

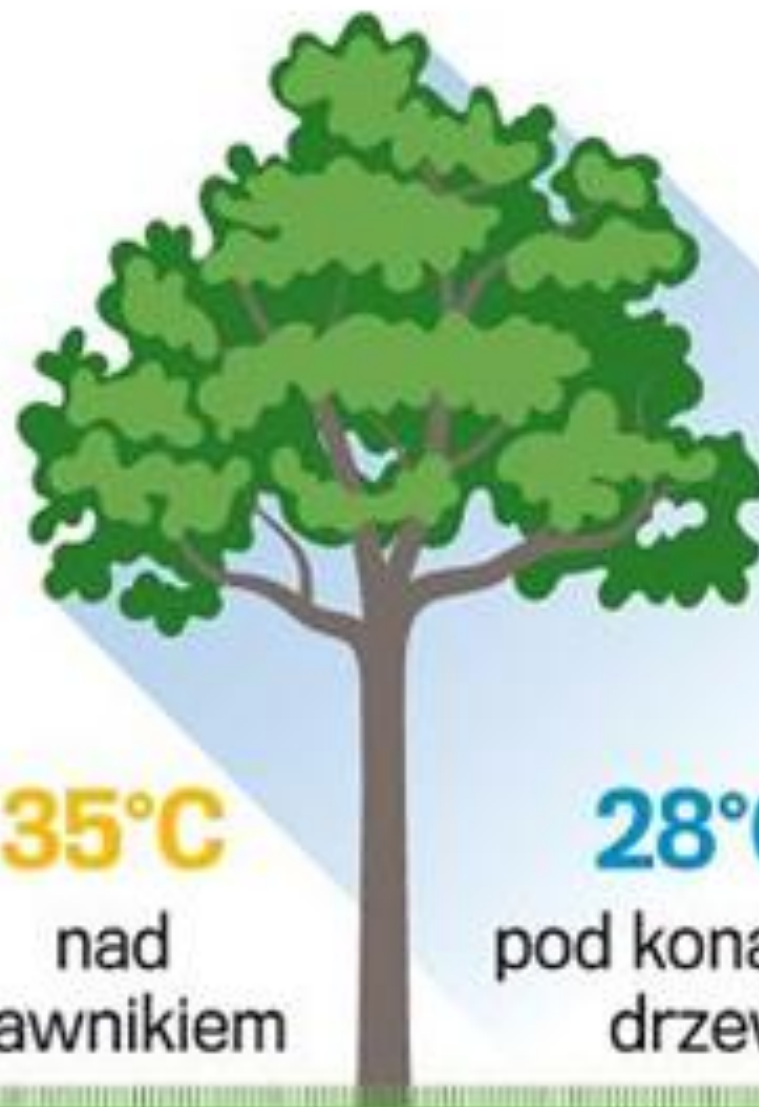
Przeciwdziałanie nagrzewaniu się miast, poprawa bioróżnorodności w miastach poprzez implementację w istniejącej strukturze miast rozwiązań opartych o naturę.



# WPŁYW DRZEW NA OBNIŻENIE TEMPERATURY W LECIE



**32°C**  
temperatura  
powietrza



**52°C**  
nad  
asfaltem

**43°C**  
nad  
betonem

**35°C**  
nad  
trawnikiem

**28°C**  
pod konarami  
drzew



# PROCES OCZYSZCZANIA POWIETRZA PRZEZ DRZEWA

ZANIECZYSZCZONE  
POWIETRZE



OCZYSZCZONE  
POWIETRZE

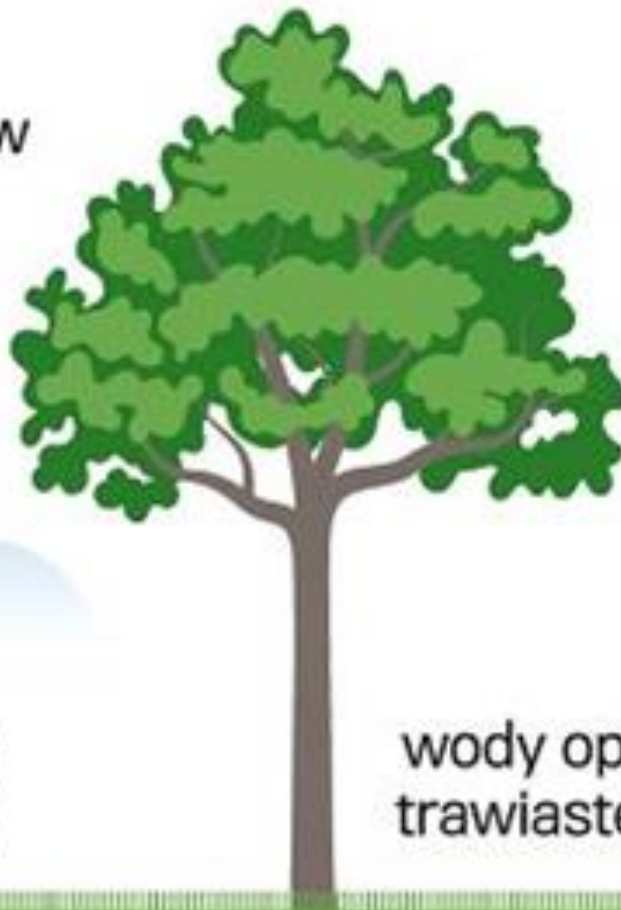
**1.** Podczas fotosyntezy razem z  $\text{CO}_2$  pochłaniane są trujące gazy

**2.** Powierzchnia liści i parująca z nich woda zatrzymują cząsteczki kurzu

**3.** Deszcz zmywa z liści osadzone cząsteczki kurzu

# ROLA DRZEW W OGRANICZENIU ODPŁYWU WÓD OPADOWYCH

**1.** Woda opadowa zatrzymuje się na liściach, co opóźnia tzw. odpływ szczytowy oraz zapobiega erozji powierzchni gleby. Część wody odparowuje, a niewielka ilość jest absorbowana przez drzewo



**2.** Spływająca z liści woda jest zatrzymywana w nierównościach gruntu utworzonych przez korzenie i w opadłych liściach

**55%**

wody opadowej z utwardzonych powierzchni sływa do kanalizacji

**10%**

wody opadowej z powierzchni trawiastej sływa do kanalizacji

**3.** Korzenie pobierają wilgoć z gleby, zwiększając jej pojemność wodną

<https://www.facebook.com/drzewa.polski/photos/>







# Learn about i-Tree

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More than beauty and shade, trees work hard for us all.

Explore how trees improve the environment in communities big and small, urban and rural... even in your own backyard!





