



Extreme Heat Mitigation

July 18, 2023

WWW.SCAG.CA.GOV

Agenda

1. Welcome and Introductions

Kim Clark, SCAG

2. LARC's Extreme Heat Campaign

Erin Coutts, LARC

3. SCAG's New Climate Resilient Urban Greening Resource Hub

Maya Luong, SCAG

4. OPR's Extreme Heat Grant Program

Braden Kay, OPR

Housekeeping

1. This meeting will be 1.5 hours long
2. This meeting is being recorded
3. The recording and PowerPoint slides will be available on the SCAG website
4. During the presentations participant lines will be muted
5. There will be Q&A after each presentation – please hold questions to end or type them in the chat

Land Acknowledgment

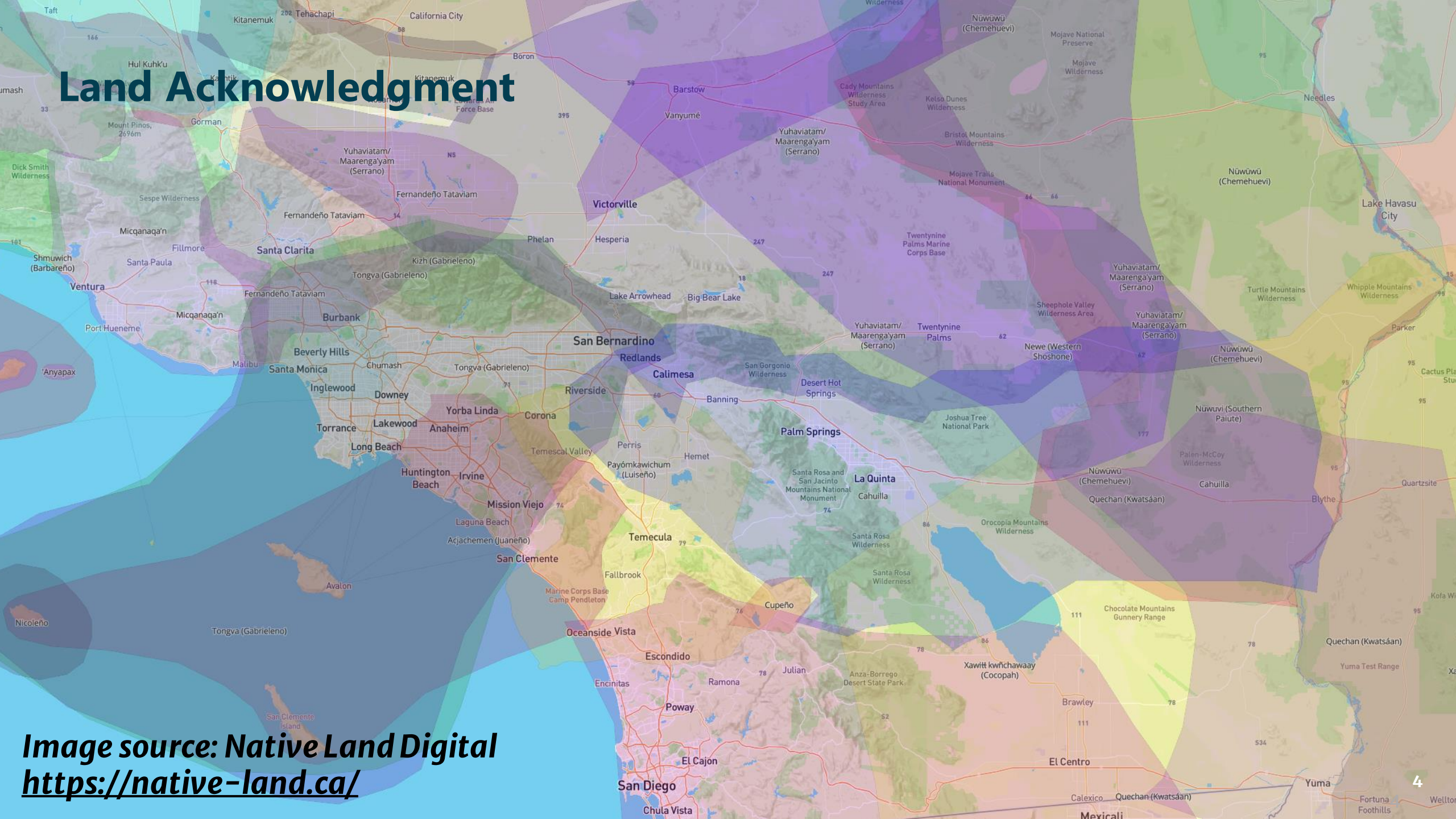


Image source: Native Land Digital
<https://native-land.ca/>



Erin Coutts

Executive Director

Los Angeles Regional
Collaborative for Climate
Action and Sustainability



Maya Luong

CivicSpark Fellow

Southern California
Association of
Governments



Braden Kay

Extreme Heat and
Community Resilience
Program Manager

Governor's Office of
Planning and Resources





Los Angeles Regional Collaborative
for Climate Action and Sustainability

Los Angeles Extreme Heat Campaign

Southern California Association of Governments
Toolbox Tuesday
July 18, 2023

Los Angeles Regional Collaborative for Climate Action and Sustainability



Housed at UCLA, LARC is a network of climate planners and policy-makers supporting cross-jurisdictional collaboration across the Los Angeles region.



LARC supports members who want to:

- Maximize limited resources
- Identify funding opportunities
- Access locally-relevant research
- Engage in state climate policy
- Advance local climate planning efforts

Become a Member

www.laregionalcollaborative.com/join

LARC is one of eight regional collaboratives in California:

<https://arccacalifornia.org/>

LA County likely to see 10x as many heat waves per year by 2035-2046



Tools

Enter a location...

Climate + Community Details

Learn more about projected heat exposure and underlying heat vulnerability and resilience characteristics of a community.

Learn more >

Extreme Heat: Days Above 90 degrees F (2035 - 2064):
140.0 days

More days above
90°F



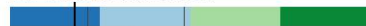
This City / Town is projected to have **140.0** days above 90°F by Mid-Century (2035-2064). The median value for the state is **79.9** days.

Fewer days above
90°F

California Healthy Places Index Score:
18.0 percentile

Value: -0.573

Less → More healthy conditions

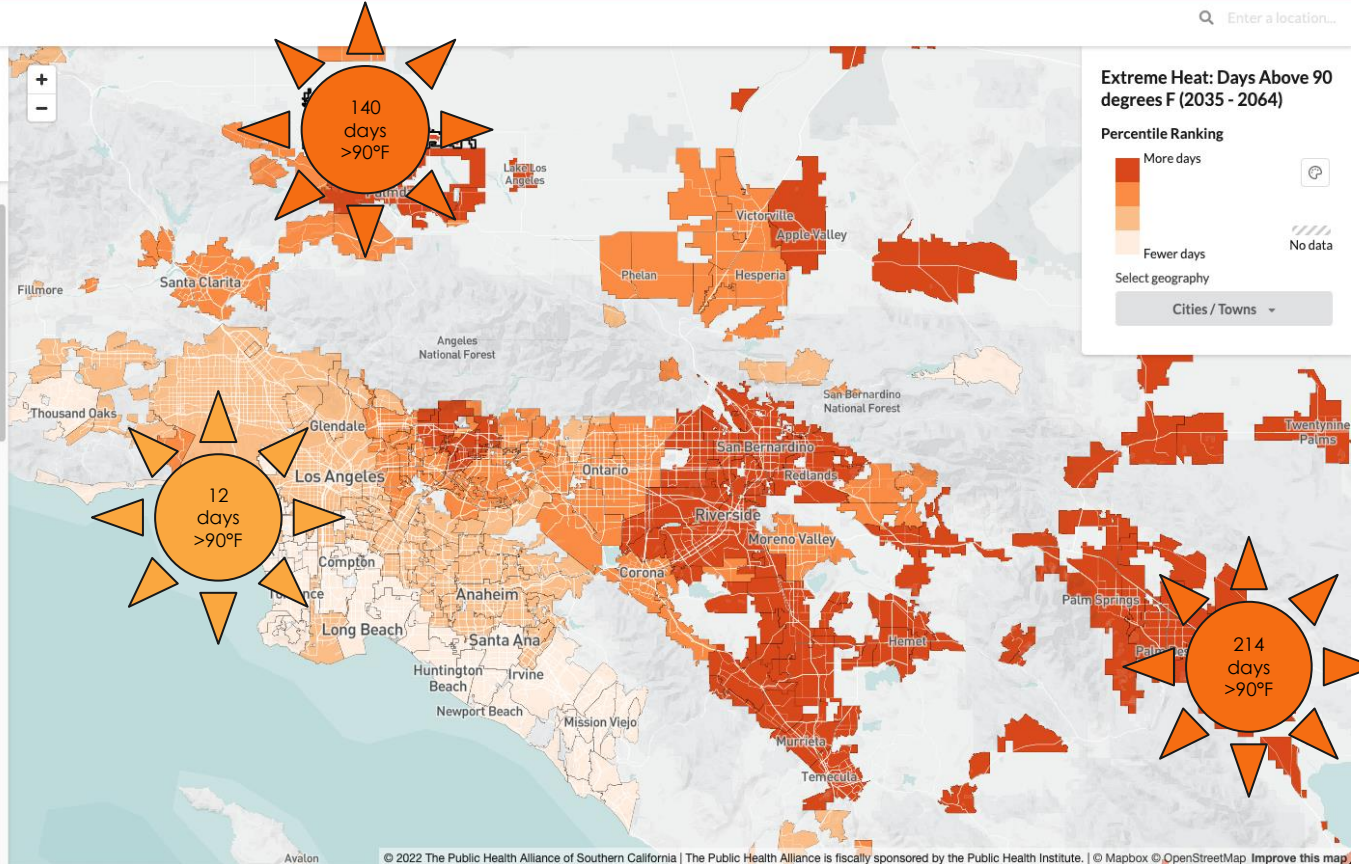


This City / Town

County Avg: 48.2

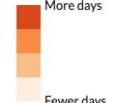
City / Town Avg: 21.3

This City / Town has healthier community conditions than **18.0%** of other California Cities / Towns.



Extreme Heat: Days Above 90 degrees F (2035 - 2064)

Percentile Ranking

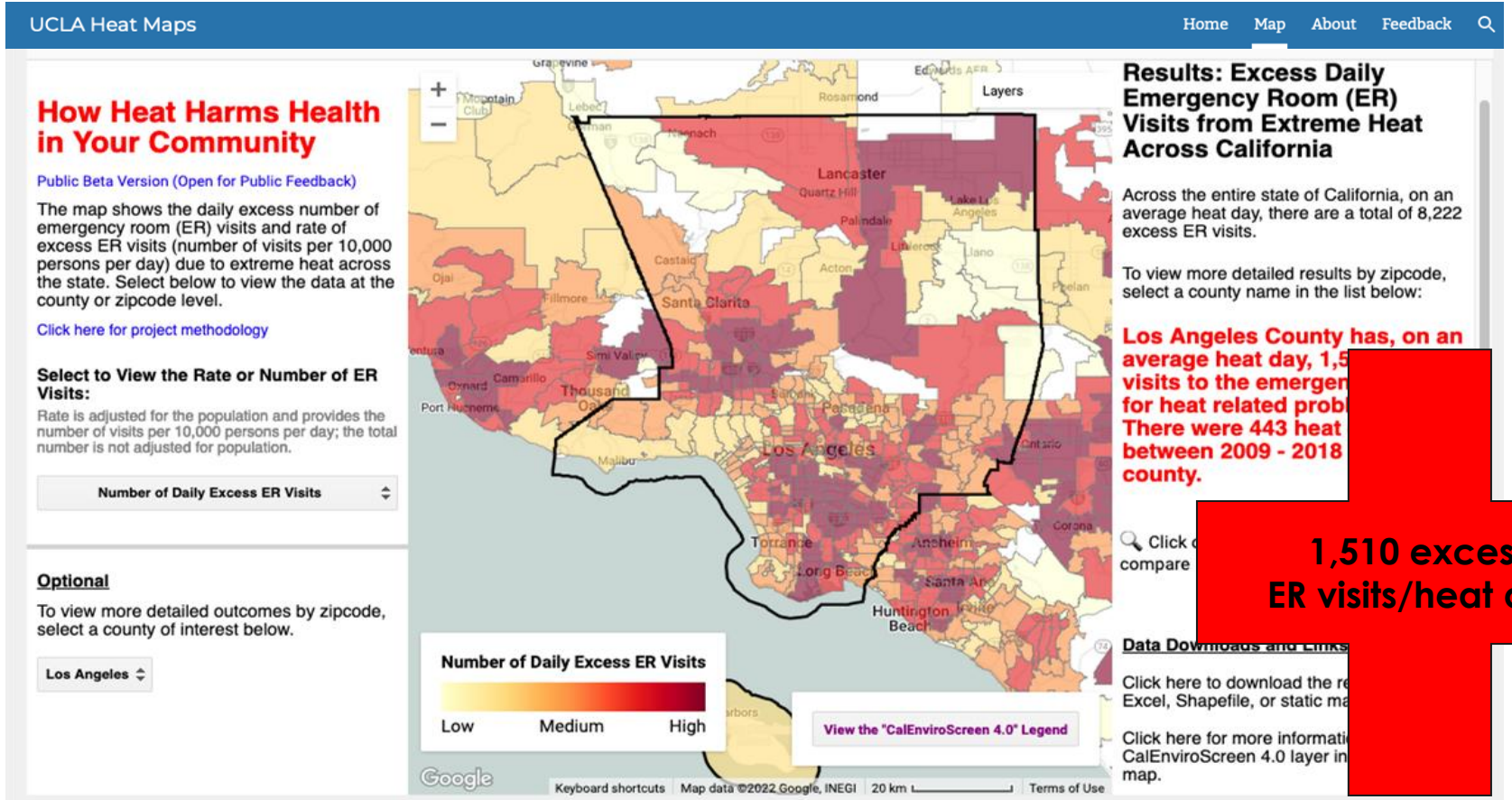


No data

Select geography

Cities / Towns

Extreme Heat as Health Risk



Building a Network of Outreach Partners



day one



promesa
BOYLE HEIGHTS

Social Media:

Produced 17 posts about heat risk with tips to stay safe
Expanding network of distribution partners – Join the network!

Printable Flyers:

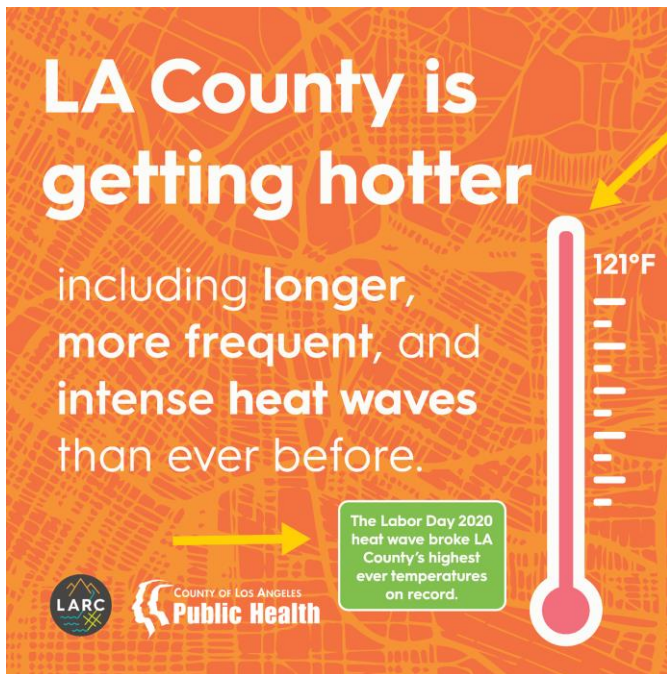
Co-produced flyers for distribution at public events, in health care settings, and by existing *promotora de salud* programs



Bus Advertisement:

LA Metro running Extreme Heat PSA on 2,300 buses from July-September.

Social Media Campaign: Partnership with LA County DPH



#HeatSafeLA | www.laregionalcollaborative.com/heat

Physical Health Risks

HEAT is the deadliest weather event in the U.S.



Extreme heat puts a lot of stress on your body that can lead to heat exhaustion and heat stroke.

Make it a habit to know when it's going to be hot, signs of heat stress, and how to avoid it.

SWIPE FOR TIPS ON HOW TO AVOID THE HEAT




Going Outside?

SWIPE RIGHT FOR TIPS





Cooling Down Inside

SWIPE RIGHT FOR TIPS



Look Out For Eachother

SWIPE RIGHT FOR TIPS



www.laregionalcollaborative.com/heat

Mental Health Risks



www.laregionalcollaborative.com/heat

Cool Down with No A/C

¿No tiene aire acondicionado en casa?

Protéjase de las enfermedades relacionadas con el calor al seguir nuestros consejos para refrescarse y mantenerse seguro cuando hace calor.



COUNTY OF LOS ANGELES
Public Health

Cómo refrescarse

- Cuando está más fresco afuera que adentro, use un ventilador con la ventana abierta para que entre el aire fresco.
- Manténgase hidratado, y no espere a tener sed para tomar agua.
- Báñese con agua fría.
- Use su estufa y horno menos para evitar que su casa se caliente aún más.
- Durante las horas más calurosas del día, pase tiempo en la biblioteca, centro comunitario, centro comercial u otro espacio que tenga aire acondicionado. Si necesita ayuda para encontrar un espacio fresco, llame al 2-1-1.

Prepare su hogar

- ¿Tiene problemas con pagar el costo de la electricidad? Averigüe si reúne los requisitos para recibir ayuda del Programa de Asistencia Energética para Hogares de Bajos Ingresos (LIHEAP).
- ¿Quiere reducir sus gastos de electricidad? Consulte el Programa de Asistencia para la Climatización (WAP), que ayuda a los hogares de bajos ingresos a obtener mejoras en la eficiencia energética sin costo adicional.
- ¿Renovando su techo? Instale un "techo reflectivo" para ahorrar en gastos de energía y para mantener su casa más fresca.

www.laregionalcollaborative.com/heat

Cool Spaces in LA

ON HOT DAYS, VISIT THESE FREE PUBLIC PLACES TO STAY COOL:

LIBRARIES,



PARKS,



and COMMUNITY
or SENIOR CENTERS.



Do fun activities and errands in cool spaces during peak heat hours:

GROCERY SHOPPING,
SEEING A MOVIE,



SWIMMING AT A PUBLIC POOL,
VISTING AN INDOOR MALL



and more!

www.laregionalcollaborative.com/heat

Tips for High Risk Populations

Los días CALUROSOS pueden ser más PELIGROSOS para los ADULTOS MAYORES.

