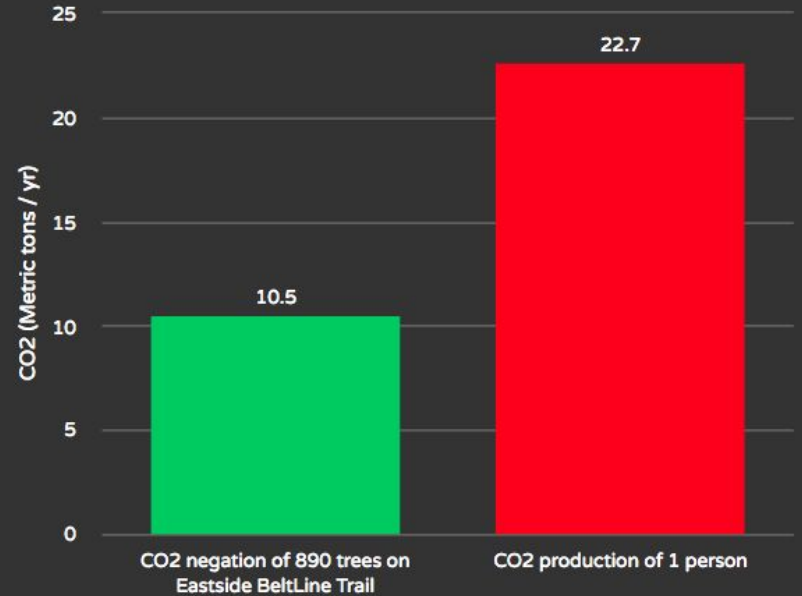


Amount of carbon dioxide negated by individual trees based on its species and age.

CO2 Totals for Atlanta



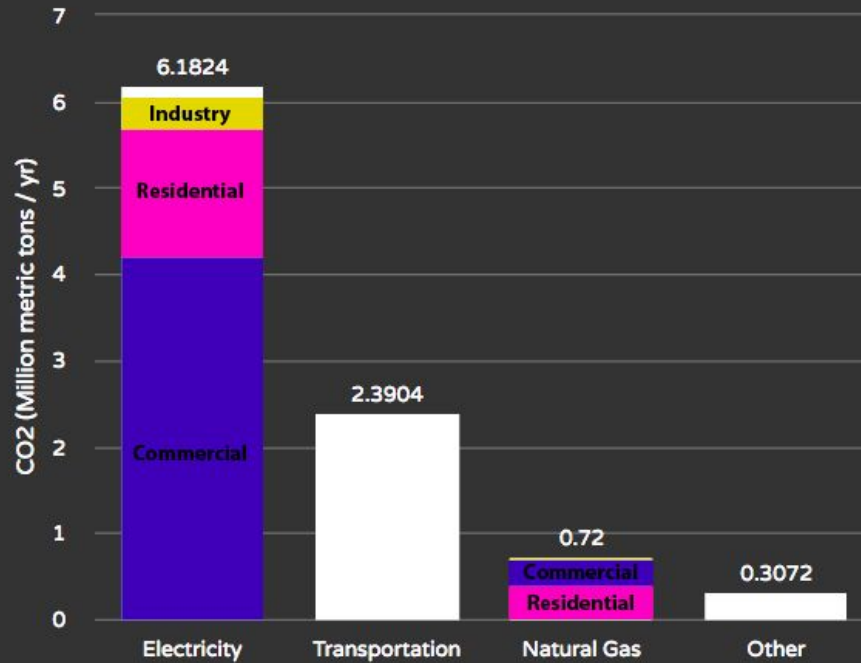
CO2 Totals for Atlanta



Assuming 26lbs / tree on Eastside BeltLine Trail

Amount of carbon dioxide produced vs negated by trees

CO2 Totals for Atlanta



CO2 Emissions by Source in Atlanta (2010)

Sources for carbon dioxide production