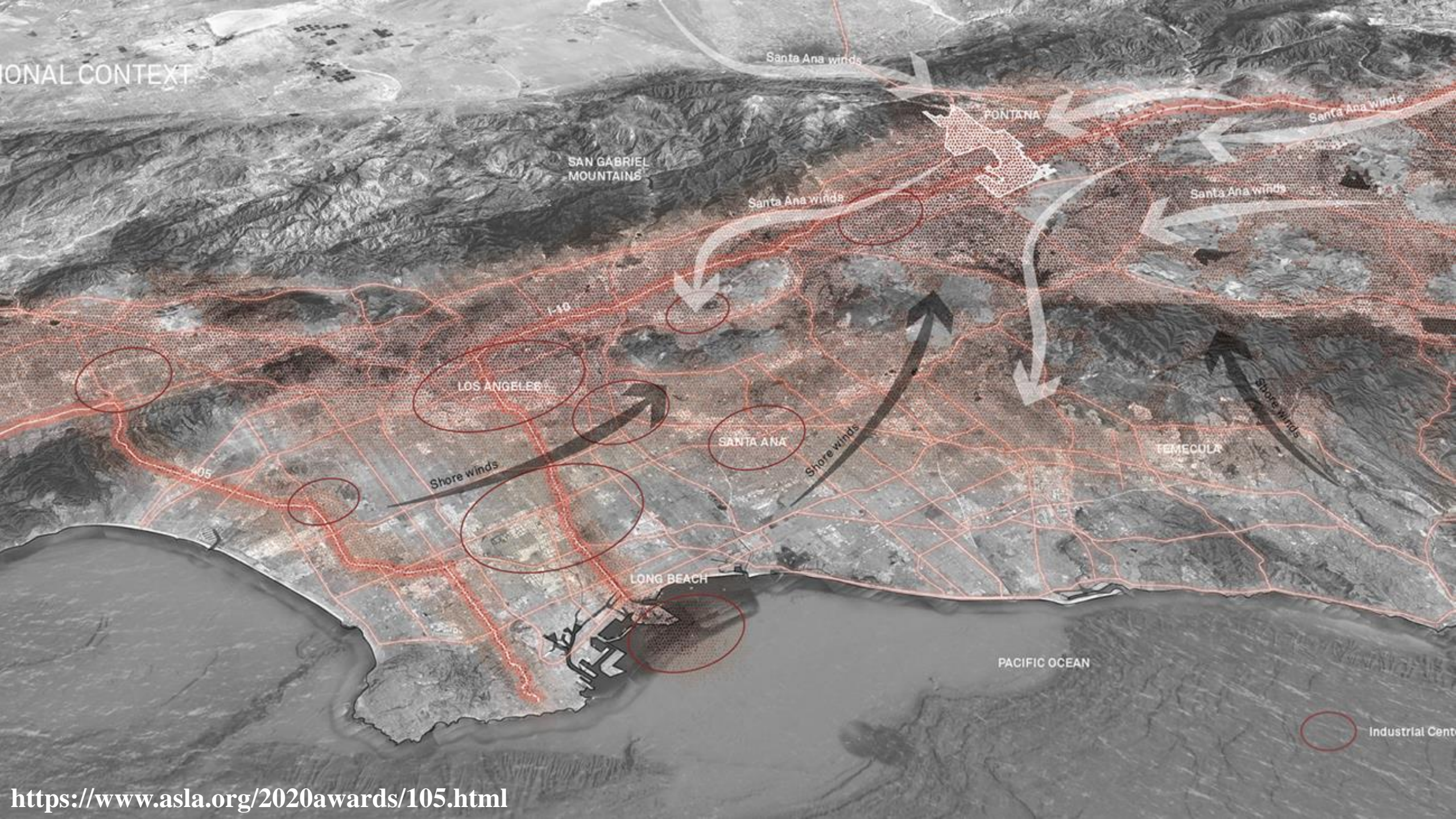




POLICIA



REGIONAL CONTEXT



# TREE CANOPY COMPARISON

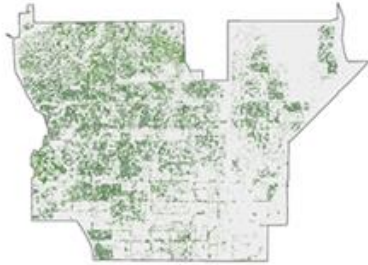


0.36%

FONTANA

City Size: 43 mi<sup>2</sup>  
 Population: 214,238  
 Population/mi<sup>2</sup>: 4,982/mi<sup>2</sup>  
 Medium Household Income: \$71,133

Note: Green dots represent existing tree canopy.  
 Source: i-tree landscape



1.01%

RANCHO CUCAMONGA

City Size: 40 mi<sup>2</sup>  
 Population: 177,080  
 Population/mi<sup>2</sup>: 4,427/mi<sup>2</sup>  
 Medium Household Income: \$87,357



1.62%

REDLANDS

City Size: 36 mi<sup>2</sup>  
 Population: 72,172  
 Population/mi<sup>2</sup>: 2,004/mi<sup>2</sup>  
 Medium Household Income: \$74,993



5.39%

PASADENA

City Size: 23 mi<sup>2</sup>  
 Population: 144,929  
 Population/mi<sup>2</sup>: 6,301/mi<sup>2</sup>  
 Medium Household Income: \$84,613