Al envejecer, nuestro cuerpo tiene más dificultades para adaptarse a los cambios de temperatura. Las enfermedades crónicas y ciertos medicamentos también pueden afectar la respuesta de nuestro cuerpo al calor.



★ Estos son algunos consejos para usted o para compartir con los adultos mayores en su vida:

LARC COUNTY OF LOS ANGELES Public Health

PAY ATTENTION to CHILDREN when it's HOT:

Children can overheat 3 to 5 times more quickly than adults, get dehydrated more quickly, and are at higher risk of heat stroke.



★ Here are some tips for parents & guardians:

LARC COUNTY OF LOS ANGELES Public Health

Mantenga a sus mascotas a salvo del calor!

- Deles suficiente agua fresca y limpia
- Manténgalas dentro de la casa o asegúrese que haya sombra cuando estén afuera.
- Manténgalo sin caminatas breves. Evite los paseos durante las horas más calurosas del día. El cuerpo de su perro puede calentarse rápidamente y sus patas se pueden quemar fácilmente sobre las aceras calientes. Tenga cuidado de no darle demasiado ejercicio.
- Conozca los síntomas del sobrecalentamiento en mascotas, que incluyen, el jadeo excesivo, mucha baba, y la respiración agitada o acelerada.



LARC COUNTY OF LOS ANGELES Public Health

HEAT IMPACTS PREGNANT PEOPLE

Pregnancy affects your body's ability to regulate temperature, making you more vulnerable on hot days.



Extreme heat can increase risk of preterm birth, having a baby with a low birth weight, and even infant mortality.

LARC COUNTY OF LOS ANGELES Public Health

Heat and People Experiencing Homelessness.

Our **unhoused community members** are much **more exposed to heat** than their housed neighbors. Without an easy place to go to cool down and drink water, people are at a **higher risk of heat-related illness.**



LARC COUNTY OF LOS ANGELES Public Health

CONOZCA LA RESPUESTA DE SU CUERPO EL CALOR

Algunas discapacidades y condiciones preexistentes lo ponen a mayor riesgo de sufrir una enfermedad relacionada con el calor.



Su cuerpo puede ser menos capaz de sentir y responder a los cambios de temperatura.

LARC COUNTY OF LOS ANGELES Public Health

If you work outside or inside without AC, you're at risk for heat-related illness.

- Request frequent breaks to cool off and drink water.
- Wear a brimmed hat and loose, lightweight, light-colored clothing.

Know Your Rights:

- Your employer is required to provide shade when temperatures are over 80 degrees.
- Your employer must allow you to take breaks of at least 5 minutes to cool down.



More information: <https://www.dir.ca.gov/dosh/heatillnessinfo.html>

LARC COUNTY OF LOS ANGELES Public Health

Get involved



Join the extreme heat campaign

- Sign up: <https://bit.ly/LAHeatPartnerSignUp>
- See content calendar:
<https://bit.ly/2023-la-heat-campaign-calendar>
- Know others we should invite?
Please connect us: ecoutts@ucla.edu

www.laregionalcollaborative.com/heat

Printable Flyers

LET'S BEAT THIS HEAT!

Make it a habit to know when it's going to be hot, signs of heat stress, and how to prevent it.



Extreme heat is deadly and kills more people than any other weather event.

Hot days are more dangerous for outdoor workers, older adults, pregnant people, children, and people with chronic illness, like asthma and diabetes.

HEAT STROKE

SYMPTOMS	WHAT TO DO
<ul style="list-style-type: none"> Red, hot, dry skin Confusion Rapid pulse Throbbing headache Temperature above 104°F (40°C) Unconsciousness 	<ul style="list-style-type: none"> Call 911 Move to a cool place Cool with water or ice

Heat stroke can cause death or disability. Call 9-1-1

HEAT EXHAUSTION

SYMPTOMS	WHAT TO DO
<ul style="list-style-type: none"> Dizziness Heavy sweating Cramps Nausea or vomiting 	<ul style="list-style-type: none"> Move to a cool place Loosen clothes Sip water



SCAN FOR TIPS

Visit: <https://bit.ly/LA-Heat-Resources>



¡A COMBATIR EL CALOR!

Muchos riesgos relacionados con el calor extremo son desatendidos.



El calor extremo es fatal. Se mata más gente que cualquier otro tipo de clima.

Pida ayuda médica si lo necesita.

RIESGOS & CONSEJOS

- Se puede sentir molesto, depresivo, incómodo y sin sueño.
- Ser paciente con los demás.
- En días muy calurosos, las visitas a las salas de emergencia suben por razones de estrés, depresión y abuso a las drogas.
- Ciertos remedios pueden elevar los riesgos de enfermedades relacionadas con el calor. Habla con su doctor.
- Busque el apoyo de su familia o amigos.

Si necesita ayuda inmediata, marca a 2-1-1, o manda mensaje a "LA" al 741741



ESCANEA PARA CONSEJOS



Visit: <https://bit.ly/LA-Heat-Resources>



LET'S BEAT THIS HEAT!

Make it a habit to know when it's going to be hot, signs of heat stress, and how to prevent it.



Heatwaves are longer, more frequent, and more dangerous to your health!

Hot days are more dangerous for older adults, pregnant people, children, outdoor workers, and people with pre-existing conditions.

GOING OUTSIDE?

- Drink more water
- Stay in the shade
- Wear lightweight clothing
- Wear sunblock
- Take breaks
- Cool off at libraries, malls, or free cooling centers
- Never leave kids or pets alone in cars

If you need immediate help, call 2-1-1, or text "LA" to 741741

STAYING INSIDE?

- Drink more water
- Avoid alcohol and caffeine
- Do not use oven or stove
- Keep home cool. Block out the sun
- Take cool showers or put feet in cold water
- Look out for headaches, nausea, or dizziness. Get help if you feel sick.



SCAN FOR TIPS

Visit: <https://bit.ly/LA-Heat-Resources>



Bus Advertisement

WATER



SHADE



REST



CHECK IN



STAY #HeatSafeLA



13P 04/28/2021
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#HeatSafeLA | www.laregionalcollaborative.com/heat

Discussion Questions

- Any questions about the LA Heat Campaign?
- Are you doing any related work?
- Are there other resources that you could use?

Thank You & Next Steps

Join the campaign

- <https://bit.ly/LAHeatPartnerSignUp>
- Know others we should invite? Please connect us.

Erin Coutts

Los Angeles Regional Collaborative
for Climate Action and Sustainability (LARC)

ecoutts@ucla.edu



Climate Resilient Urban Greening Resources

July 18, 2023

WWW.SCAG.CA.GOV

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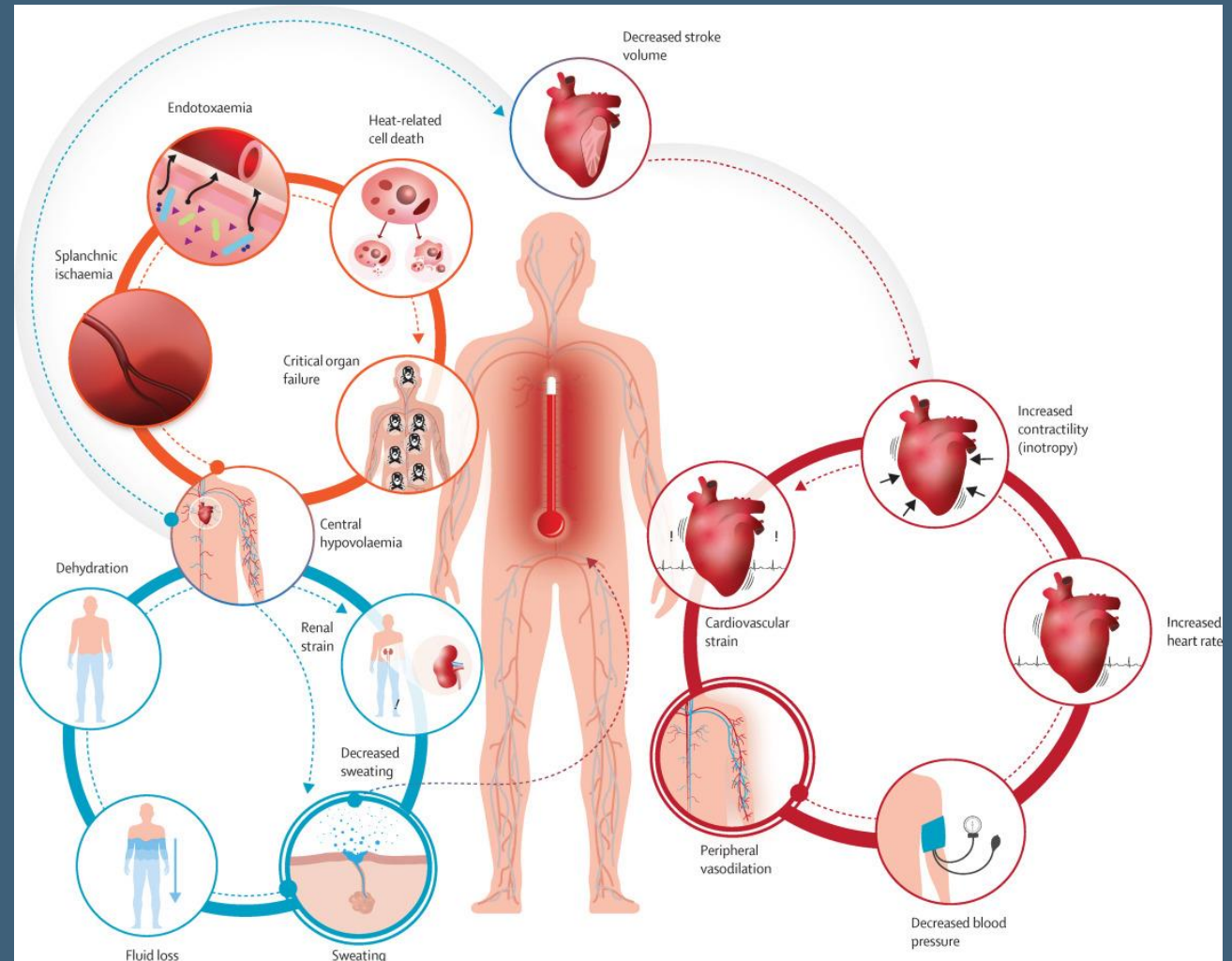
1. Urban Heat Overview
2. Challenges Facing SCAG Region
3. Urban Greening Resilience Benefits
4. Using New SCAG Resource Hub for Climate Resilient Urban Greening
 1. Urban forestry best practices
 2. Creating management plans and city tree ordinances
 3. Tree planting in a changing climate
5. Experts List



URBAN HEAT OVERVIEW

Urban Heat Overview

- Extreme heat is the **leading cause of weather- and climate change-related deaths** in the United States



Urban Heat Overview

- Urban heat islands occur throughout the SCAG region, **but are most concentrated in formerly redlined areas and economically disadvantaged areas.**

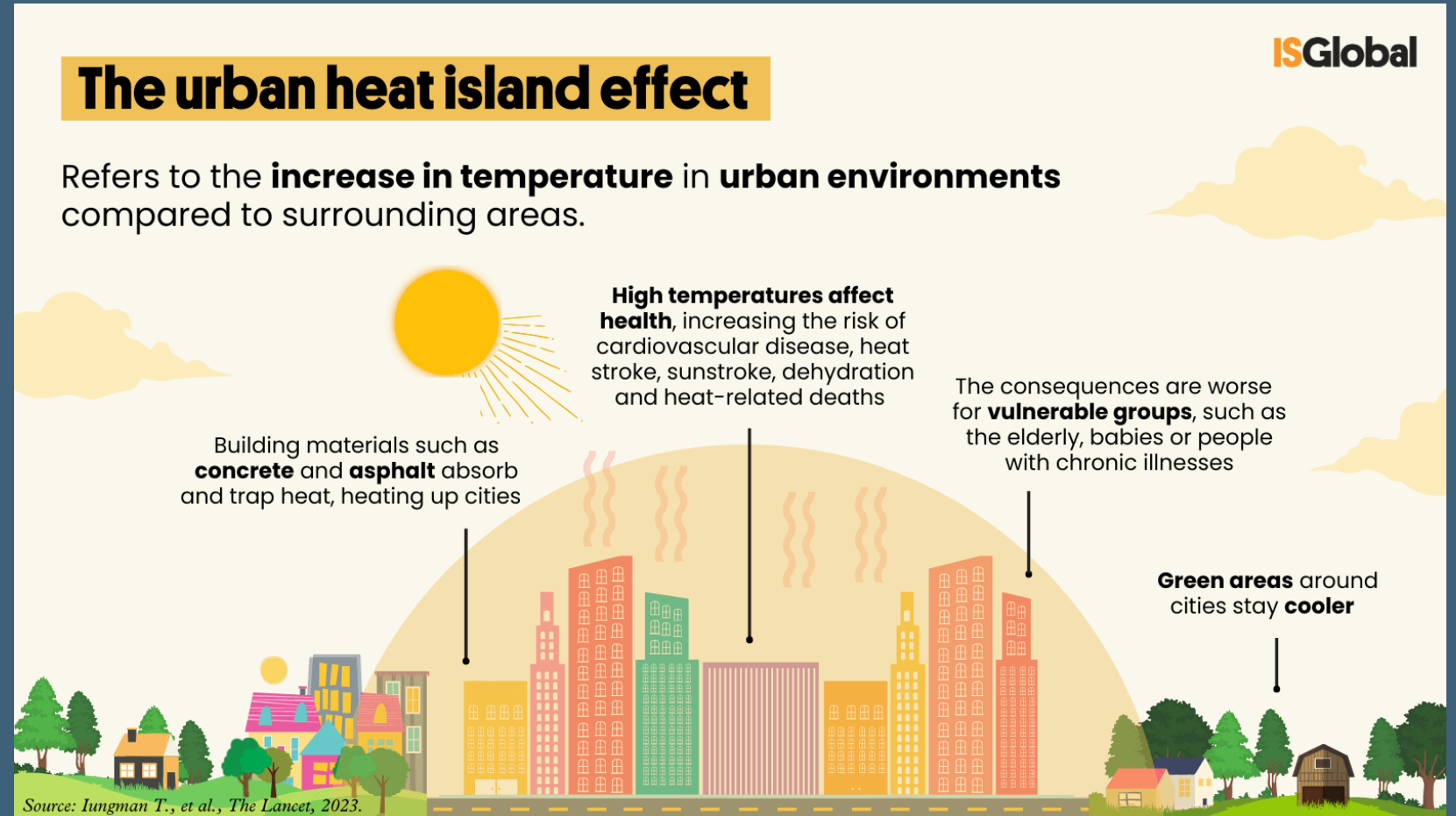


Photo by ISGlobal.

Urban Heat Overview

- Heatwaves are already occurring twice as frequently as frequently than historically
 - By mid-century, they are projected to be 3-4 times more frequently during the day time, and 4-5 times more frequently during the nighttime.

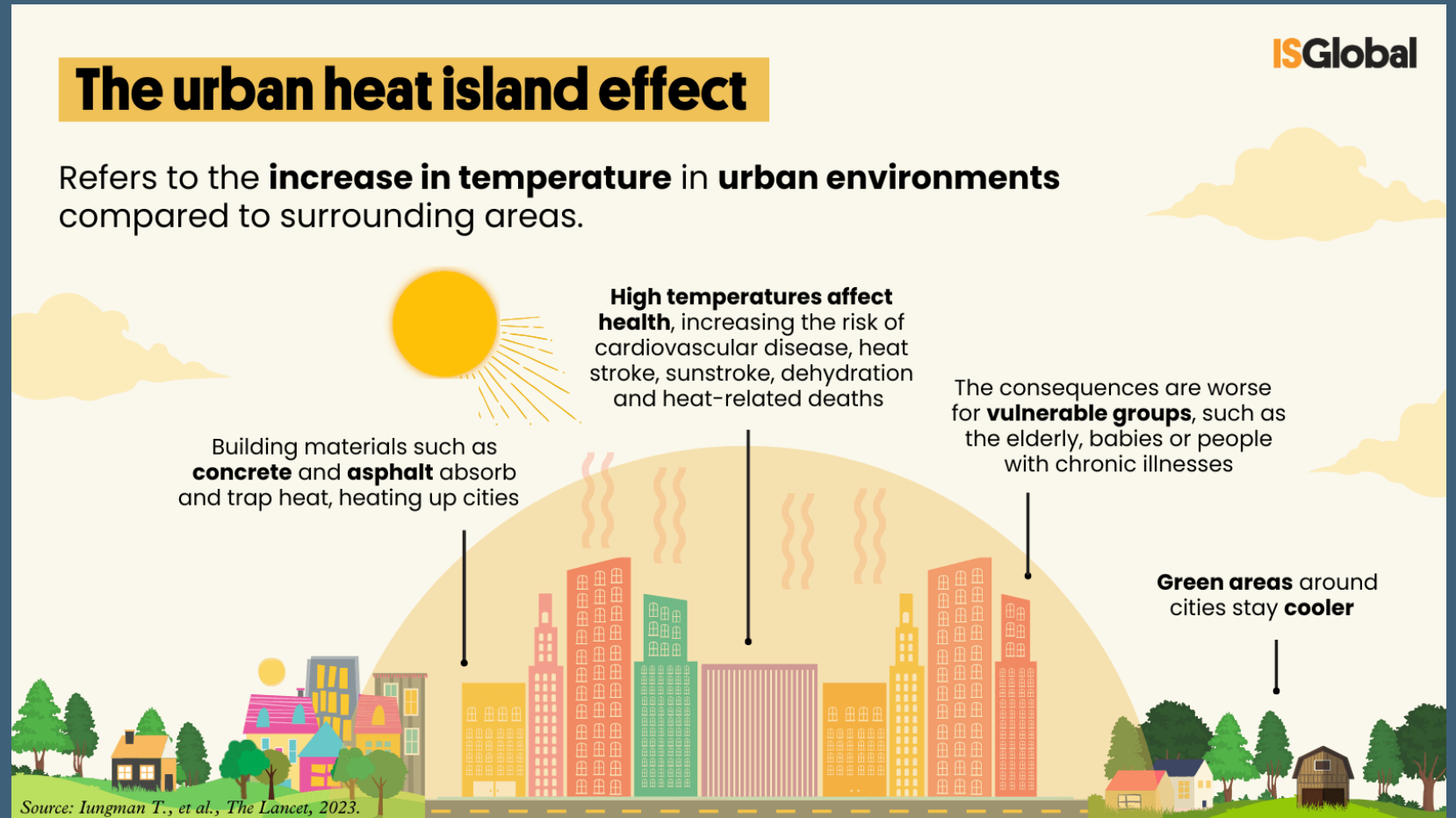


Photo by ISGlobal.

Urban Heat Overview

- Urban cooling strategies such as shade structures, bus shelters, and tree planting, etc,... have been shown to mitigate existing heat conditions.
- When there is a reduction in urban heat, people are more likely to engage in active transportation modes.



Photos courtesy of Superior Recreational Products, Spectrum News/Susan Carpenter, and Daniel Jeffries.



CHALLENGES FACING SCAG REGION

CHALLENGES FACING SCAG REGION

- Extreme heat
- Rising sea level
- More frequent wildfires
- Shifting precipitation rates

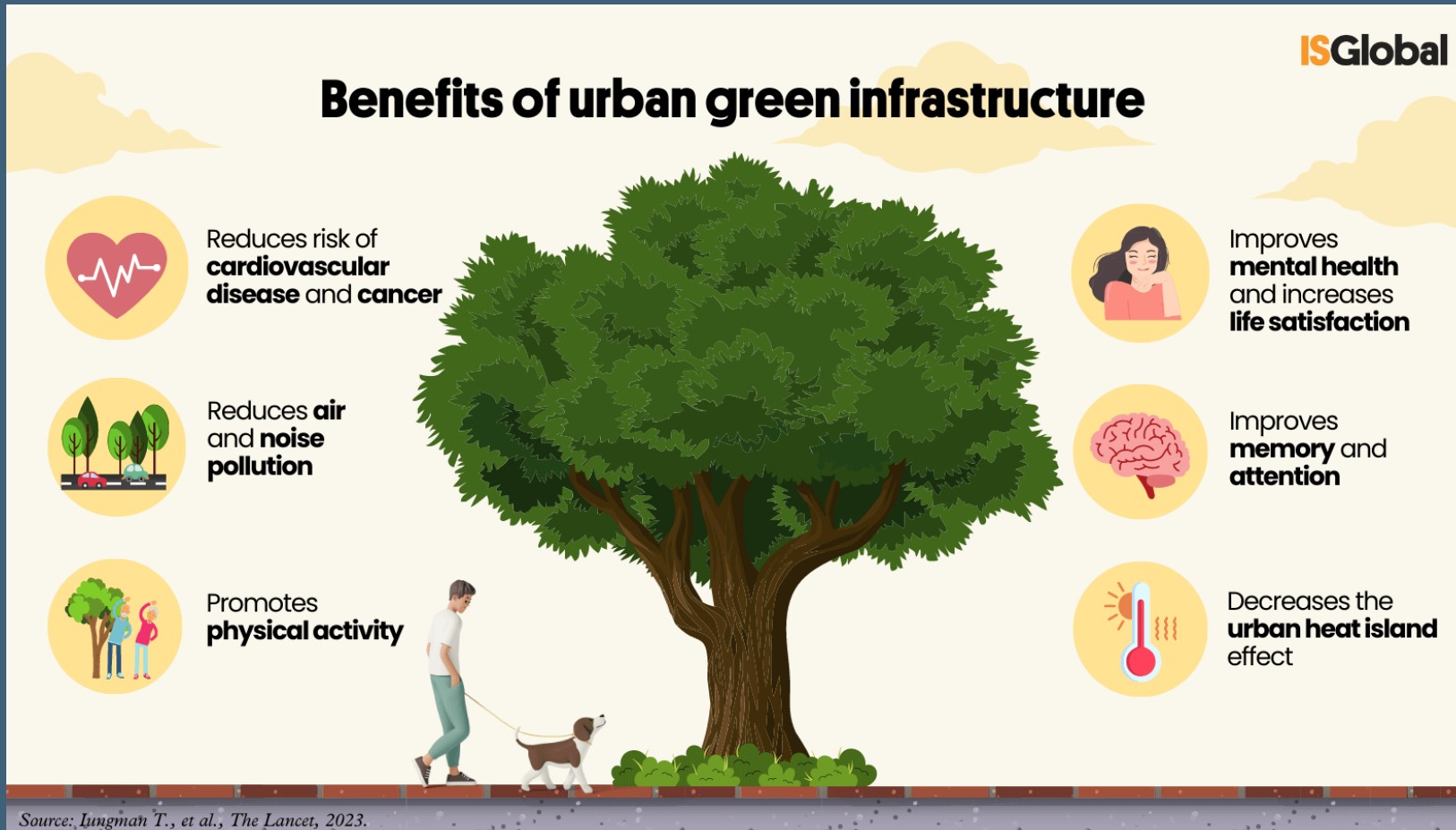


A car is submerged in floodwaters by a vineyard after heavy rain on January 9, 2023, in Windsor, California. Photo by Justin Sullivan/Getty Images.



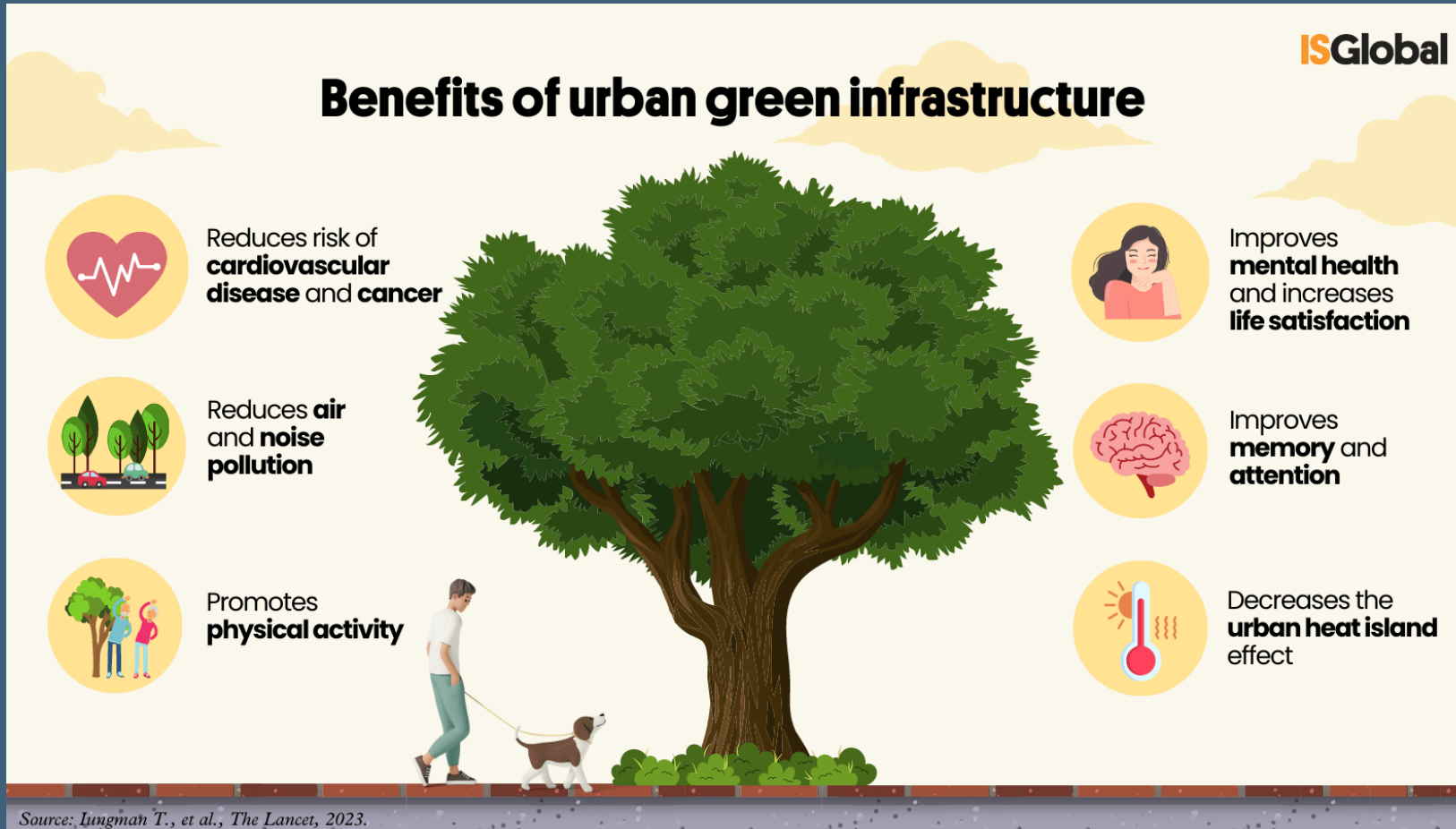
URBAN GREENING BENEFITS

URBAN GREENING BENEFITS



- Improved mental health and stress levels
- Reduce air pollution
- Providing shade and lowered surrounding temperatures
- Improved comfort for active transportation users (walking, biking, rolling)

URBAN GREENING BENEFITS



- Reduce stormwater runoff
- Replenish groundwater
- Reduce electricity use
- Reduce GHGs
- Reduce Vehicles Miles Traveled (VMT)

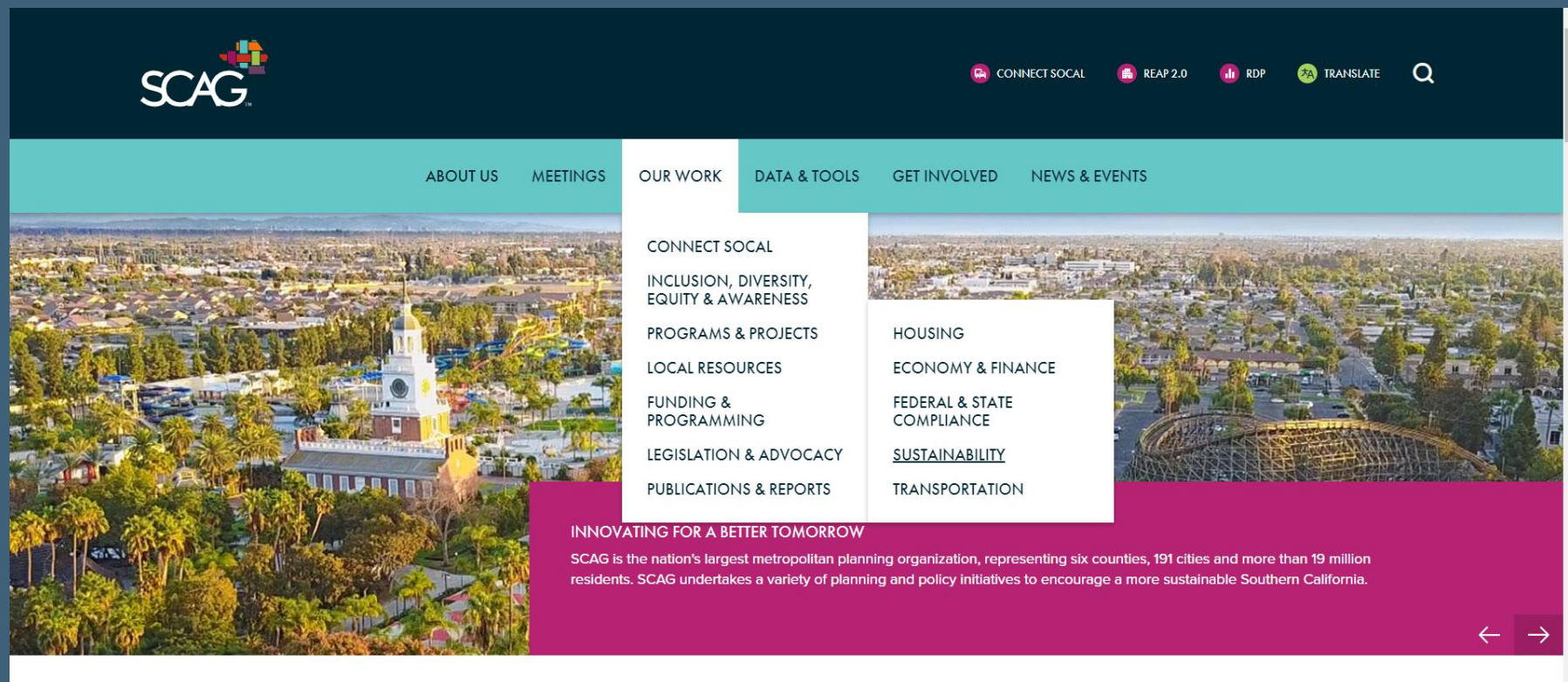


NEW SCAG RESOURCE PAGE FOR CLIMATE RESILIENT URBAN GREENING PROGRAMS

scag.ca.gov/post/climate-resilient-urban-greening-best-practices

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES PAGE

- SCAG's Website > Our Work > Programs and Projects > Sustainability > Climate Change > Climate Resilient Urban Greening Best Practices



CLIMATE RESILIENT URBAN GREENING BEST PRACTICES PAGE

- SCAG's Website > Our Work > Programs and Projects > Sustainability > Climate Change > Climate Resilient Urban Greening Best Practices

Project

- Adaptation
- Mitigation
- Climate Change & The Future of Southern California
- Climate Change Resources
- HQTA Pilot Project
- Alternative Fuels & Vehicles +
- Open Space +
- Green Region Initiative
- Green Buildings
- Energy +
- Water
- Solid Waste
- Sustainability Resources +
- SCAG Sustainability Awards +
- Current Projects

Transportation +

Local Resources +

Funding & Programming +

Legislation & Advocacy +


Publications & Reports +

Climate Resilient Urban Greening Best Practices

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.


[READ MORE →](#)

Regional Climate Adaptation Framework




The Southern California Association of Governments is pleased to be developing a Regional Climate Adaptation Framework, which assists local and regional jurisdictions in managing the negative impacts of climate change.


Climate & Economic Development Project



Working together to identify a range of options to meet the region's needs for equitable economic development, pollution reduction, housing and transportation planning.



POWERING THE FUTURE
A Vision for Clean Energy, Clear Skies, and a Growing Economy in Southern California.



THE GREENHOUSE GAS REDUCTION FUND

THE GREENHOUSE GAS REDUCTION FUND

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES PAGE

- SCAG's Website > Our Work > Programs and Projects > Sustainability > Climate Change > Climate Resilient Urban Greening Best Practices

The screenshot displays the SCAG website interface. At the top left is the SCAG logo. To the right are social media icons for Connect SoCal, REAP 2.0, RDP, and Translate, along with a search icon. Below this is a teal navigation bar with links for ABOUT US, MEETINGS, OUR WORK, DATA & TOOLS, GET INVOLVED, and NEWS & EVENTS. On the left side, there is a sidebar menu under 'OUR WORK' with expandable categories: Connect SoCal, Inclusion, Diversity, Equity & Awareness, Programs & Projects, Housing, Economy & Finance, Federal & State Compliance, Sustainability, Public Health, Sustainability Program, Climate Change (which is expanded to show sub-items like Regional Climate Adaptation Framework, Climate & Economic Development Project, Adaptation, Mitigation, and Climate Change & The Future of...), and Climate Change & The Future of... The main content area is titled 'CLIMATE CHANGE' and features a sub-section 'The Global Warming Solutions Act' with an image of a smokestack and a text block explaining the act's goals. Below this is another sub-section 'SUSTAINABLE COMMUNITIES & THE CLIMATE PROTECTION ACT OF 2008' with a text block detailing Senate Bill No. 375. On the right side, there are two promotional banners: 'Powering the Future' and 'THE GREENHOUSE GAS REDUCTION FUND'.

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES PAGE

- SCAG's Website > Our Work > Programs and Projects > Sustainability > Climate Change > Climate Resilient Urban Greening Best Practices

The screenshot shows the SCAG website page for "Climate Resilient Urban Greening Best Practices". The page features a dark teal header with the SCAG logo on the left and navigation links for "CONNECT SOCIAL", "REAP 2.0", "RDP", "TRANSLATE", and a search icon on the right. Below the header is a light teal navigation bar with links for "ABOUT US", "MEETINGS", "OUR WORK", "DATA & TOOLS", "GET INVOLVED", and "NEWS & EVENTS". The main content area has a white background with the title "CLIMATE RESILIENT URBAN GREENING BEST PRACTICES" in bold. Below the title is a paragraph of text explaining the impact of climate change and the role of urban greening. To the right of the main text is a "SHARE THIS PAGE" section with icons for Facebook, Twitter, and LinkedIn, and a "THIS ITEM APPEARS IN" section listing "Climate Change". Below the main text is a horizontal navigation bar with three tabs: "HEALTH BENEFITS AND URBAN HEAT REDUCTION" (which is highlighted with a green bar), "RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS", and "URBAN FORESTRY BEST PRACTICES". Underneath this bar are three sub-sections: "CITY TREE ORDINANCES", "IDENTIFYING PRIORITY AREAS FOR TREE PLANTING", and "PLANTING TREES IN A CHANGING CLIMATE". The "Health Benefits and Urban Heat Reduction" section is currently selected, showing a sub-heading and a paragraph of text.

SCAG

CONNECT SOCIAL REAP 2.0 RDP TRANSLATE

ABOUT US MEETINGS OUR WORK DATA & TOOLS GET INVOLVED NEWS & EVENTS

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.