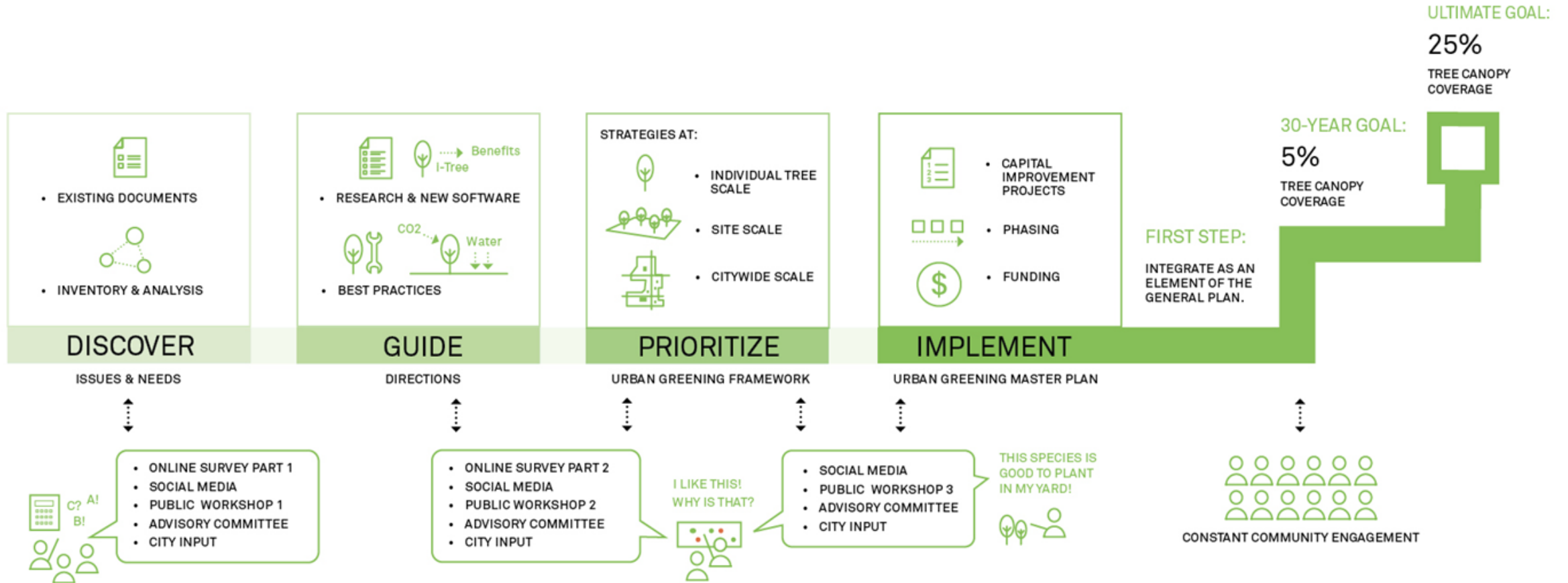


26.54%

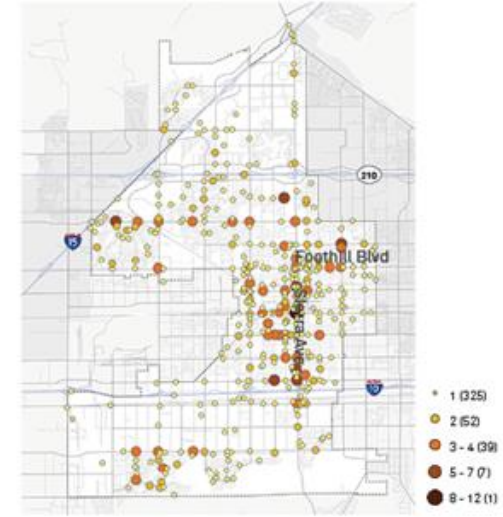
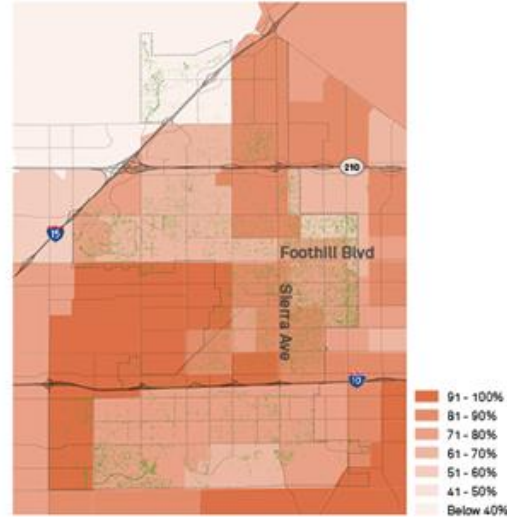
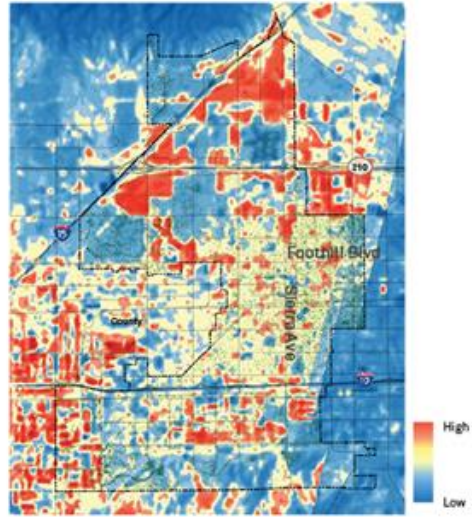
BEVERLY HILLS

City Size: 5.7 mi<sup>2</sup>  
 Population: 35,447  
 Population/mi<sup>2</sup>: 6,219/mi<sup>2</sup>  
 Medium Household Income: \$112,107

# PROCESS



# DISCOVER ISSUES & NEEDS



## EXISTING TREE CANOPY

Tree population is young.



0.3%

Of street trees in Fontana are larger than 31" DBH.

## LAND SURFACE TEMPERATURE



Land surface temperature is increased with the density of urban built-up and barren land, but decreased with vegetation cover.

## CALENVIROSCREEN 3.0 RESULTS



CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

## PEDESTRIAN & BICYCLIST COLLISIONS

One of the goals in this plan is to promote active transportation. Streets with the most severe collision condition are prioritized for street redesign to be greener, safer for all types of transportation modes.





# COMMUNITY ENGAGEMENT

## COMMUNITY WORKSHOPS

### DOTTING EXERCISE

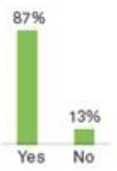
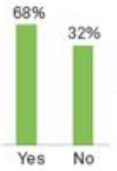
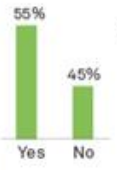
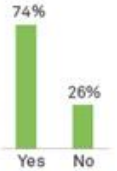


### TREE PALETTE



## ONLINE SURVEYS

### VISUAL PREFERENCE



### SAMPLE QUESTIONS

I see the greatest benefits of Fontana's urban greening plan to be (Pick 4)?



Where should the City start Urban Greening?