SHARE THIS PAGE

f t in

THIS ITEM APPEARS IN

Climate Change

HEALTH BENEFITS AND URBAN HEAT REDUCTION RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS URBAN FORESTRY BEST PRACTICES

CITY TREE ORDINANCES IDENTIFYING PRIORITY AREAS FOR TREE PLANTING PLANTING TREES IN A CHANGING CLIMATE

Health Benefits and Urban Heat Reduction

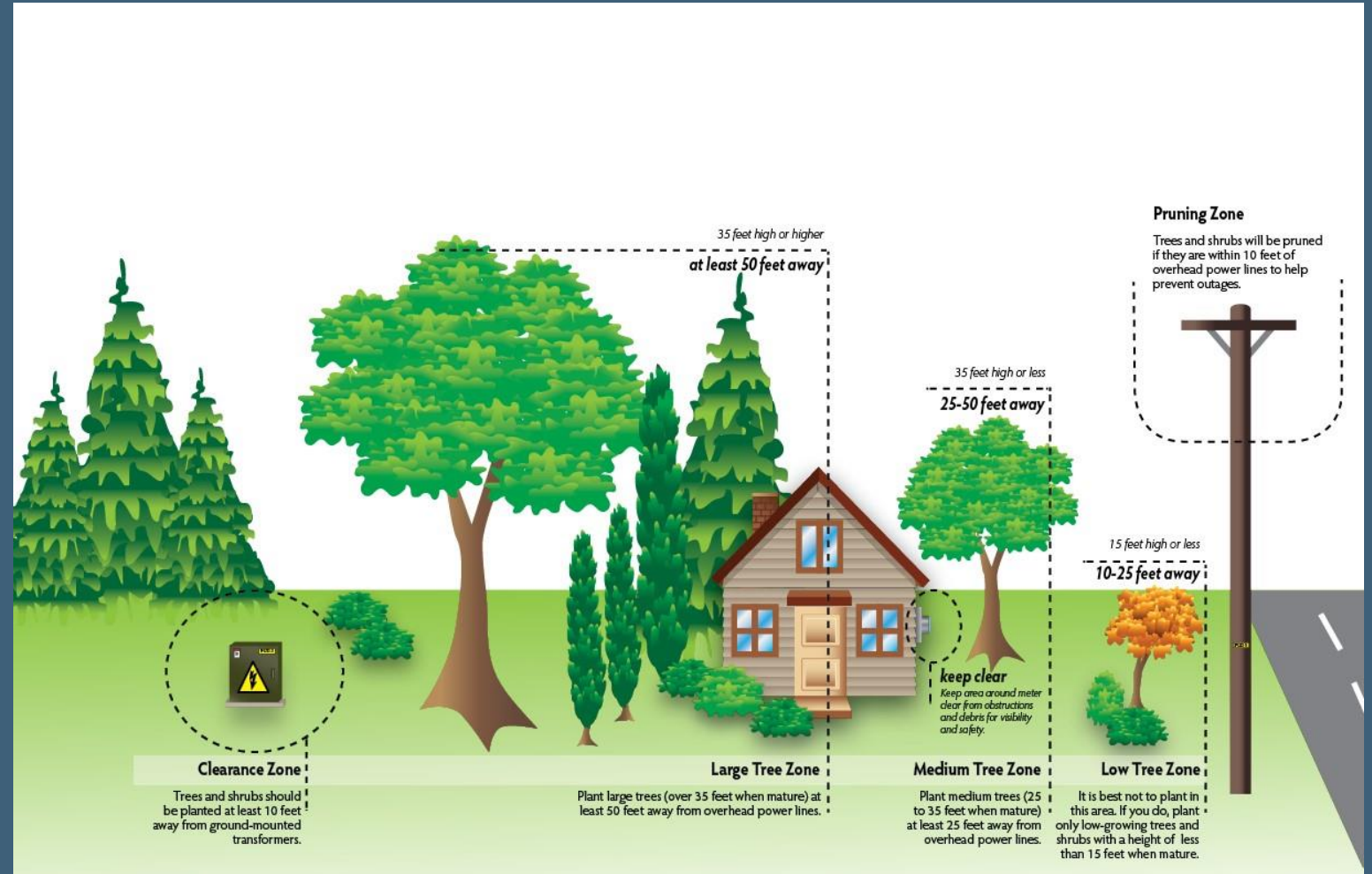
Urban greening is an important tool to improve resiliency and equity in a changing climate. Urban greening is especially important in low-income communities where residents are more likely to depend on walking or biking to access public transportation and reach key destinations such as jobs, school, healthcare and shopping but often lack trees that can lower urban heat. Urban trees are shown to reduce air pollution, improve water quality and boost mental health through lowered stress levels. They have also been shown to mitigate existing heat conditions by providing shade and lower temperatures making it more comfortable to walk or bike which leads to better health outcomes and lowered Vehicle Miles Traveled (VMT).



URBAN FORESTRY BEST PRACTICES

URBAN FORESTRY BEST PRACTICES

- Right Tree, Right Place
- Site-specific evaluation



URBAN FORESTRY BEST PRACTICES

- Adequate soil
- Photo from [Cooling Long Beach Urban Heat Island Reductions Strategies](#).

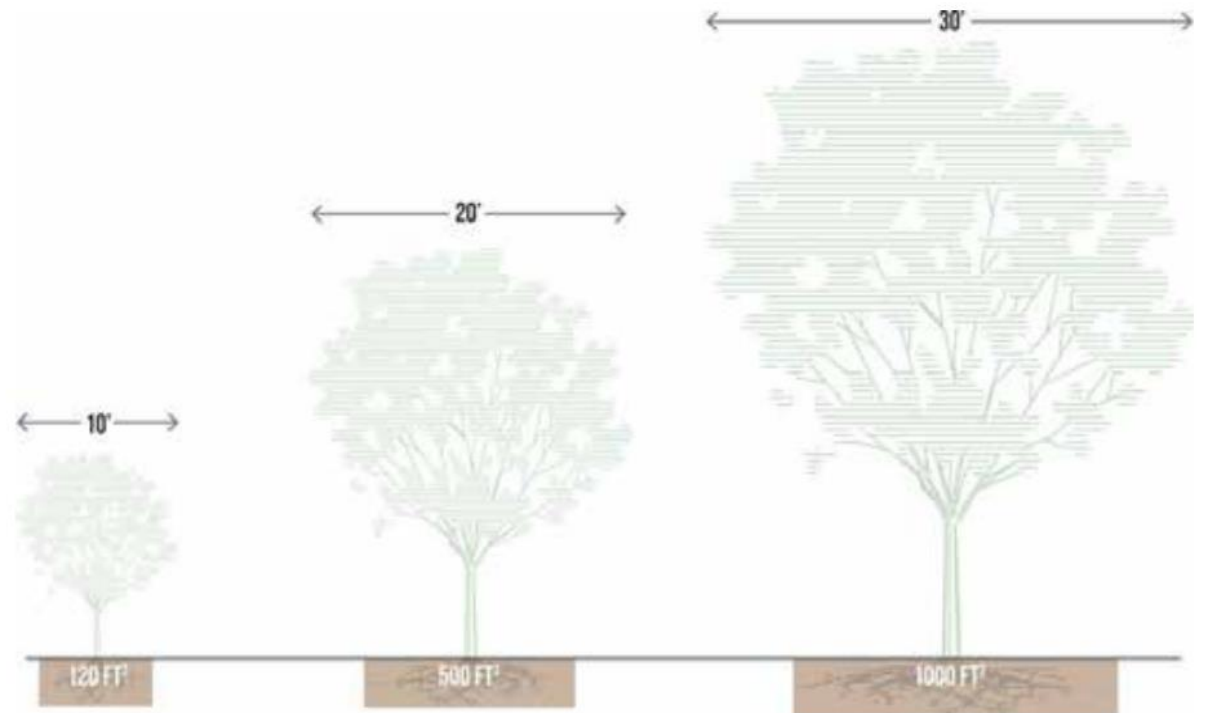


Table 2. Larger trees that provide the greatest shade and cooling benefits require greater volumes of uncompacted soil space to allow roots to grow. For example, a tree with a 30-foot wide canopy needs approximately 1,000 cubic feet of root space to thrive. (Source: NACTO)

URBAN FORESTRY BEST PRACTICES

- Planning for tree care in the first 10 years



URBAN FORESTRY BEST PRACTICES

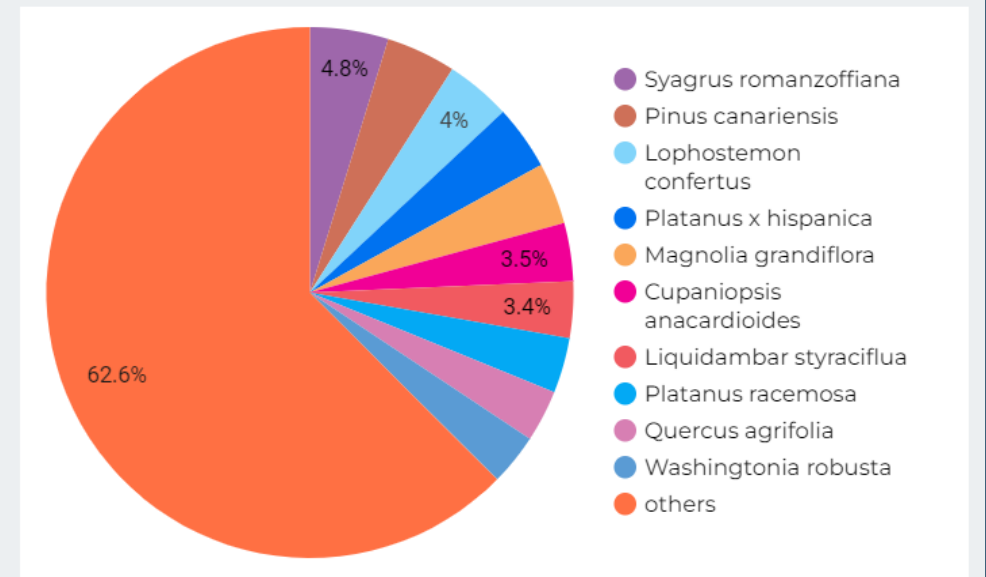
- Select the right species
- Ensure a diverse urban forest

Count distribution of each species

	Species	Number of trees	Proportion
1.	Syagrus romanzoffiana	8,600	4.81%
2.	Pinus canariensis	7,648	4.28%
3.	Lophostemon confertus	7,153	4%
4.	Platanus x hispanica	7,024	3.93%
5.	Magnolia grandiflora	6,722	3.76%
6.	Cupaniopsis anacardioides	6,323	3.54%
7.	Liquidambar styraciflua	6,159	3.44%
8.	Platanus racemosa	6,015	3.36%

1 - 100 / 391 < >

Count distribution of each species



Urban tree species distribution of Ventura County. Screenshot taken from [Urban Tree Inventory](#).

URBAN FORESTRY BEST PRACTICES

- Engage and collaborate with local communities
- Plan for post-planning monitoring and evaluation



Photo by LA Compost.

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.

SHARE THIS PAGE



THIS ITEM APPEARS IN

Climate Change

HEALTH BENEFITS AND URBAN HEAT REDUCTION

RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS

URBAN FORESTRY BEST PRACTICES

CITY TREE ORDINANCES

IDENTIFYING PRIORITY AREAS FOR TREE PLANTING

PLANTING TREES IN A CHANGING CLIMATE

Urban Forestry Best Practices

Urban forestry programs should practice the right tree, right place rule. Planning for the right tree that will thrive in its location, combined with a plan for continuing care, is crucial for the tree to grow to full maturity. Without early planning and tree care implementation, trees are likely to have high mortality rates, undercutting the ability of tree-planting programs to provide the full range of potential community benefits. Giving trees the best chance of success includes the following recommendations:

1. CONDUCT A SITE-SPECIFIC EVALUATION



2. PROVIDE ADEQUATE SOIL



3. PLAN FOR TREE CARE IN THE FIRST 10 YEARS



4. SELECT THE RIGHT SPECIES





URBAN GREENING MANAGEMENT PLANS AND ORDINANCES

URBAN GREENING MANAGEMENT PLANS AND ORDINANCES



- Benefits from the maintenance of urban trees, such as pruning and pest management likely outweigh the cost

URBAN GREENING MANAGEMENT PLANS AND ORDINANCES



- An Urban Forest Management Plan: A roadmap that creates a shared vision for the future of the urban canopy.
- A tree ordinance establishes authorization and standards for addressing a wide range of issues regarding trees.

City of Sierra Madre



Community Forest Management Plan



Suggested Sections for a Tree Ordinance

Although no two tree ordinances will be exactly alike, there are some basic elements that will help ensure that the document is workable and effective. These elements are called sections, and they are presented here with examples and principles that illustrate why each one is necessary.

I. PURPOSE

PRINCIPLE: An opening statement that clearly sets forth the purpose of the ordinance will help avoid ambiguity in interpretation. This initial section is usually capitalized and in bold print.

EXAMPLE: It is the purpose of this ordinance to promote and protect the public health, safety, and general welfare by providing for the regulation of the planting, maintenance, and removal of trees, shrubs, and other plants within the city of _____.

II. AUTHORITY AND POWER

PRINCIPLE: Someone within city government must have the clearly designated authority to administer the provisions of the ordinance. This section defines, designates, or creates a department, board, commission, or person responsible for the planting, care, and protection of the city's trees.

EXAMPLE: There is hereby created and established a City Tree Board for the City of _____, which shall consist of five members, citizens, and residents of this city, who shall be appointed by the mayor with the approval of the city council. Members of the board shall serve without compensation.

HOME RULE AUTHORITY: In order to avoid conflicts with state laws governing trees, a statement transferring regulations to the city may be necessary. State, county, and city laws will explain this process. If needed, the statement should be added as a section.



A clearly stated purpose prevents misinterpretation.

III. TERM OF OFFICE

PRINCIPLE: Reasonable and clearly stated terms of office for volunteer boards or commissions will help infuse the program with new ideas on a periodic basis and will help avoid the problems created by obstructionists with life or long-term tenure. This section defines length of service, a method for filling vacancies, and the number of consecutive terms (if any) that can be served. Staggering terms can help ensure continuity and stability.

EXAMPLE: The term of the five persons to be appointed by the mayor shall be three years, except that the term of two of the members appointed to the first board shall be for only one year and the term of two members of the first board shall be for two years. In the event that a vacancy shall occur during the term of any member, his or her successor shall be appointed for the unexpired portion of the term.

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.

[HEALTH BENEFITS AND URBAN HEAT REDUCTION](#)[RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS](#)[URBAN FORESTRY BEST PRACTICES](#)[CITY TREE ORDINANCES](#)[IDENTIFYING PRIORITY AREAS FOR TREE PLANTING](#)[PLANTING TREES IN A CHANGING CLIMATE](#)

City Tree Ordinances

Because of the immense value in planting and caring for trees, communities should consider implementing tree ordinances that establish clear guidelines and regulations for the maintenance and removal of trees on public and private lands. Comprehensive tree preservation ordinances can play a central role in successfully protecting trees during and after residential development.

SCAG Region Urban Greening Management Plan Examples

- [Santa Monica Urban Forest site \(includes Urban Forestry Master Plan, list of upcoming tree removals, Community Engagement Map, Urban Forest Task Force, Heritage Tree Map, and Drought Guide\)](#)
- [South Pasadena Trees](#)
- [Sierra Madre Community Forest Management Plan](#)

Resources for creating a Tree Ordinance

- [Guidelines for Developing and Evaluating Tree Ordinances by the International Society of Arboriculture](#)
- [How To Write a Municipal Tree Ordinance by Tree City USA](#)
- [Tree Ordinance Overview by WeConservePA](#)

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THIS ITEM APPEARS IN

Climate Change



TREE PLANTING IN A CHANGING CLIMATE

TREE PLANTING IN A CHANGING CLIMATE



- Climate change is projected to cause changes in
 - Air temperatures
 - Precipitation
 - Disease frequencies
 - Other factors that will affect the ability of trees in urban and natural forests to survive

TREE PLANTING IN A CHANGING CLIMATE



- **Key things to consider:**
 - Your locality's specific climate hazards by mid- to end-of-century.
 - New air temperature, rainfall, flooding
 - This will inform factors to consider while forming your tree list.
 - Tree characteristics
 - Low water requirements or drought tolerant
 - Tolerance to multiple water levels or soil moisture levels
 - Temperature adaptive
 - Salinity tolerance



UNDERSTANDING LOCAL RISKS

UNDERSTANDING LOCAL RISKS: RISK FACTOR

- Allows you to see the projected risk factors of your city, including flood, extreme heat, fire and wind factors.

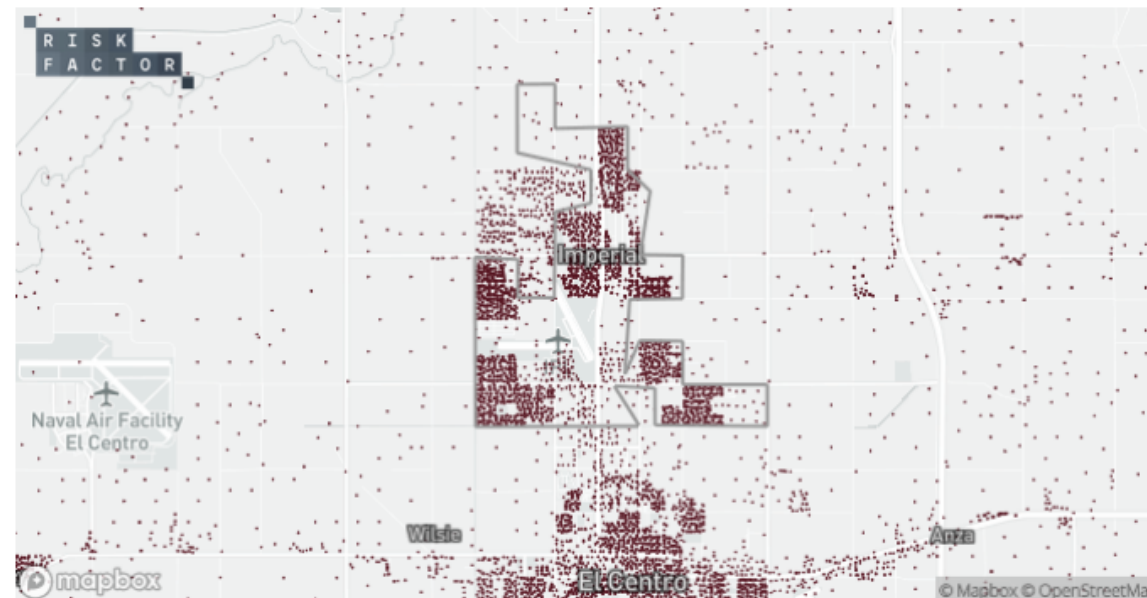
 Heat Risk Overview Heat Trends Current & Future Risk Area Heat Vulnerability Heat Energy Usage Heat Safety Environmental Changes Community Solutions Other Risks

HEAT RISK OVERVIEW

Does Imperial have risk?

Extreme

Imperial has **extreme** risk from heat. This is due to "feels like" temperatures increasing, and because 100% of homes in Imperial have a **Extreme Heat Factor**®.



Imperial heat risk

6,473 ⓘ

Total properties at risk

Heat Factor distribution of properties

Minimal - 0

Minor - 0

Moderate - 0

Major - 0

Severe - 0

Extreme - 6.5K

 Heat Risk Overview Heat Trends **Current & Future Risk** Area Heat Vulnerability Heat Energy Usage Heat Safety Environmental Changes Community Solutions Other Risks

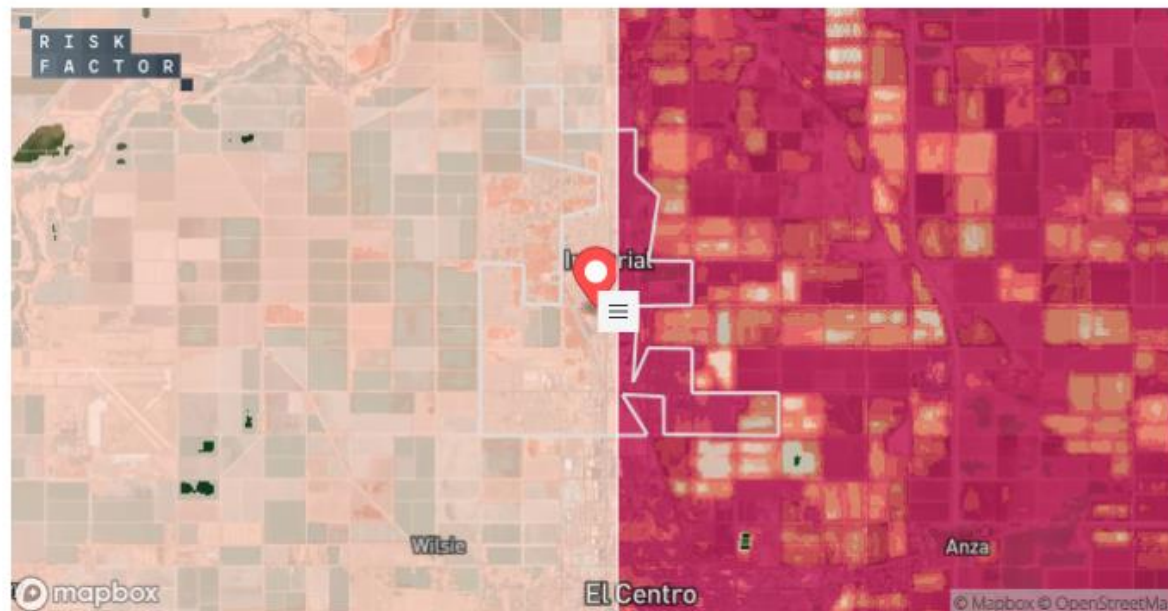
CURRENT & FUTURE RISK

How many hot days will Imperial have?

A hot day in Imperial is considered to be any day above a "feels like" temperature of 114°F. Imperial is expected to experience **7 hot days** this year. Due to a changing climate, Imperial will experience **20 days** above 114°F in 30 years.

This year

In 30 years



Total hot days

7 days

This year ⓘ

20 days

In 30 years ⓘ



Days above 114°F "feels like" temp

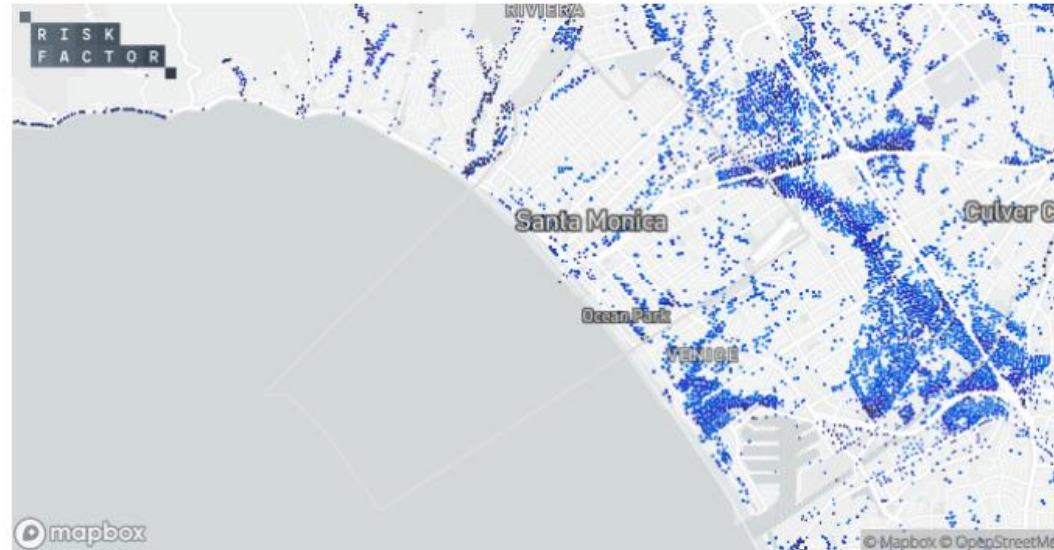
Does Santa Monica have risk?

Moderate



There are **1,244** properties in **Santa Monica** that have greater than a **26%** chance of being severely affected by flooding over the next 30 years. This represents **11%** of all properties in Santa Monica.

In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Overall, **Santa Monica** has a **moderate risk of flooding** over the next 30 years, which means flooding is likely to impact day-to-day life within the community. This is based on the level of risk the properties face rather than the proportion of properties with risk.



Santa Monica Flood Risk ⓘ

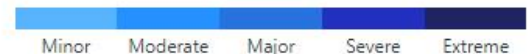
Residential **Minor Risk**
1,155 out of 12,412 homes ⓘ

Road **Minor Risk**
99 out of 275 miles of roads ⓘ

Commercial **Moderate Risk**
466 out of 1,895 commercial properties ⓘ

Critical Infrastructure **Moderate Risk**
3 out of 15 infrastructure facilities ⓘ

Social Facilities **Moderate Risk**
29 out of 147 social facilities ⓘ



- Flood Risk Overview
- Current Protections
- Where to Start
- Current & Future Risk
- Historic Floods
- Environmental Changes
- Community Solutions
- Other Risks

UNDERSTANDING LOCAL RISKS: CAL-ADAPT

- Projected mid-century (2035-2064) and end-century (2070-2099)
 - annual average maximum and minimum temperatures
 - annual average precipitation
 - broken down by cities, counties, congressional districts and other boundaries.

Annual Averages

Explore projected changes in annual average Maximum Temperature, Minimum Temperature and Precipitation through end of this century for California.

EXPLORE DATA ABOUT THE TOOL RESOURCES HELP

LOCA Grid Cell 38.59375, -121.46875

[Change Location](#)

Projected changes in **Annual Average Maximum Temperature** under a **Medium Emissions (RCP 4.5) Scenario**.

MODELED HISTORICAL

Baseline (1961-1990)

[Change Period](#)

30 YEAR AVG

74.2 °F

[Learn More](#)

30 YEAR RANGE

71.3–77.2 °F

FUTURE PROJECTIONS

Mid-Century (2035-2064)

[Change Period](#)

30 YEAR AVG

78.4 °F

[Learn More](#)

30 YEAR RANGE

75.5–81.9 °F

FUTURE PROJECTIONS

End-Century (2070-2099)

[Change Period](#)

30 YEAR AVG

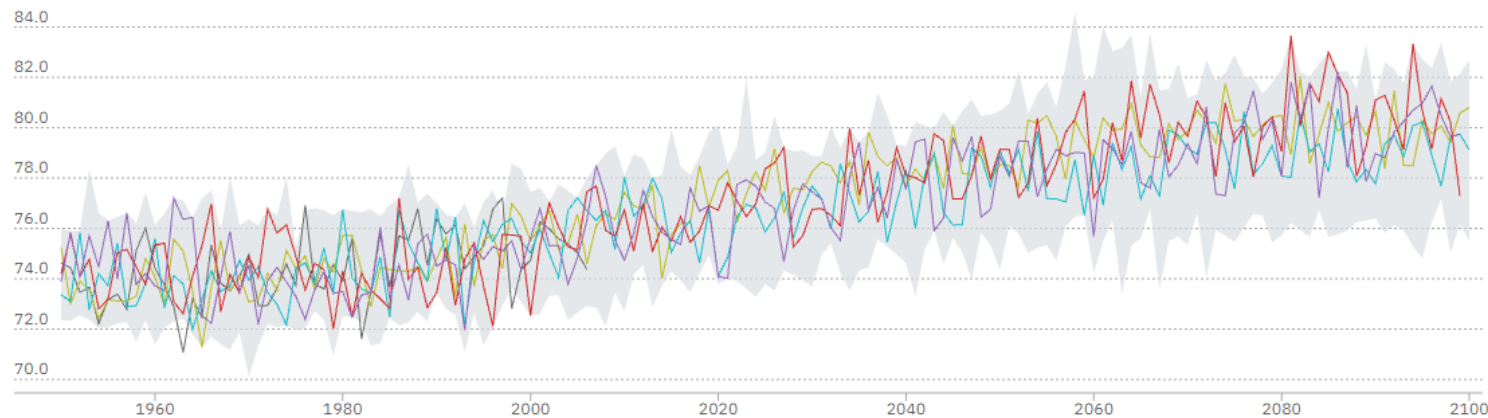
79.8 °F

[Learn More](#)

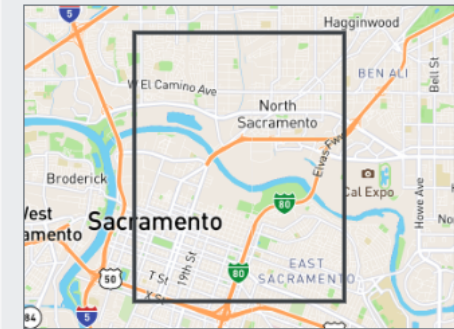
30 YEAR RANGE

77.2–83.7 °F

86.0 Annual Average Maximum Temperature (°F)



SELECT LOCATION



[Learn More](#)

SELECT CLIMATE VARIABLE

Maximum Temperature

[Learn More](#)

SELECT SCENARIO

Medium (RCP 4.5)

High (RCP 8.5)

[Learn More](#)

SELECT MODELS

4 Select...

CanESM2, CNRM-CM5, HadGEM2-ES, MIROC5

[Learn More](#)



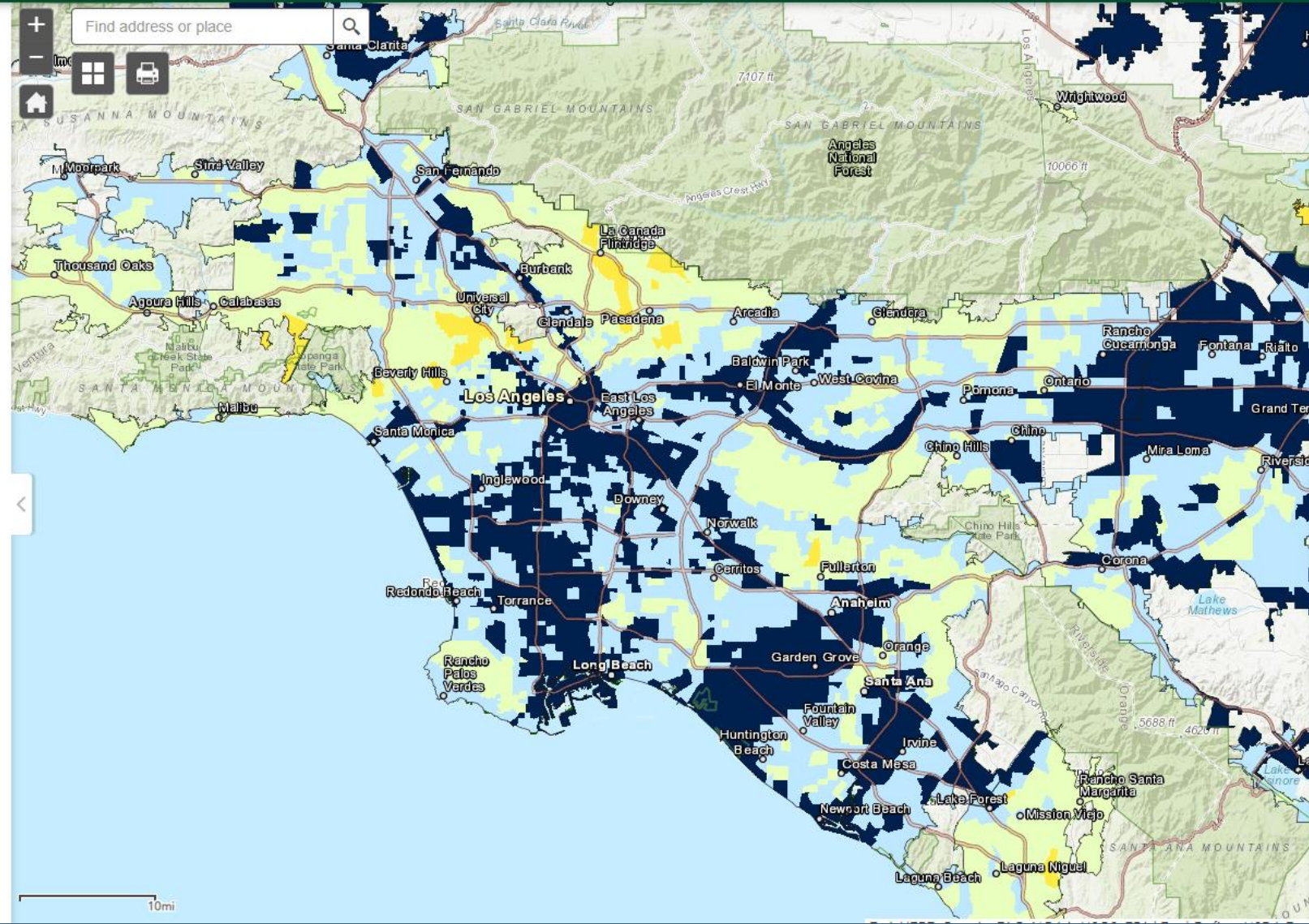
IDENTIFYING PRIORITY AREAS FOR URBAN GREENING/TREE PLANTING

IDENTIFYING PRIORITY AREAS: USDA FOREST SERVICE TREE CANOPY DATA

- Overlays tree canopy coverage data at 60-cm spatial resolution, ozone and PM 2.5 pollution information, CalEPA's urban heat island index, and other public health indicators.
- Uses data from Earthdefine.

USDA UAS Urban Tree Canopy in California

- Layers
- Urban area boundaries
 - CA census tracts
 - Neighborhoods and roads
 - Percent canopy cover 2018
 - Urban canopy 2018
 - Population size 2010
 - Poverty incidence
 - Asthma incidence
 - Cardiovascular disease incidence
 - Ozone pollution
 - PM 2.5 pollution
 - Water body impairment
 - Urban Heat Island Index



Legend

Urban area boundaries

Percent canopy cover 2018

Percent canopy cover

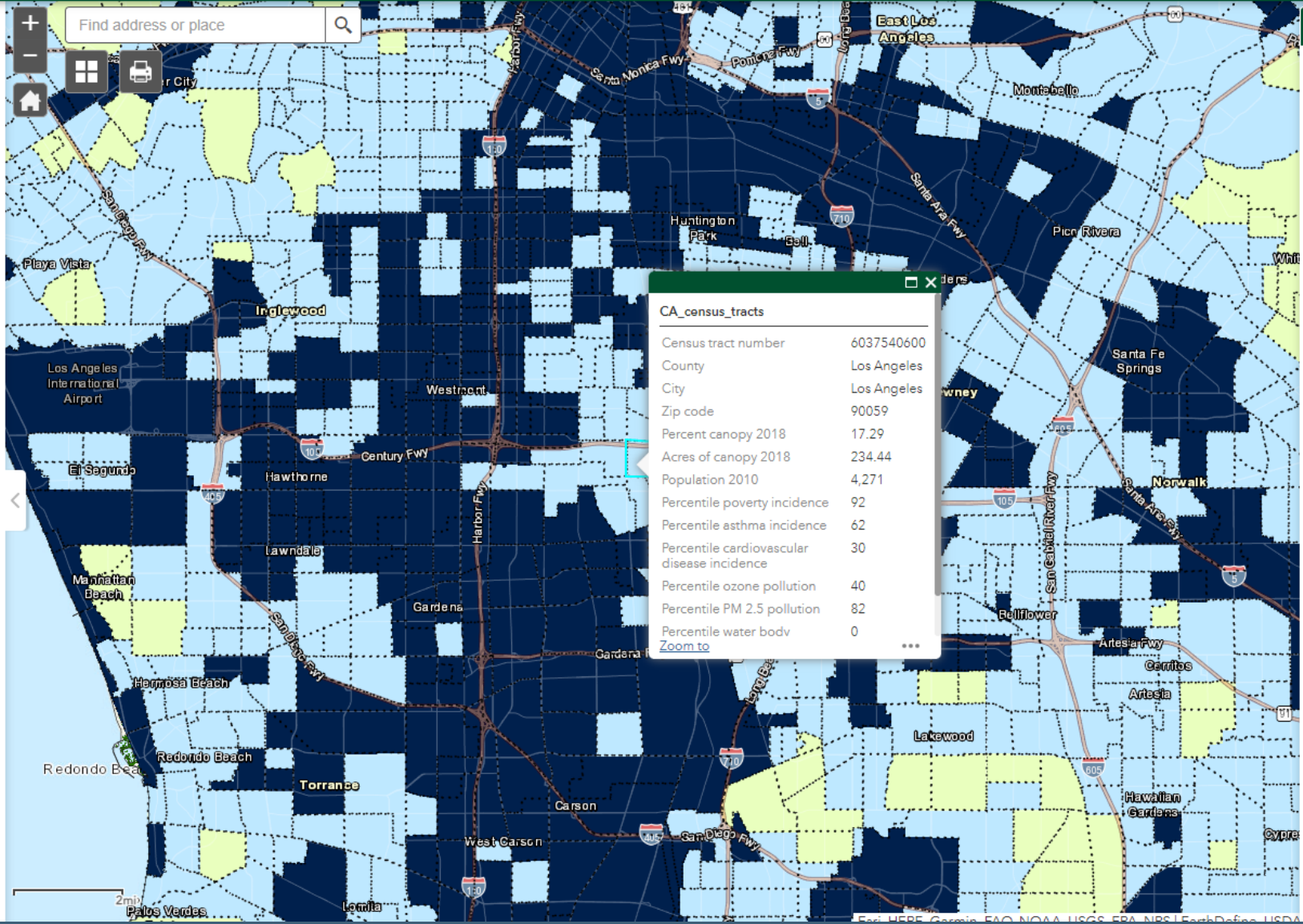
- 42-86
- 25-41
- 15-24
- 0-14

Urban canopy 2018

Canopy cover 2018

Urban Tree Canopy in California

- Layers**
- Urban area boundaries
 - CA census tracts
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 - Population size 2010
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 - Cardiovascular disease incidence
 - Ozone pollution
 - PM 2.5 pollution
 - Water body impairment
 - Urban Heat Island Index



CA_census_tracts

Census tract number	6037540600
County	Los Angeles
City	Los Angeles
Zip code	90059
Percent canopy 2018	17.29
Acres of canopy 2018	234.44
Population 2010	4,271
Percentile poverty incidence	92
Percentile asthma incidence	62
Percentile cardiovascular disease incidence	30
Percentile ozone pollution	40
Percentile PM 2.5 pollution	82
Percentile water body	0