## SOCIAL MEDIA POSTS

### BILINGUAL POSTERS

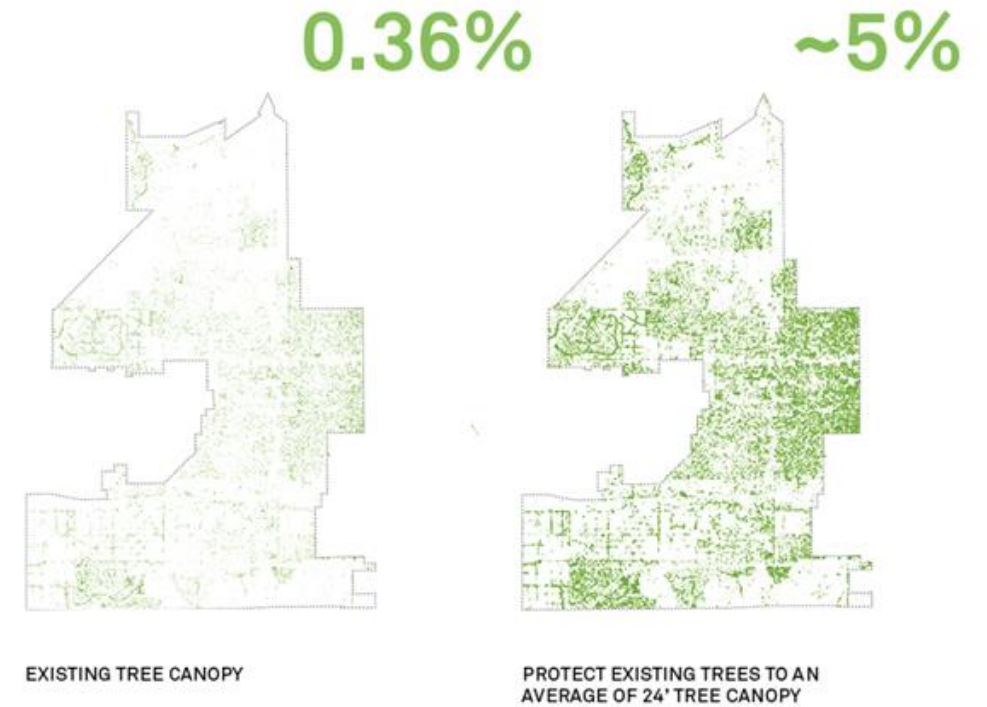


# EXISTING TREE PRESERVATION

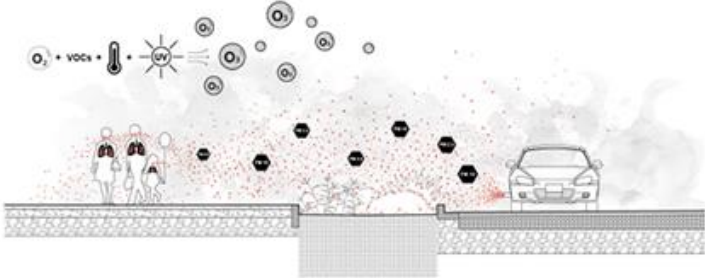
ONE CANARY ISLAND PINE  
IN SINGLE FAMILY RESIDENTIAL



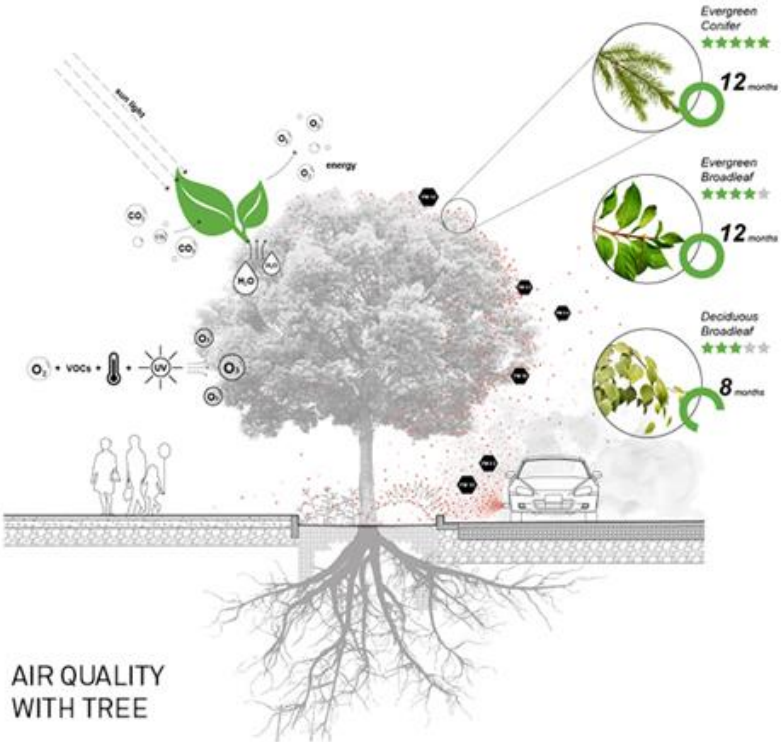
WHAT IF FONTANA JUST PROTECT ALL EXISTING TREES  
WITHOUT NEW TREE PLANTING?