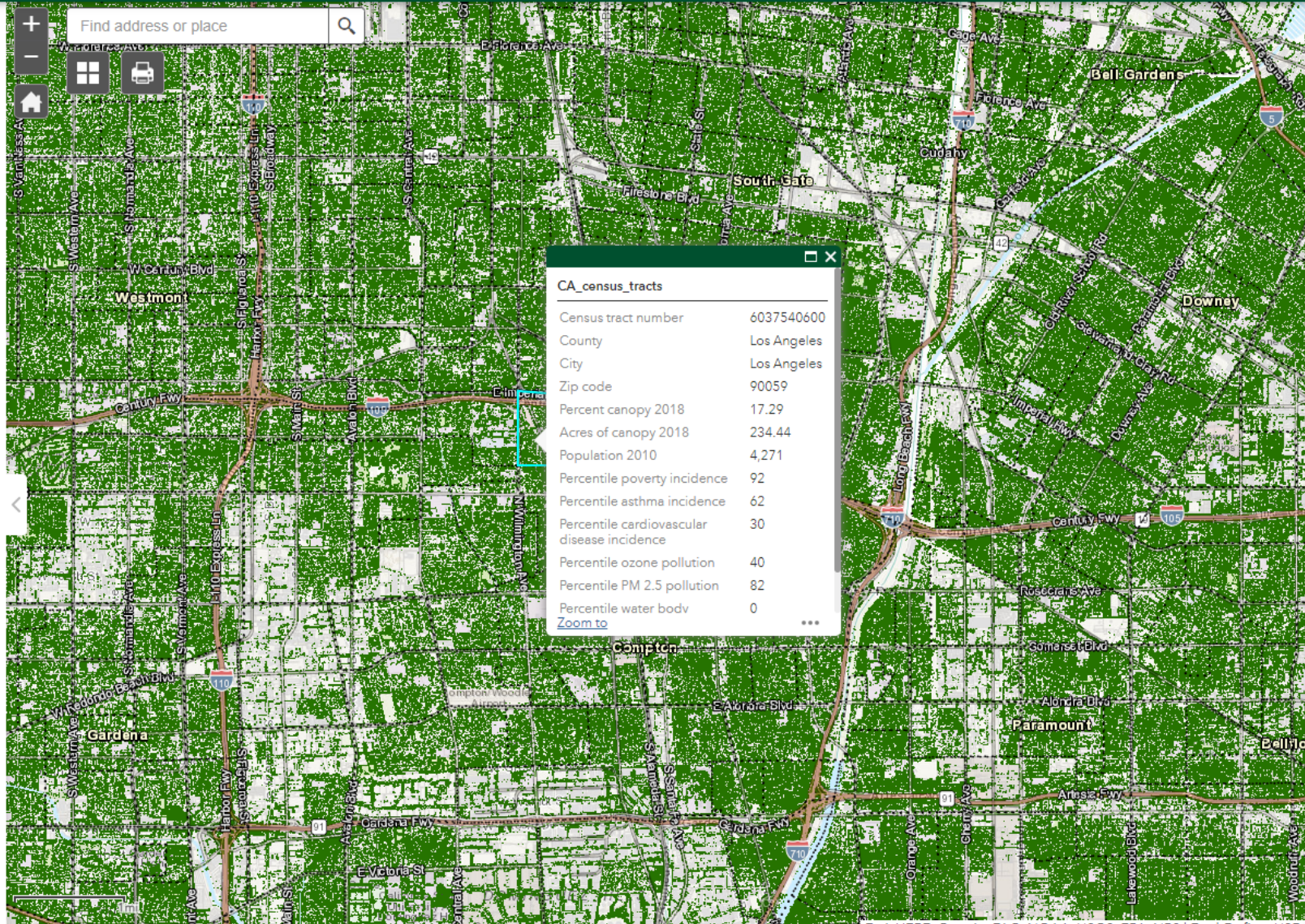
[Zoom to](#)

Legend

- Urban area boundaries
- CA census tracts
- Percent canopy cover 2018
 - 42-86
 - 25-41
 - 15-24
 - 0-14
- Urban canopy 2018
 - Canopy cover 2018

Urban Tree Canopy in California

- Layers**
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 - Water body impairment
 - Urban Heat Island Index



Legend

- CA census tracts**
- Percent canopy cover 2018**
- Percent canopy cover
- 42-86
 - 25-41
 - 15-24
 - 0-14
- Urban canopy 2018**
- Canopy cover 2018
-

IDENTIFYING PRIORITY AREAS: CALIFORNIA HEALTHY PLACES INDEX EXTREME HEAT EDITION

- This map shows data on social conditions that drive health such as education, economic opportunities, clean air and water, and other indicators.

Tools

Enter a location...

View Indicators

Map individual indicators, including HPI indicators and our extensive decision support layers.

Learn more >

Search Indicators...

Exposure

Extreme Heat

Days Above 100 degrees F (2035 - 2064)

Days Above 100 degrees F (2070-2099)

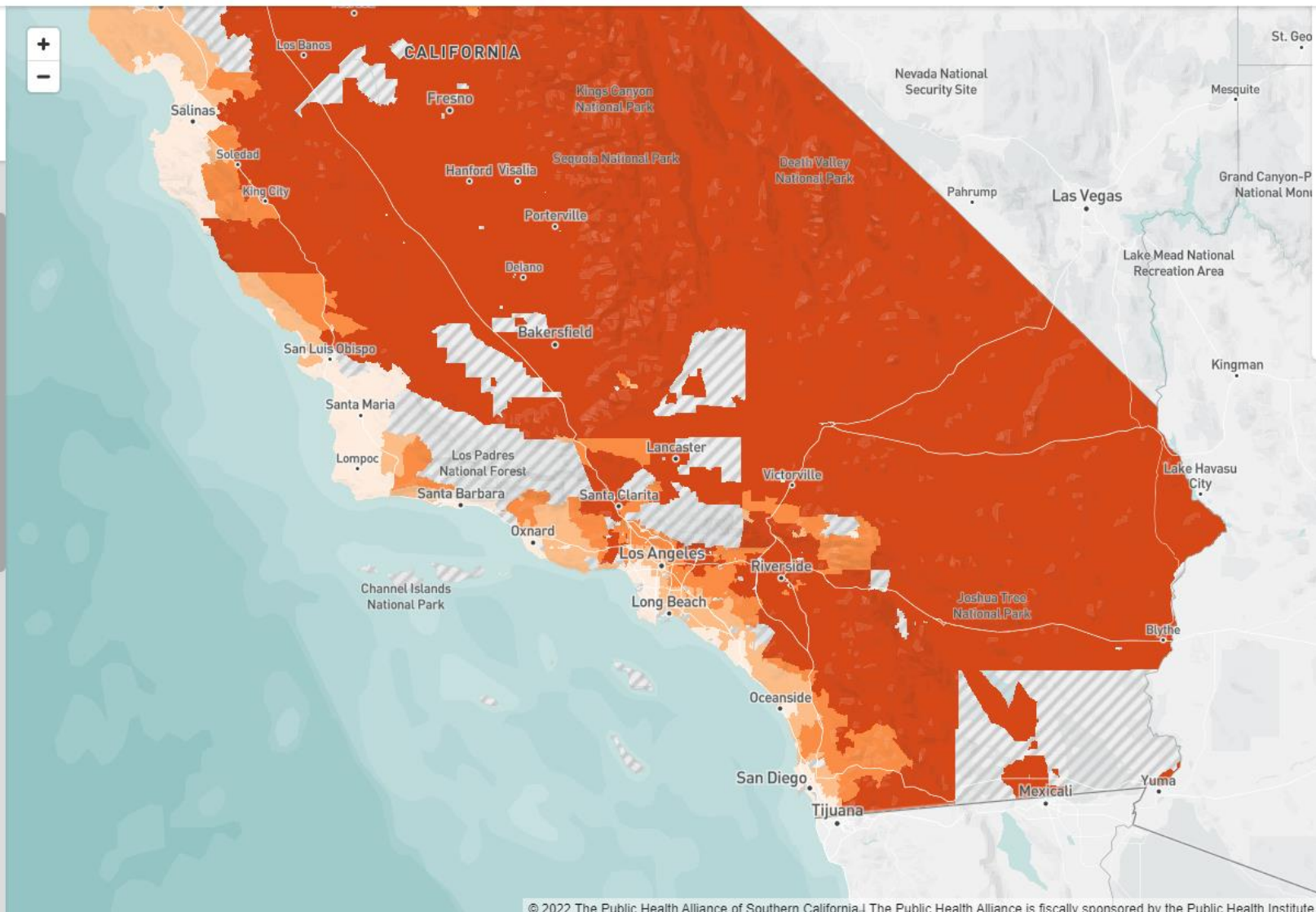
Days Above 90 degrees F (2035 - 2064)

Days Above 90 degrees F (2070-2099)

Extreme Heat Days 2035-2064 (above historical baseline)

Extreme Heat Days 2070-2099 (above historical baseline)

Place



Extreme Heat: Days Above 90 degrees F (2035 - 2064)



Select geography

Tracts

- Tracts
- Zip Codes
- Unincorporated Areas
- Cities / Towns
- Medical Service Study Areas
- Elementary School Districts
- Unified School Districts
- Secondary School Districts

IDENTIFYING PRIORITY AREAS: CALIFORNIA URBAN FOREST INVENTORY

- Largest dataset for California urban trees (on public streets)
- 7 million trees
- Include public data from cities and private organizations
- Assess a more [in-depth tutorial of Urban Forest Inventory here](#) (from at 8:35 to 13:00)
- Updated once a year

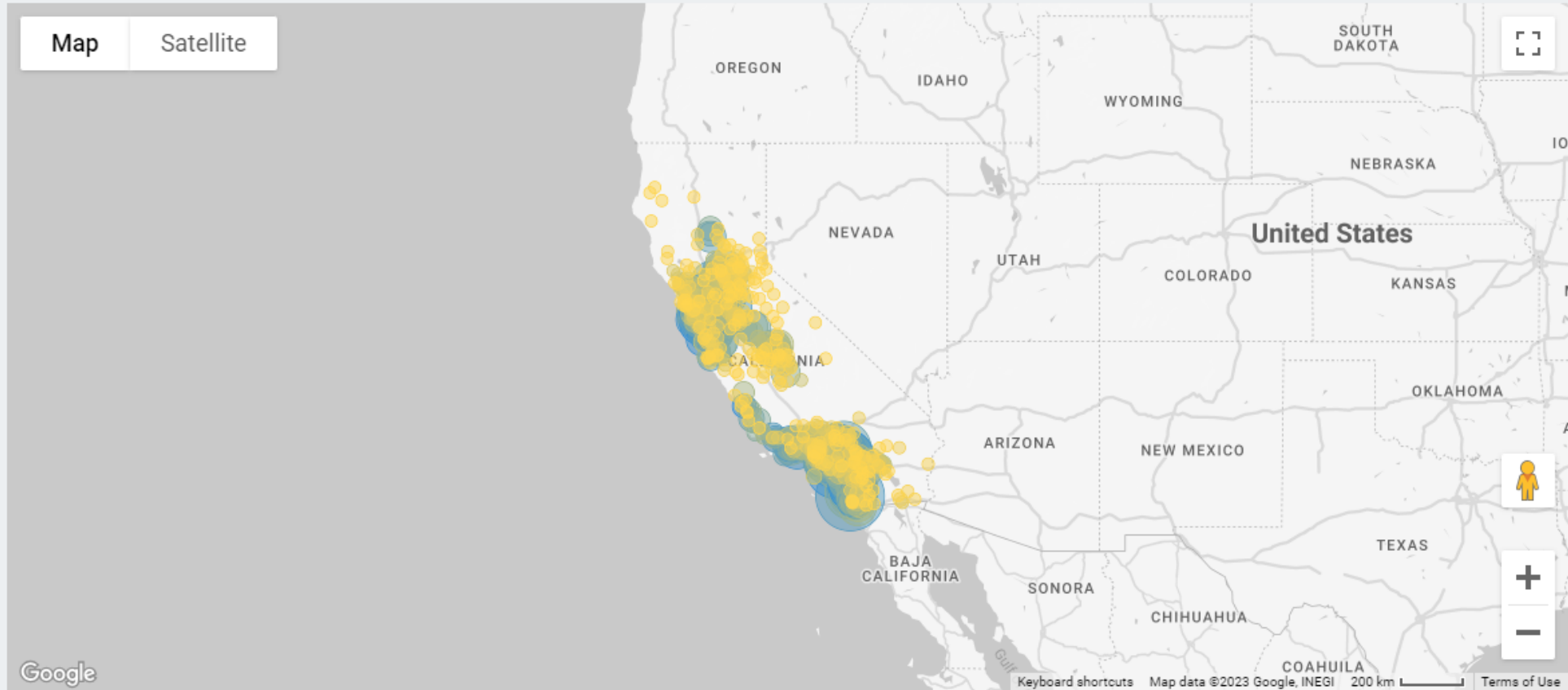
Number of trees in inventory
7,075,606

Number of genera in inventory
223

Number of species in inventory
513

Filter the inventory

County ▾ Climate Zone ▾ Family ▾ Genus ▾ Place ▾ Species ▾ Zip ▾



Points are centered on the city jurisdiction and do not reflect specific locations. The size of the circle indicates the number of trees in the zip code boundary that are in the inventory, the color of the circle indicates the number of distinct species (blue regions have more species than yellow regions).

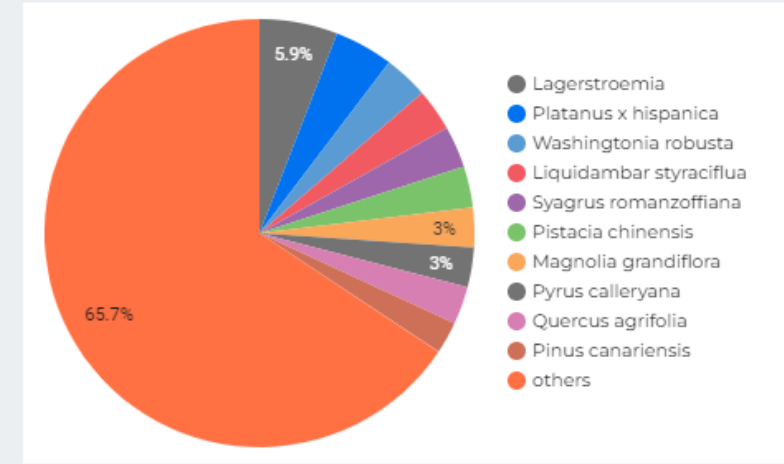
in the inventory, the color of the circle indicates the number of distinct species (blue regions have more species than yellow regions).

Count distribution of each species

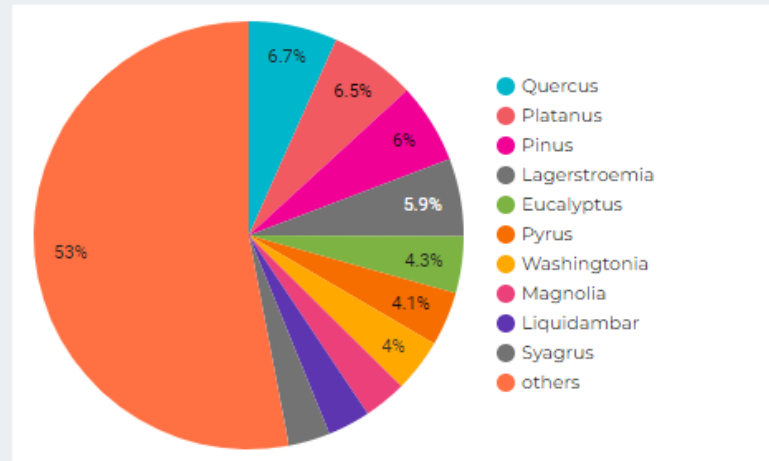
	Species	Number of trees	Proportion
1.	Lagerstroemia	415,704	5.88%
2.	Platanus x hispanica	313,424	4.43%
3.	Washingtonia robusta	236,109	3.34%
4.	Liquidambar styraciflua	225,666	3.19%
5.	Syagrus romanzoffiana	221,623	3.13%
6.	Pistacia chinensis	220,295	3.11%
7.	Magnolia grandiflora	211,867	2.99%
8.	Pyrus calleryana	211,751	2.99%

1 - 100 / 588 < >

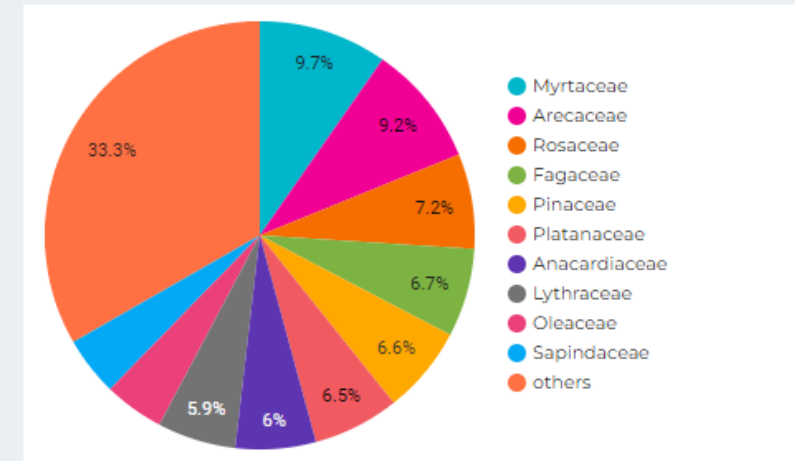
Count distribution of each species



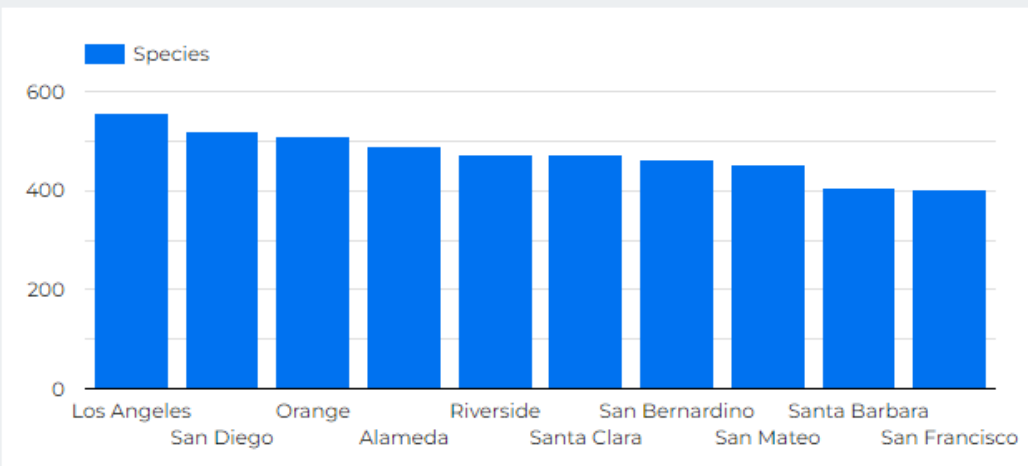
Count distribution of each genus



Count distribution of each family



Diversity - Number of species found in each county and city



	Place	County	Species	Number of trees
1.	San Diego	San Diego	455	489,348
2.	Los Angeles	Los Angeles	454	325,009
3.	San Jose	Santa Clara	425	338,655
4.	Riverside	Riverside	412	141,271
5.	San Francisco	San Francisco	402	140,105
6.	Oakland	Alameda	393	74,308
7.	Fremont	Alameda	360	86,568
8.	Long Beach	Los Angeles	355	121,434

1 - 100 / 751 < >

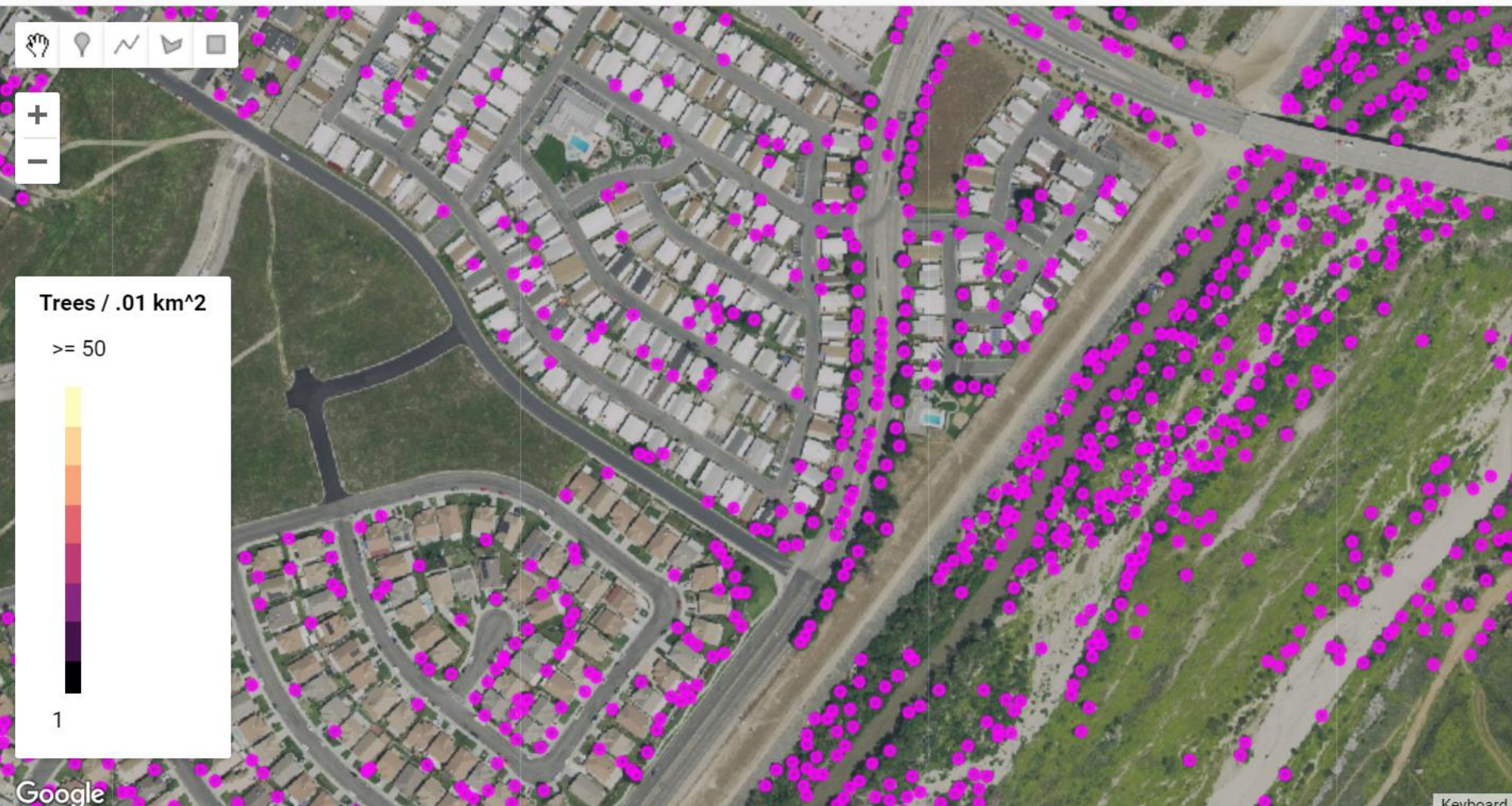
Geographic extent of each species

	Species	County	Place	Zip
1.	Morus alba	40	432	821
2.	Lagerstroemia	39	499	939
3.	Pyrus calleryana	39	480	912
4.	Pistacia chinensis	39	467	903
5.	Pinus halepensis	38	457	857
6.	Quercus lobata	38	339	587
7.	Calocedrus decurrens	37	294	569
8.	Salix	37	224	470

1 - 100 / 588 < >

IDENTIFYING PRIORITY AREAS: URBAN TREE DETECTOR

- We now know which percentage of trees in a city is public and which is private
- Assess a more [in-depth tutorial of Urban Tree Detector here](#) (from at 13:00 to 18:00)



Cal Layers Map

Map of trees in the urban reserve of California in 2020. This map is based on NAIP imagery from 2020, processed by a convolutional neural network (CNN) which learned to detect trees from a collection of hand-annotated samples. The CNN takes NAIP imagery as input and outputs a confidence map indicating the locations of trees. The individual tree locations are found by local peak finding. In our study site in Southern California, we determined that 73.6% of the detected trees matched to hand-annotated trees, and 73.3% of the hand-annotated trees were detected.

The map covers the entire state of California. Please zoom out and/or drag the map to see other areas. A tree density map can also be enabled in the Layers panel above.

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.

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HEALTH BENEFITS AND URBAN HEAT REDUCTION RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS URBAN FORESTRY BEST PRACTICES

CITY TREE ORDINANCES IDENTIFYING PRIORITY AREAS FOR TREE PLANTING PLANTING TREES IN A CHANGING CLIMATE

Identifying Priority Areas for Tree Planting

Urban forestry programs can be used as one of the strategies to improve health, environmental and heat reduction outcomes in underresourced communities, which often lack parks and open space. The following resources may help you determine which areas to prioritize tree planting.

RESOURCES TO CONSIDER WHEN PRIORITIZING AREAS FOR TREE PLANTING

1. The USDA Forest Service Tree Canopy Data: [This map](#) overlays tree canopy coverage data at 60-cm spatial resolution, ozone and PM 2.5 pollution information, CalEPA's urban heat island index, and other public health indicators. This map shows which areas lack tree canopy coverage, combined with low health indicators, to prioritize areas for tree planting.
2. Multi-Resolution Land Characteristics (MRLC) Consortium: [This resource](#) provides land cover datasets at the national scale.
3. California Healthy Places Index: [This map](#) shows data on social conditions that drive health such as education, economic opportunities, clean air and water, and other indicators.
4. California Healthy Places Index: Extreme Heat Edition: [This resource](#) shows the number of days above 90 or 100 degrees at various time scales such as mid- and end-of-century down to cities and elementary school districts. It also shows other indicators such as tree canopy coverage (from the national land cover database), park acres, impervious surface cover, urban heat island index, PM 2.5, Diesel PM, ozone and more.



CREATING A TREE PALETTE FOR YOUR CITY

CREATING A TREE PALETTE: PRESENTATIONS BY EXPERTS

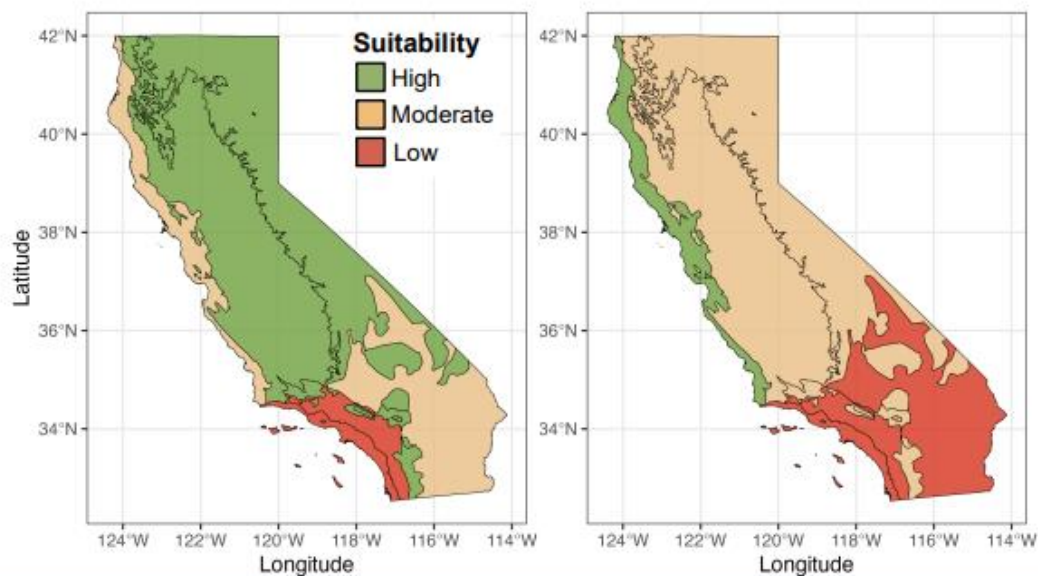
- [New Tools from the Urban Forest Ecosystem Institute \(CalPoly\)](#): In-depth discussions on the process of creating a climate resilient tree palette, Urban Tree Inventory, Urban Tree Detector (Start from 27:00 for presentation by Dr. Natalie Love on Planning for Resilient Urban Forests.)
- [Climate Change and Urban Forests](#): This presentation by Igor Lacan (UCANR) describes the space-for-time substitution process that can be used to identify tree species for your city's future climate.
- Method:
 - Identifying data of tree species in native range
 - -> Looking at future climate factors
 - -> Finding the area of overlap of where a tree species currently live in the future climate.

Atlas Cedar (*Cedrus atlantica*)



Current

2041-2070



INTRODUCTION ~ METHODS ~ RESULTS ~ CONSIDERATIONS

RESULTS

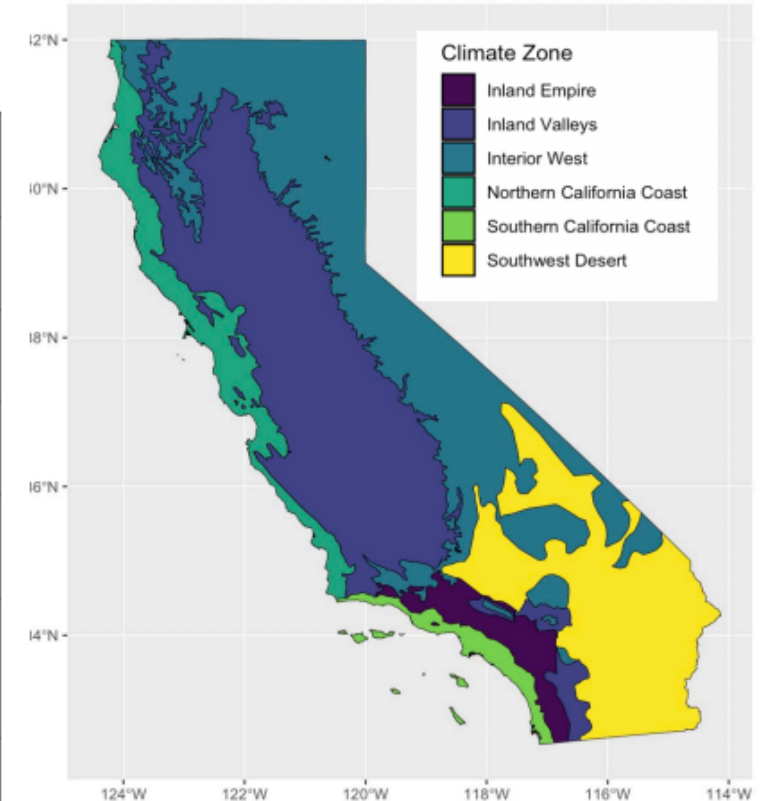
Atlas cedar is climatically well-suited for Inland Valleys and Interior West under current climate conditions

Current Suitability

Climate Zone	Percent Overlap
Inland Empire	3%
Inland Valleys	81%
Interior West	93%
Northern California	27%
Southern California Coast	<1%
Southwest Desert	15%

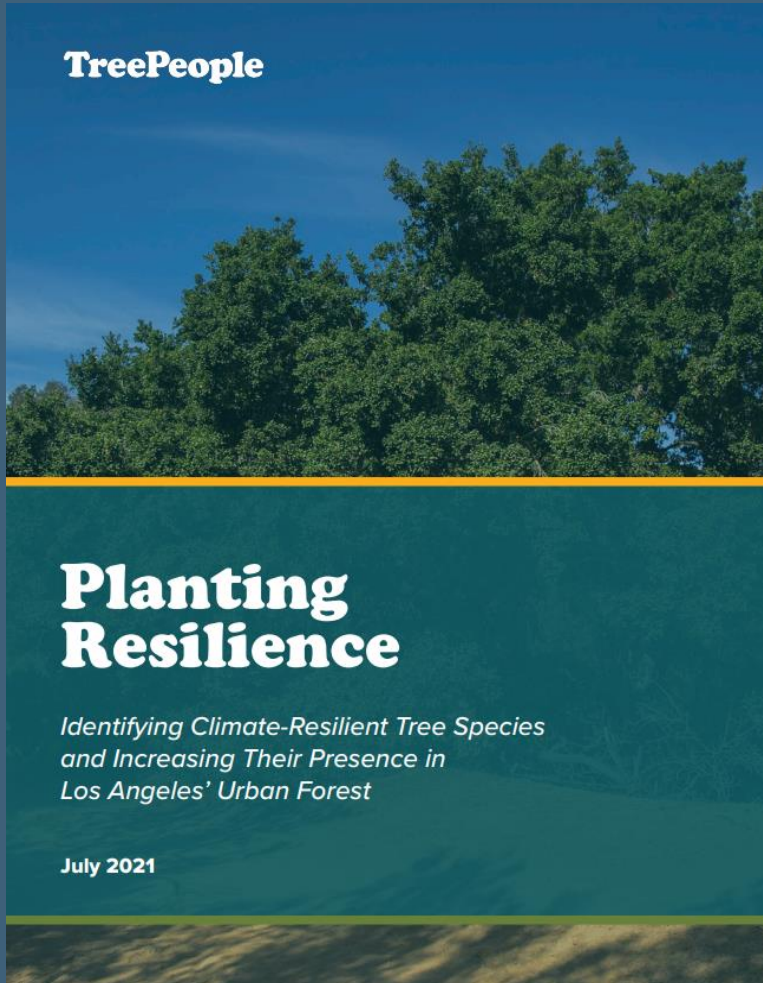
2041-2070 Suitability

Climate Zone	Percent Overlap
Inland Empire	<1%
Inland Valleys	20%
Interior West	28%
Northern California	51%
Southern California Coast	<1%
Southwest Desert	<1%








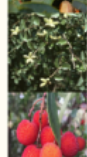


INTRODUCTION ~ METHODS ~ RESULTS ~ CONSIDERATIONS

CREATING A TREE PALETTE: PAPER BY UCLA LUSKIN SCHOOL OF PUBLIC AFFAIRS AND TREEPEOPLE



- Suggested list of Climate Ready Trees for Los Angeles on page 19-20 (page 13 on PDF)
- Considerations for drought tolerance, water demand, pest resistance, and salinity tolerance.

Figure 3. Climate Ready Trees for the Los Angeles Region

	Overall Mature Size	Height	Crown Spread	Canopy Form	Canopy Height	Growth Rate	Drought Tolerant	Shading Capacity	Water Demand	Pests and Diseases	
	Lemon Bottle Brush <i>Callistemon citrinus</i>	Medium	20-25'	15'	Upright, Rounded, Spreading	Low	Moderate	Yes, once established	Dense	Low	Chlorosis
	White Bottle Brush <i>Callistemon salignus</i>	Medium	20-25'	10-15'	Rounded, Spreading or Weeping	Low	Moderate	Yes, once established	Moderate - Dense	Low	—
	Weeping Bottle Brush <i>Callistemon viminalis</i>	Small	25-35'	15'	Rounded, Spreading or Weeping	Low	Moderate	Yes, once established	Moderate - Dense	Low	Armillaria, Root Rot
	Chitalpa <i>Chitalpa Tashkentensis</i>	Medium	20-30'	20-30'	Rounded, Spreading, or Vase	Low	Moderate	Yes, once established	Moderate	Low	Aphids, Root Rot, Verticillium
	Peppermint Tree <i>Agonis Flexuosa</i>	Medium	20-30'	15-30'	Rounded, Spreading, or Vase	Low	Slow - Moderate	Yes, once established	Moderate	Low	Phytophthora and Root Rot
	Sweet Bay <i>Laurus Nobilis</i>	Medium	15-25'	15-20'	Upright, Conical, or Rounded	Low	Slow - Moderate	Yes, once established	Dense - Very Dense	Low	Psyllid, Scales, Phytophthora, Root Rot
	Flaxleaf Paperbark <i>Melaleuca Linariifolia</i>	Medium	15-20'	20-25'	Rounded	Low	Moderate	Yes, once established	Moderate - Dense	Low	Chlorosis, Phytophthora, Root Rot
	Cajeput <i>Melaleuca Quinquenervia</i>	Medium	25-35'	20'	Rounded, Oval		Fast	Yes, once established	Moderate - Dense	Low	Phytophthora, Root Rot
	African Sumac <i>Rhus Lancea</i>	Medium	20-30'	20-35'	Rounded, Spreading	Low	Moderate	Yes, once established	Moderate	Low	Root Rot, Verticillium
	Blue Oak <i>Quercus douglasii</i>	Large	50-65'	40-50'	Rounded, Spreading	High	Slow	Yes, once established	Moderate	Very Low	Caterpillars, Insect Galls, California Oak Moth, Gall Wasp, Scales, Crown Rot, Mistletoe, Armillaria, Powdery Mildew, Root Rot
	Soapbark Tree <i>Quillaja saponaria</i>	Medium	30-45'	15-22.5'	Columnar, Arching		Slow	Yes, once established		Low	Armillaria, Root Rot
	Strawberry Tree <i>Arbutus uneda</i>	Small	25-40'	25-40'	Rounded, Spreading, or Vase	Low	Slow - Moderate	Yes, once established	Dense	Low	Scales, Thrip, Anthracnose, Phytophthora, Root Rot, Rust

CREATING A TREE PALETTE: GREEN SCHOOLYARDS OF AMERICA CALIFORNIA TREE PALETTE

- Help you identify trees that are climate-resilient and are appropriate for a schoolyard setting by sunset climate zones in California.