# URBAN GREENING AND AIR QUALITY STUDY



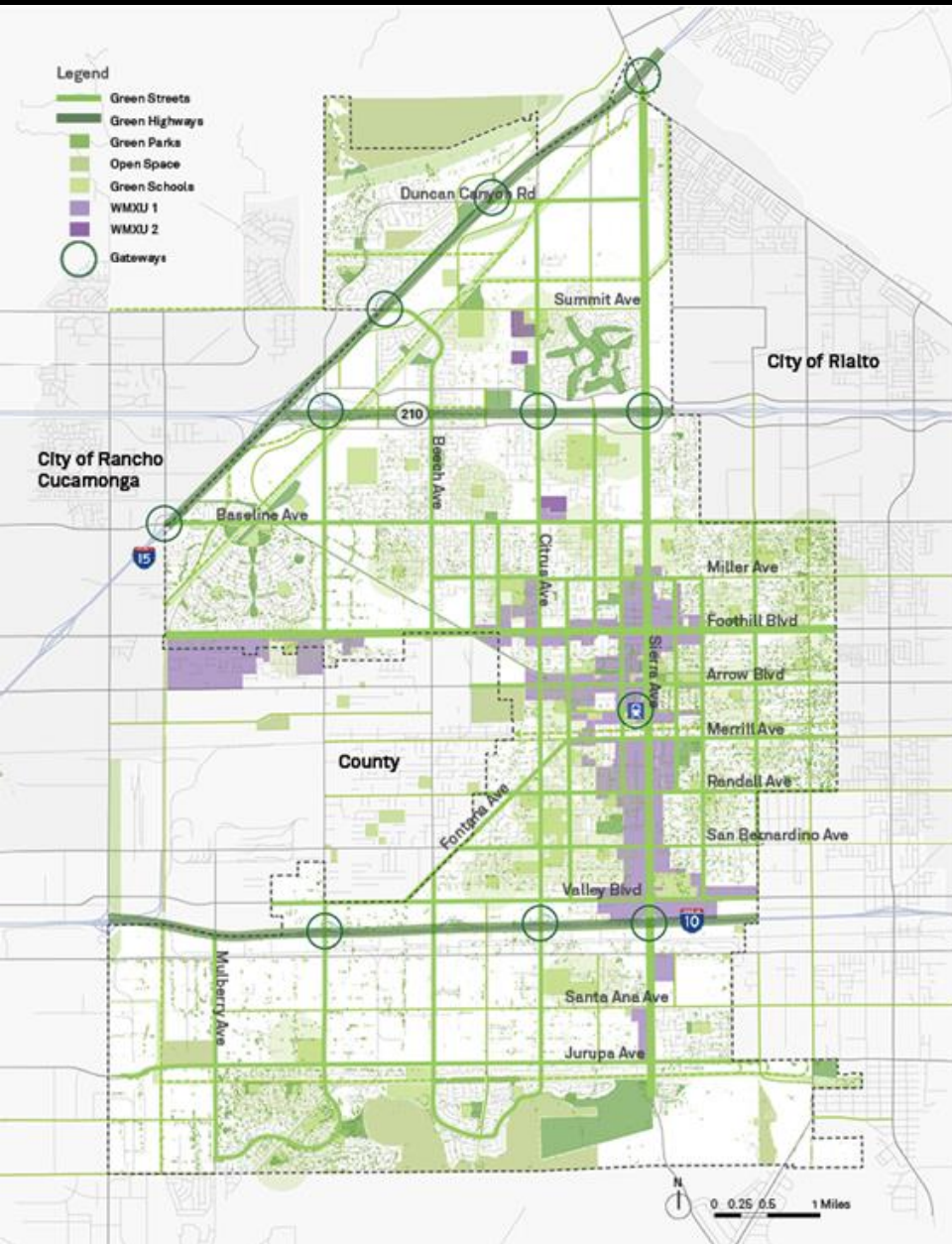
AIR QUALITY WITH NO TREE



AIR QUALITY WITH TREE

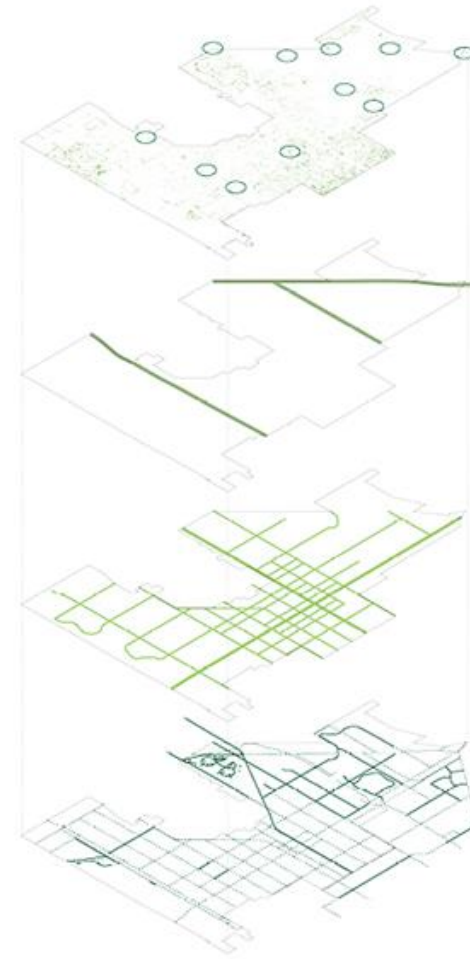


AIR QUALITY WITH TREE RAINING

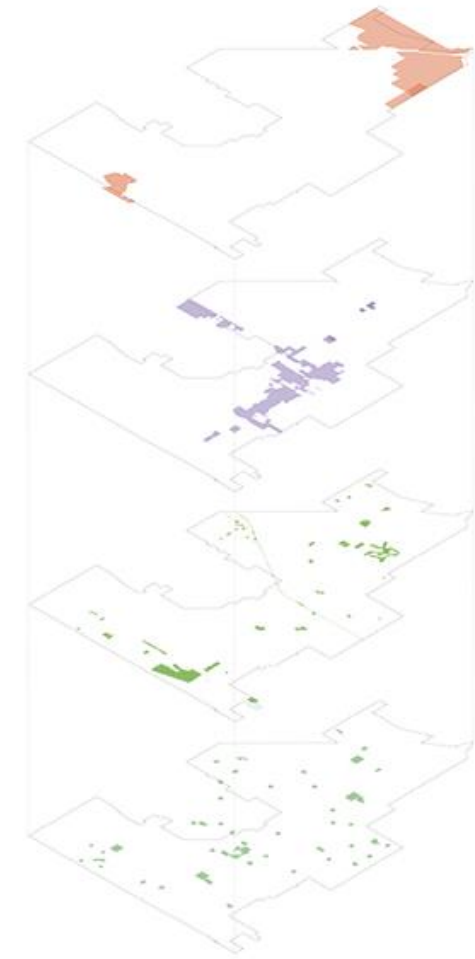


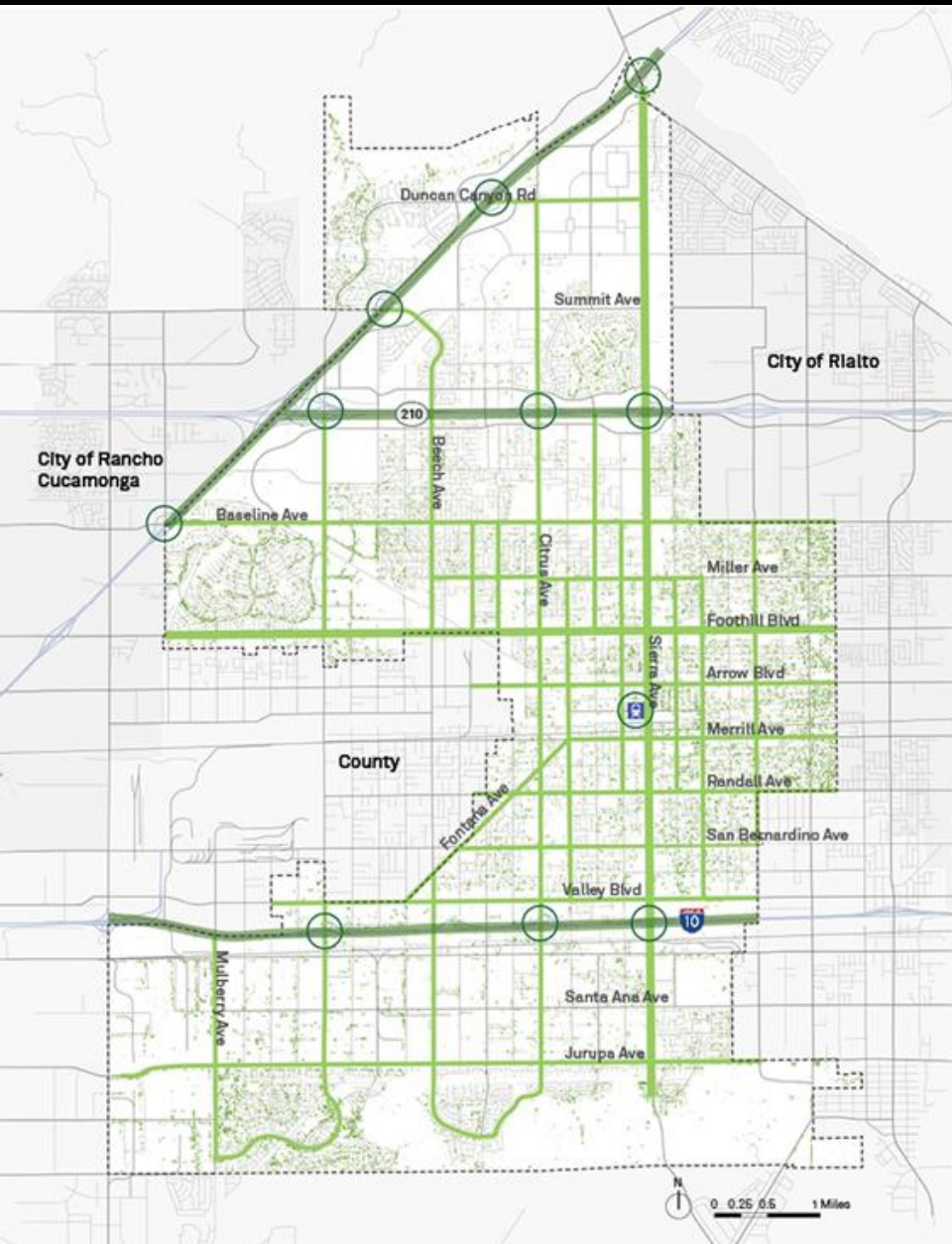
## URBAN GREENING FRAMEWORK

### GREEN STREETS



### GREEN PLACES





## GREEN STREETS

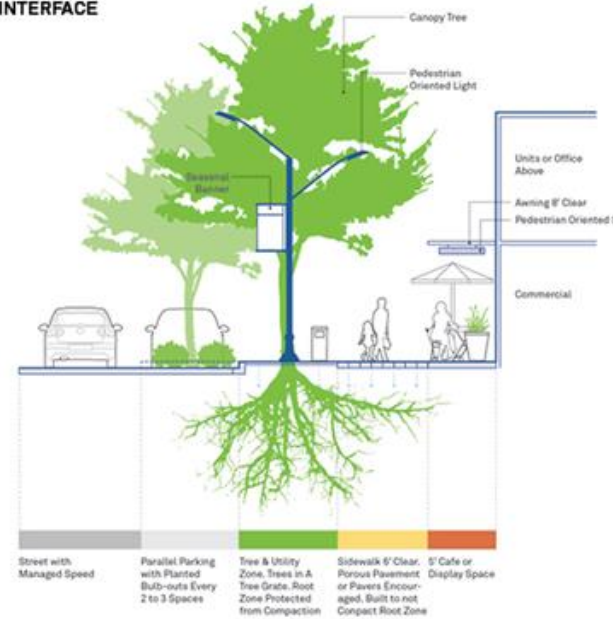
THE CITY MAINTAINS  
**497 MILES OF STREETS**

ASSUMPTION  
**2,500 sqFT**  
 PER 100 FT OF STREET

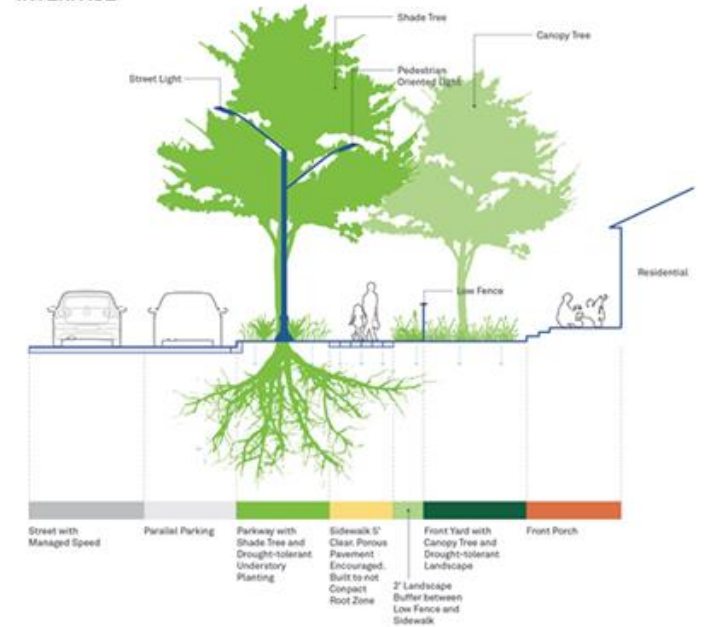
BEST CASE SCENARIO  
 TREE CANOPY COVERAGE THAT ALL CITY MAINTAINED  
 STREETS CAN PROVIDE IS:  
**4.8%**

## STREET & PLACE INTERFACE

LANDSCAPE IN  
 RESIDENTIAL  
 INTERFACE



LANDSCAPE IN  
 COMMERCIAL  
 INTERFACE



# SIERRA AVENUE



TREE CANOPY



TEMPERATURE



HUMAN COMFORT

## EXISTING



TREE CANOPY



TEMPERATURE



HUMAN COMFORT

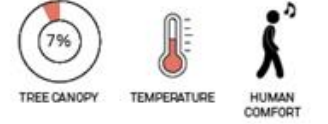
## PROPOSED



# FOOTHILL BOULEVARD



EXISTING



PROPOSED



# GREEN PLACES

BEST CASE SCENARIO:

TREE CANOPY COVERAGE ALL GREEN PLACES CAN PROVIDE IS:

# 12.6%

## WALKABLE MIXED-USE

SITE SCALE



### TREE CANOPY COVERAGE

Existing 1%  
Proposed 8%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 3%  
Proposed 28%

## RESIDENTIAL



### TREE CANOPY COVERAGE

Existing 5%  
Proposed 17%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 53%  
Proposed 63%

## PARKS & OPEN SPACE



### TREE CANOPY COVERAGE

Existing 9%  
Proposed 11%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 58%  
Proposed 65%

CITY SCALE



TOTAL: 2,039 ACRES

TREE CANOPY COVERAGE PERCENTAGE

0.5%

CO2 REDUCTION

0.92%



TOTAL: 15,409 ACRES

TREE CANOPY COVERAGE PERCENTAGE

8.3%

CO2 REDUCTION

2.59%



TOTAL: 2,564 ACRES

TREE CANOPY COVERAGE PERCENTAGE

0.9%

CO2 REDUCTION

15.06%



# GREEN PLACES

## COMMERCIAL

SITE SCALE



### TREE CANOPY COVERAGE

Existing 0.5%  
Proposed 7%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 3%  
Proposed 27%

## INDUSTRIAL



### TREE CANOPY COVERAGE

Existing 3%  
Proposed 8%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 7%  
Proposed 31%

## SCHOOLS & PUBLIC FACILITIES



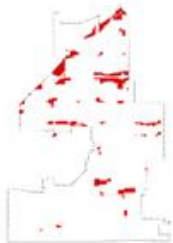
### TREE CANOPY COVERAGE

Existing 7%  
Proposed 9%

### LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

Existing 48%  
Proposed 55%

CITY SCALE



TOTAL: 1,825 ACRES

TREE CANOPY COVERAGE PERCENTAGE

0.4%

CO2 REDUCTION

0.84%



TOTAL: 8,505 ACRES

TREE CANOPY COVERAGE PERCENTAGE

2.1%

CO2 REDUCTION

1.80%



TOTAL: 1,248 ACRES

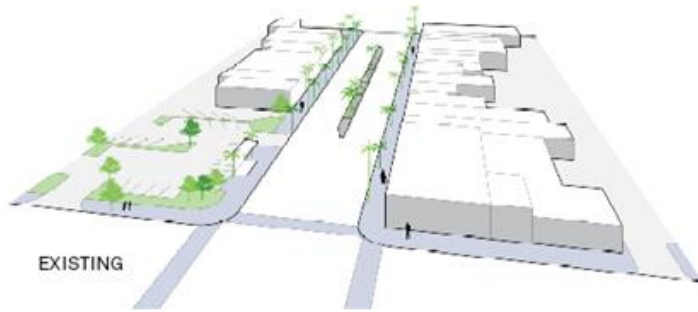
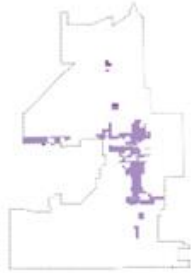
TREE CANOPY COVERAGE PERCENTAGE

0.4%

CO2 REDUCTION

0.10%

# WALKABLE MIXED-USE



## LAND DISTRIBUTION

### EXISTING



### PROPOSED



- Impermeable Surface Area
- Permeable Surface Area
- Landscape Area
- Hard Rooftop Surface Area
- Green Rooftop Surface Area

## TREE CANOPY COVERAGE

- Existing 1%
- Proposed 8%

## LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF

- Existing 3%
- Proposed 28%

Use Permeable Paving For Sidewalks.

Use solar panels and/or green roof where applicable. Turf is prohibited in the walkable mixed-use areas unless a special exception is granted.

Green building setbacks and backyards.

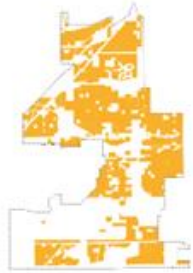
In high foot traffic areas, a consistent tree grate can be used instead of understory plant material.

Narrow Lanes From 12' To 10'.

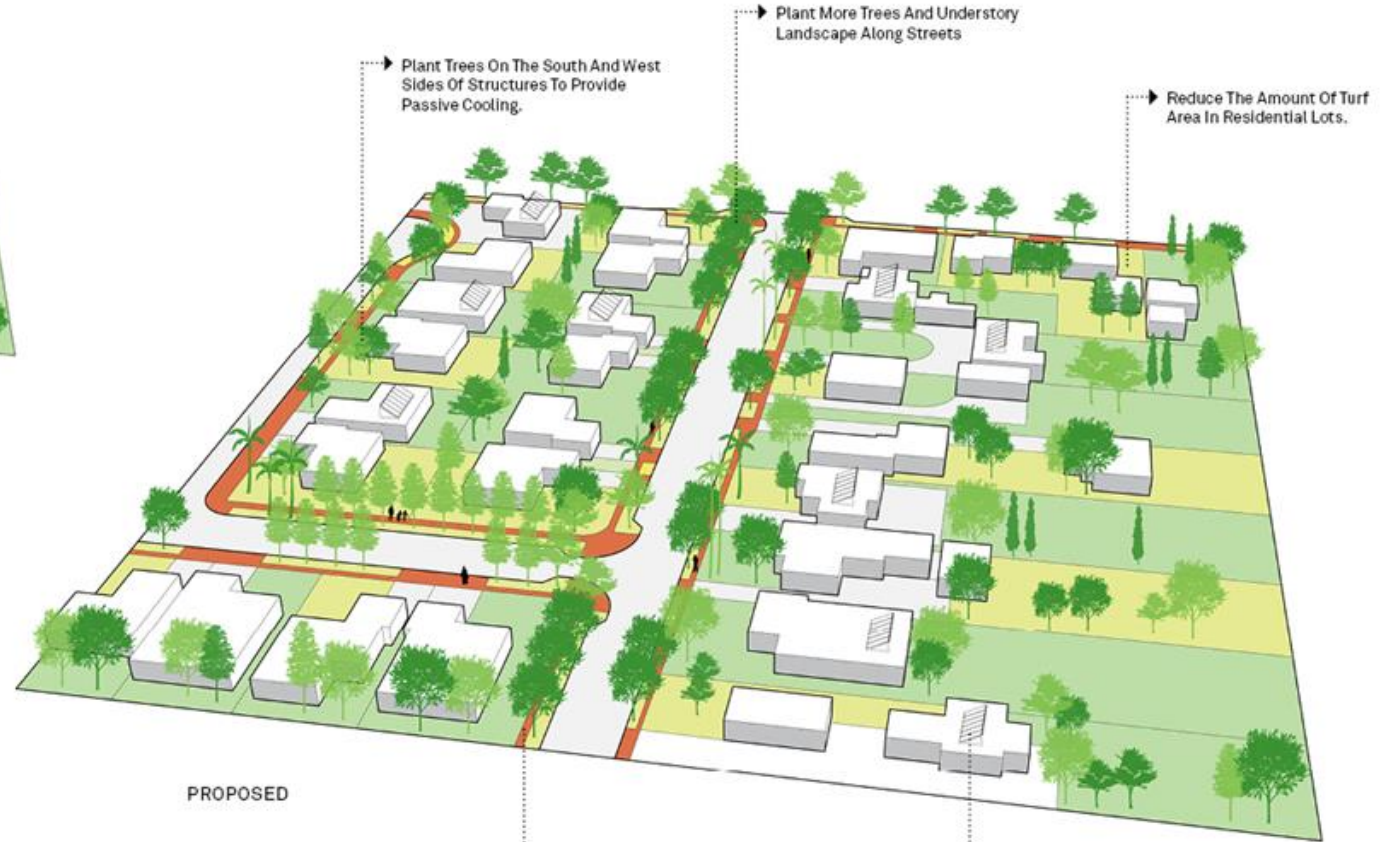
When requesting a building permit for a valuation over \$10,000, it is required that applicant plant a 24" box tree every 36' on center between the curb and sidewalk. New tree planters shall have a minimum opening of 5' clear by 7' clear and a minimum of 1,000 cubic feet of soil volume.

Create "Bulb-out" areas at the intersections with unique landscape.

# RESIDENTIAL



EXISTING



PROPOSED

Plant Trees On The South And West Sides Of Structures To Provide Passive Cooling.

Plant More Trees And Understory Landscape Along Streets

Reduce The Amount Of Turf Area In Residential Lots.

Use Permeable Paving For Sidewalks Where Applicable.

Encourage The Use Of Solar Panels.

## LAND DISTRIBUTION

### EXISTING



### PROPOSED



- Impermeable Surface Area
- Permeable Surface Area
- Landscape Area
- Hard Rooftop Surface Area
- Green Rooftop Surface Area

## TREE CANOPY COVERAGE



## LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF



# PARK & OPEN SPACE



EXISTING

## LAND DISTRIBUTION

### EXISTING



### PROPOSED

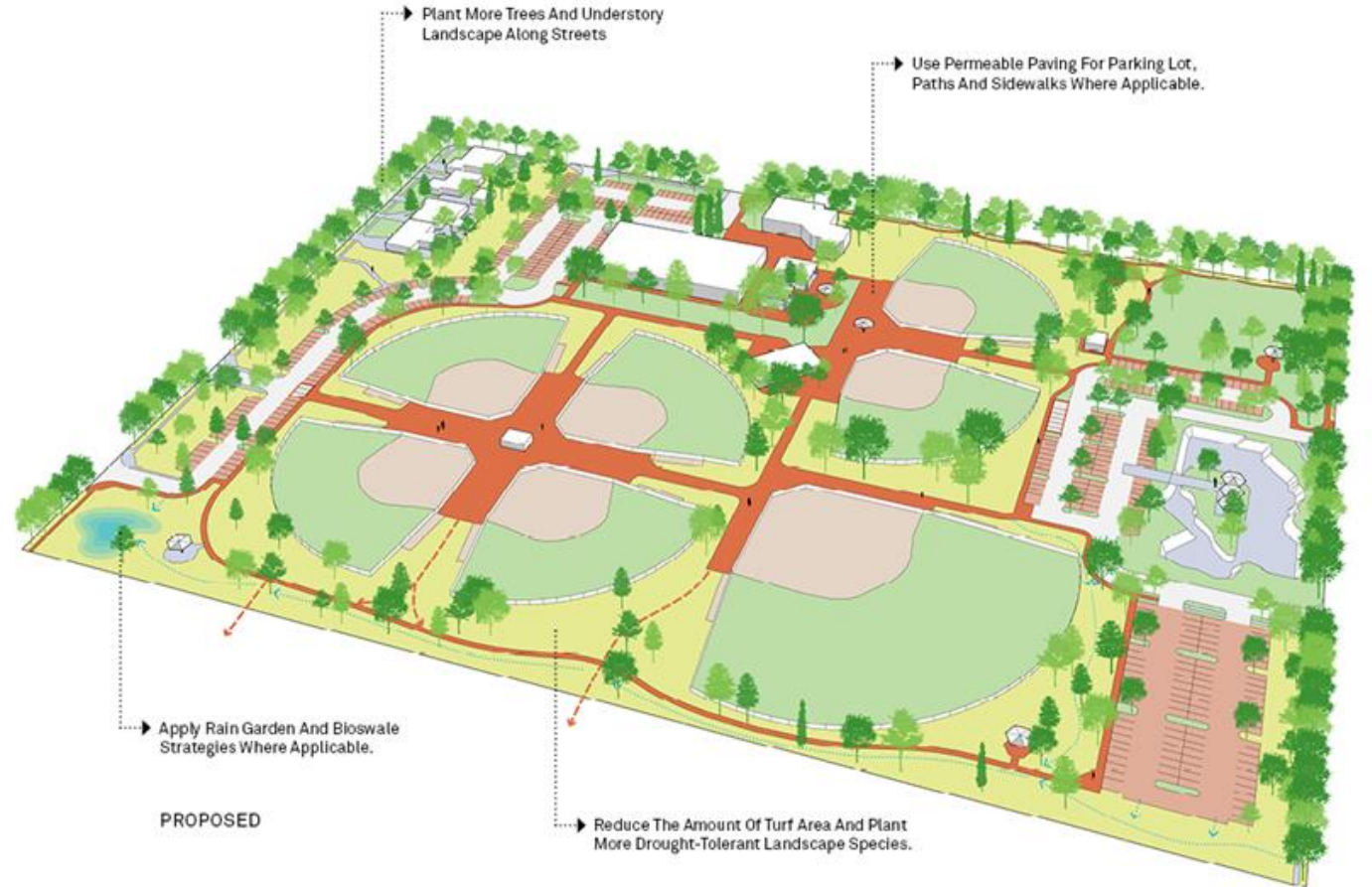


- Impermeable Surface Area
- Permeable Surface Area
- Landscape Area
- Hard Rooftop Surface Area
- Green Rooftop Surface Area

## TREE CANOPY COVERAGE

- Existing 9%
- Proposed 11%

## LANDSCAPE AREA + PERMEABLE SURFACE + GREEN ROOF



PROPOSED

Milano, 2015

A pilot project for Urban Algae Farming  
by ecologicStudio

Supported by:

COOP

Expo Milano 2015

Twin Europe





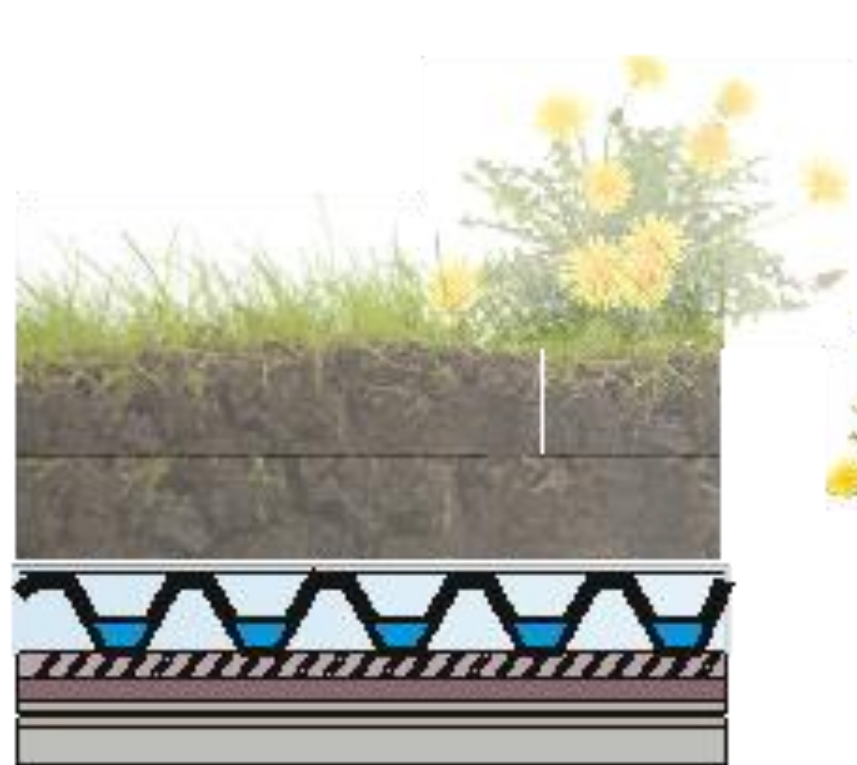
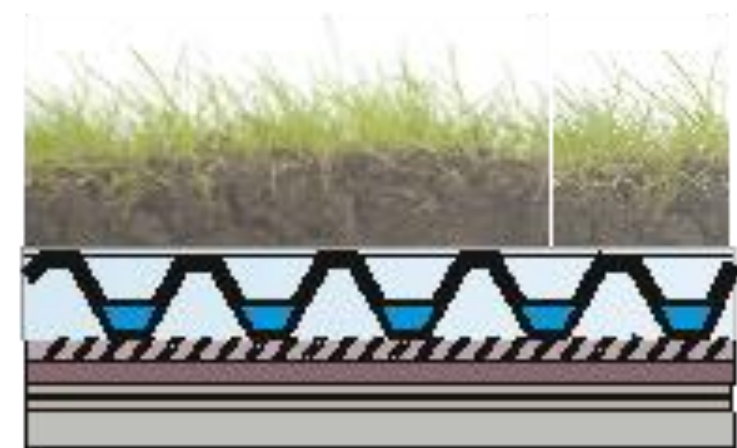
2010.08.18



2010.08.18













2010 08 03

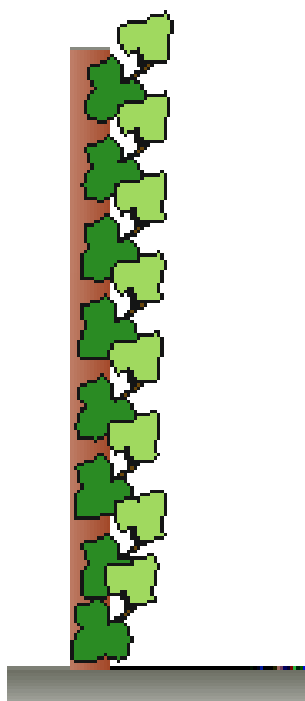


2010 08 03

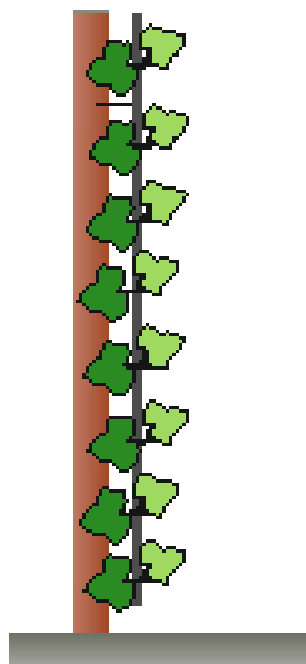




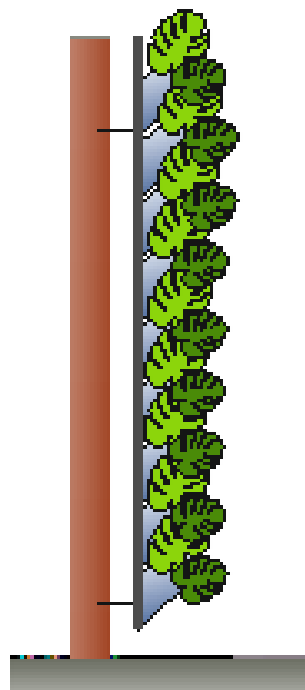




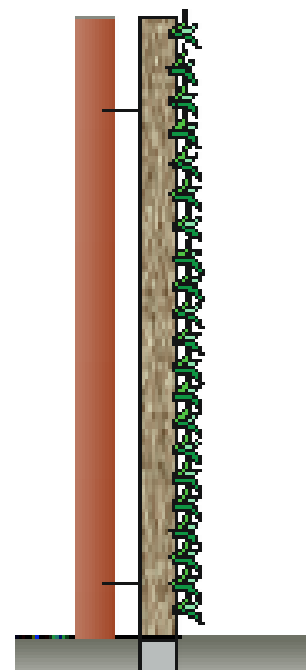
„Żyjąca ściana” z  
pnączy bez podpór.



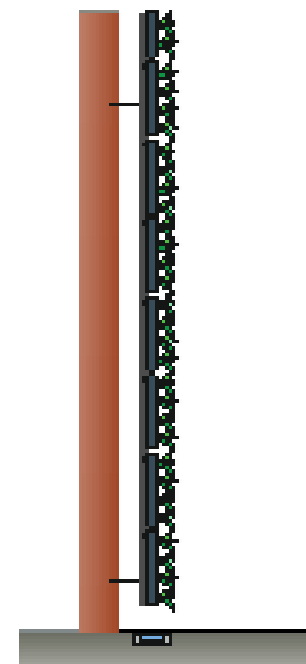
„Żyjąca ściana” z  
pnączy z podporami i



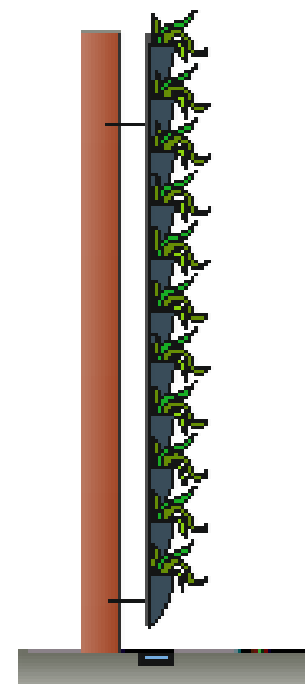
„Żyjąca ściana”-  
pojemnikowa.



„Wertykalny ogród”-  
gabionowy.



„Wertykalny ogród”-  
modułowy.



„Wertykalny ogród”-  
trójwarstwowy.











2010.08.02















University of the Philippines System