FIND TREE PALETTE FOR YOUR SCHOOL'S SUNSET ZONE

In addition to the master tree palette, which includes all tree species and detailed attributes, we provided a tree list for each climate Sunset Zone. Find your Sunset Zone using the button below.

VIEW MASTER PALETTE FOR ALL SUNSET ZONES

FIND YOUR SCHOOL'S SUNSET ZONE

FIND TREE PALETTE BY SUNSET ZONE ▼



SUNSET CLIMATE ZONE 14

TREE PALETTE FOR CALIFORNIA SCHOOLYARD FOREST SYSTEM

Tree Name		Basic Information						
Botanical Name	Common Name	2022 Sunset Climate Zone Range	Evergreen/Deciduous	Sun Exposure	Height at Maturity	Canopy Width at Maturity	Growth Rate	Water Use
LARGE								
<u><i>Acer macrophyllum</i></u>	bigleaf maple	2-9, 14-24	D	Sh-S	56	30	F	H
<u><i>Betula nigra</i></u>	river birch	1-24	D	Sh-S	68	38	F	H
<u><i>Calocedrus decurrens</i></u>	incense cedar	2-12, 14-24	E	PSh-S	68	9	M	M
<u><i>Catalpa speciosa</i></u>	Northern catalpa, Western catalpa	2-24	D	Sh-S	45	23	F	M
<u><i>Cedrus deodara</i></u>	deodar cedar	3-10, 14-24	E	PSh-S	45	19	F	M
<u><i>Celtis occidentalis</i></u>	common hackberry	1-24	D	Sh-S	60	34	F	L
<u><i>Ginkgo biloba cvs.</i></u>	ginkgo	1-10, 12, 14-24	D	PSh-S	49	19	M	M
<u><i>Metasequoia glyptostroboides</i></u>	dawn redwood	3-10, 14-24	D	PSh-S	68	12	F	H
<u><i>Pinus canariensis</i></u>	Canary Island pine	8-9, 12-24	E	PSh-S	60	21	F	M

Sunset Climate Zone Region

Los Angeles Region

[Home](#) | [Climate Zones](#) | Los Angeles Region

Want to know which Sunset Plants grow best in your region? Use the map image and climate zone descriptions below to identify your location, and then click the Zone number for a list of plants ideal for your region.

Zone 2	Cold mountain and intermountain areas
Zone 3	Mild areas of mountain and intermountain climates
Zone 11	Medium to high desert of California and southern Nevada
Zone 18	Above and below the thermal belts in Southern California
Zone 19	Thermal belts around Southern California's interior valleys
Zone 20	Cool winters in Southern California
Zone 21	Thermal belts in Southern California
Zone 22	Cold-winter portions of Southern California
Zone 23	Thermal belts of Southern California
Zone 24	Marine influence along the Southern California coast



Click the map to enlarge

CREATING A TREE PALETTE: [SELECTREE](#)

- Allows you to search California trees by tree characteristics
 - Native/non-native
 - height
 - tree shape
 - salinity tolerance
 - water use rating
 - sun exposure
 - USDA hardiness zone, sunset climate zone
 - utility precautions
 - etc

SelectTree

A TREE SELECTION GUIDE

Enter a tree name...



SEARCH PACIFIC ISLANDS



SEARCH CHARACTERISTICS



SEARCH TREE LISTS

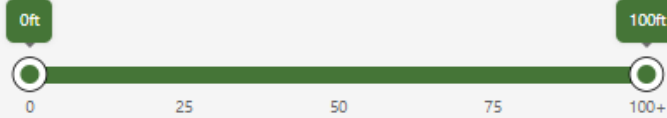


SEARCH HELP

SEARCH BY CHARACTERISTICS

TREE CHARACTERISTICS

MAXIMUM TREE HEIGHT



IS CA NATIVE?

Yes

HAS FALL COLOR?

Yes

POWERLINE FRIENDLY?

Yes

TREE SHAPE

Select... | v

LEAF FORM

Select... | v

FOLIAGE TYPE

Deciduous | v

LEAF ARRANGEMENT

Select... | v

FLOWERS & FRUIT

FLOWER COLOR

Select... | v

FRUIT TYPE

Select... | v

HAS FRAGRANCE?

Yes

Select... | v

Select... | v

FOLIAGE TYPE ✕

Deciduous | v

LEAF ARRANGEMENT

Select... | v

FLOWERS & FRUIT

FLOWER COLOR

Select... | v

FRUIT TYPE

Select... | v

HAS FRAGRANCE?

Yes

SEARCH TERM

TYPE IN A TERM TO SEARCH

SITE CONDITIONS

USDA HARDINESS ZONE

Select... | v

SUNSET CLIMATE ZONE

Select... | v

AVAILABLE PLANTING AREA

Select... | v

DEER RESISTANT

Yes

SALINITY TOLERANCE

Yes

UTILITY PRECAUTIONS

Medium Zone Low Zones

SELECTREE WATER USE RATING

Very Low Low Medium High

SUN EXPOSURE

Sun Partial Shade Full Shade

CREATING A TREE PALETTE: CLIMATE READY TREES

- Joint project between U.S. Forest Service and U.C. Davis
- Highlights a small number of trees that may be particularly suited to tolerate the stressors of a changing climate.



Southern California Coastal Trees

[Home](#) [Meet the Trees](#) [Southern California Coastal Trees](#)

Mulga (*Acacia aneura*)



Mulga is native to arid Western Australia and tolerates hot and dry condition. It can grow in sandy, loam, or clay soil types. This versatile and hardy tree produces ascending thornless branches and grows 15 to 20 feet in height. The leaves are evergreen and the tree has yellow, showy flowers in the spring.



- [Northern California Central Valley Trees](#)
- [Southern California Inland Empire Trees](#)
- [Southern California Coastal Trees](#)



[Climate Ready Trees Southern California Coast Project Handout](#)

CREATING A TREE PALETTE: CLIMATE ASSESSMENT TOOL

- Allows you to see how suitable certain taxa, or groups of trees are to the future climate of a location.
- Not all species of plants and botanical gardens are included.
- The analysis of the climate suitability of species is based on mean annual temperature.

Assessment Results

for taxon *Magnolia grandiflora* L.

at location 34.07355, -118.35219

with climate change scenario Emissions Limited in 2050 (SSP2)

Source	Records	MAT	Temperature in Celsius																	Updated At	Hottest Month	Coldest Quarter	Annual Precipitation	Driest Quarter	
			12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°						
GBIF BGCI	505	18.5 °C	1	1	2	3	3	3	3	3	3	3	2	1	0	0	0	0	0	0	2019-06-13	32.7 °C	8.7 °C	1274 mm/year	247 mm/qtr
GBIF Current	3768	17.7 °C	1	1	2	2	3	3	3	3	3	3	2	1	1	0	0	0	0	0	2020-10-09	32.4 °C	9.3 °C	1278 mm/year	245 mm/qtr
Model	0	18.5 °C	0	1	1	2	2	3	3	3	3	3	2	2	1	1	0	0	0	0	2021-06-18			0	0
UrbanPlants	107	16 °C	1	2	2	3	3	3	3	3	2	2	1	1	0	0	0	0	0	0	2020-06-30	30.9 °C	9.5 °C	968 mm/year	122 mm/qtr
PlantSearch	237	12.7 °C	3	3	3	3	3	2	2	2	1	1	1	1	1	0	0	0	0	2023-07-18	28 °C	4.9 °C	926 mm/year	157 mm/qtr	

Projected climate details at garden based on selected climate scenario:

Mean Annual Temperature (BIO1): 20.3 °C

Maximum temperature of the hottest month (BIO5): 30.6 °C

Minimum temperature of the coldest quarter (BIO11): 16.2 °C

Annual precipitation (BIO12): 346 mm/year

Precipitation of the driest quarter (BIO17): 4 mm/qtr

Risk Codes

- 0 Species not known to occur at this temperature
- 1 At the edge of the known temperature for the species
- 2 Species known to occur at this temperature
- 3 Species mostly occurs at this temperature

Assessment Results

for taxon *Magnolia grandiflora* L.

at location 34.07355, -118.35219

with climate change scenario Business as Usual in 2090 (SSP3)

Source	Records	MAT	Temperature in Celsius																	Updated At	Hottest Month	Coldest Quarter	Annual Precipitation	Driest Quarter
			15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	31°					
GBIF BGCI	505	18.5 °C	3	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	2019-06-13	32.7 °C	8.7 °C	1274 mm/year	247 mm/qtr
GBIF Current	3768	17.7 °C	2	3	3	3	3	3	2	1	1	0	0	0	0	0	0	0	0	2020-10-09	32.4 °C	9.3 °C	1278 mm/year	245 mm/qtr
Model	0	18.5 °C	2	2	3	3	3	3	2	2	1	1	0	0	0	0	0	0	0	2021-06-18			0	0
UrbanPlants	107	16 °C	3	3	3	3	2	2	2	1	1	0	0	0	0	0	0	0	0	2020-06-30	30.9 °C	9.5 °C	968 mm/year	122 mm/qtr
PlantSearch	237	12.7 °C	3	3	2	2	2	1	1	1	1	1	1	0	0	0	0	0	0	2023-07-18	28 °C	4.9 °C	926 mm/year	157 mm/qtr

Projected climate details at garden based on selected climate scenario:

Mean Annual Temperature (BIO1): 22.8 °C

Maximum temperature of the hottest month (BIO5): 33.5 °C

Minimum temperature of the coldest quarter (BIO11): 18.5 °C

Annual precipitation (BIO12): 312 mm/year

Precipitation of the driest quarter (BIO17): 4 mm/qtr

Risk Codes

- 0 Species not known to occur at this temperature
- 1 At the edge of the known temperature for the species
- 2 Species known to occur at this temperature
- 3 Species mostly occurs at this temperature

CLIMATE RESILIENT URBAN GREENING BEST PRACTICES

The changing climate will impact Southern California in several ways, including more days with extreme heat, rising sea level, more frequent wildfires and shifting precipitation rates. With this reality, urban greening, and urban trees in particular, can play a key role in improving community health, mobility, and overall quality of life, and achieving greenhouse gas emissions goals. SCAG outlines urban greening as the greening of developed areas within Southern California communities that can benefit from cooling strategies to reduce urban heat island effects and extreme heat.

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THIS ITEM APPEARS IN

Climate Change

- HEALTH BENEFITS AND URBAN HEAT REDUCTION
- RESILIENCE AND GREENHOUSE GAS EMISSIONS BENEFITS
- URBAN FORESTRY BEST PRACTICES
- CITY TREE ORDINANCES
- IDENTIFYING PRIORITY AREAS FOR TREE PLANTING
- PLANTING TREES IN A CHANGING CLIMATE**

Planting Trees in a Changing Climate

Climate change is projected to cause changes in air temperatures, precipitation, disease frequencies and other factors that will affect the ability of trees in urban and natural forests to survive. The interactions of drought, heat stress and insect outbreaks due to climate change, as well as other factors, can lead to forest mortality in complex patterns. Drought-related tree mortality may even occur years or decades after the drought. Different sequences of climate events, such as a flood followed by a drought, can also affect tree growth and the risk of mortality.

Selecting trees that are appropriate for the site and able to withstand a variety of landscape characteristics will be key in planting resilient, climate-ready urban forests. Communities should consider forming a tree list that includes a variety of different tree species that show promise in withstanding the local projected climate hazards. Please note that research into climate-ready trees is still in its early stages and there are information gaps on how climate change will impact tree survival rates. Here are the factors to consider when forming your tree list. Communities should determine priority based on their projected climate hazards.

- **Consider plants that have low water requirements or are drought tolerant:** Planting programs may want to prioritize trees that use low amounts of water because climate models predict that drought and heat waves will increase water loss from tree surfaces (evaporative demands).
- **Consider plants that can tolerate multiple water levels or soil moisture levels:** In some regions, flooding will be an increased risk within this century. Selecting trees that have been known to be tolerant to multiple water levels may increase their ability to survive in projected flood-prone areas. There is limited information on tree species' levels of tolerance to water levels. Communities should consider working with local arborists to identify trees that can tolerate high water levels if increased flooding is projected.
- **Identify trees that can do well in new projected USDA hardiness zones:** Selecting trees that can potentially do well in projected future U.S. Department of Agriculture (USDA) Plant Hardiness Zones, minimum and maximum temperatures.
- **Identify trees that can do well in new projected air temperature:** Warmer temperatures alone can increase forest water stress independent of precipitation amount and can accelerate drought-induced mortality. Selecting species that have been known to thrive in multiple temperatures can potentially increase their chances of

To Find	Use
<p>Projected risk factors and future climate</p>	<ul style="list-style-type: none"> • Risk Factor: ☞ This tool by the First Street Foundation allows you to see the projected risk factors of your city, including flood, extreme heat, fire and wind factors. • Cal-Adapt: ☞ Cal-Adapt allows you to see projected mid-century (2035-2064) and end-century (2070-2099) annual average maximum and minimum temperatures, and annual average precipitation, broken down by cities, counties, congressional districts and other boundaries. • Climate Assessment Tool: ☞ This tool allows you to see how suitable certain taxa, or groups of trees are to the future climate of a botanic garden's location or by longitude and latitude coordinates. Not all species of plants and botanical gardens are included. The analysis of the climate suitability of species is based on mean annual temperature. • Future Plant USDA Hardiness Zone: ☞ This interactive webtool by Davey Institute and Arbor Day Foundation allows you to see the projected new USDA Hardiness Zone of your area based on multiple emissions scenarios. • USDA Hardiness Zone Map: ☞ The USDA Hardiness Zone Map allows you to identify your current USDA hardiness zone based on zip code. The map is based on the average annual minimum winter temperature. Although plants are often noted to show that they can live in certain USDA zones. A plant may still thrive in an area not indicated to match its USDA zone.
<p>Tree characteristics</p>	<ul style="list-style-type: none"> • Climate Ready Trees: ☞ Climate Ready Trees is a resource compiled by a coalition of university, USDA forest service researchers, and ecological non-profits that highlights a number of trees that may be particularly suited to tolerate the stressors of a changing climate. • SelecTree: ☞ SelecTree allows you to search California trees by tree characteristics such as whether they are native, height, tree shape, salinity tolerance, water use rating, sun exposure and landscape information such as USDA hardiness zone, sunset climate zone, utility precautions, available planting size, and more. • The Water Use Classification of Landscape Species: ☞ This database by the UC Davis California Center for Urban Horticulture assigns ratings for irrigation needs from very low to high. • CalScape: ☞ This resource by the California Native Plant Society can help you identify where, on a map, different native species are found in California. This resource also provides basic information about plant characteristics and how to care for them. • Waterwise Garden Planner: ☞ This tool allows you to search for different California plants based on whether they're native, plant type (trees or shrubs), evergreen or deciduous, water needs, sun exposure, aesthetics and functions.
<p>Where trees historically lived and invasiveness</p>	<ul style="list-style-type: none"> • CalScape: ☞ This resource by the California Native Plant Society can help you identify where, on a map, different native

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Where trees historically lived and invasiveness	<ul style="list-style-type: none"> • CalScape: This resource by the California Native Plant Society can help you identify where, on a map, different native species are found in California. This resource also provides basic information about plant characteristics and how to care for them. • Inventory of Invasive Plants: This list by the California Invasive Plant Council ranks the invasiveness of species.
Guides on how to create your tree palette	<ul style="list-style-type: none"> • California Tree Palette for Schoolyard Forests: This resource by the Green Schoolyards of America is intended to help you identify trees that are climate-resilient and are appropriate for a schoolyard setting by sunset climate zones in California. • Planning for resilient urban forests: A datadriven approach to assessing urban tree species suitability in California: This presentation by Natalie Love, Ph.D. describes a process by which communities can use to select a tree list for their city. • Climate Change and Urban Forests: This presentation by Igor Lacan, UC Agriculture and Natural Resources, (UCANR) describes the space-for-time substitution process that can be used to identify tree species for a community's future climate. • Tree Species Selection Guidelines for the Albuquerque Metro Area: A study on identifying climate-ready trees by the Nature Conservancy for the Albuquerque area.
List of locally specific climate-resilient trees considered by other organizations	<ul style="list-style-type: none"> • California Tree Palette for Schoolyard Forests: This resource by the Green Schoolyards of America is intended to help identify trees that are climate-resilient and are appropriate for a schoolyard setting by sunset climate zones in California. • Planting Resilience: Identifying Climate-Resilient Tree Species and Increasing Their Presence in Los Angeles' Urban Forest: This study by the UCLA Luskin School of Public Affairs and TreePeople identified 28 climate-resilient tree species that show promise for Los Angeles County. • Climate Ready Trees: Climate Ready Trees is a resource compiled by a coalition of university, USDA forest service researchers, and ecological non-profits that highlights a number of trees that may be particularly suited to tolerate the stressors of a changing climate. • Tree Species Selection Guidelines for the Albuquerque Metro Area: A study on identifying climate-ready trees by the Nature Conservancy for the Albuquerque area.

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The following experts have had experience researching and working with climate-resilient species for the future climate.

Natalie Van Doorn, Research Urban Ecologist, USDA Forest Service Pacific Southwest Research Station. natalie.vandoorn@usda.gov

NATIVE VS. NON-NATIVE TREES?

- Species diversity is extremely important to create resiliency in an urban forest
- Non-native and native plants should be considered for their ability to withstand the future climate
- Addressed in the Q&A of presentation by [Urban Forest Ecosystem Institute \(CalPoly\)](#) (starting 42:20)

EXPERTS LIST

- Natalie Van Doorn, Research Urban Ecologist, USDA Forest Service Pacific Southwest Research Station. natalie.vandoorn@usda.gov.
- Igor Lacan, University of California Cooperative Extension Advisor, UCCE Agriculture and Natural Resources (UCANR). ilacan@ucanr.edu.
- Emily Griswold, Director of GATEways Horticulture and Teaching Gardens at UC Davis Arboretum and Public Garden. ebgriswold@ucdavis.edu
- Jeremy Klemic, ASLA, PLA, SWA Group. www.swagroup.com. JKlemic@SWAGroup.com.
- Matt Ritter, Director, Cal Poly Plant Conservatory. ritter@calpoly.edu.
- Natalie Love, Postdoctoral Fellow, Urban Forest Ecosystem Institute. nllove@calpoly.edu.

Thank You

Thank you for your time and attention
Slides will be available after the meeting

Get in touch with us:

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Kim Clark, Planning Supervisor

Clark@scag.ca.gov



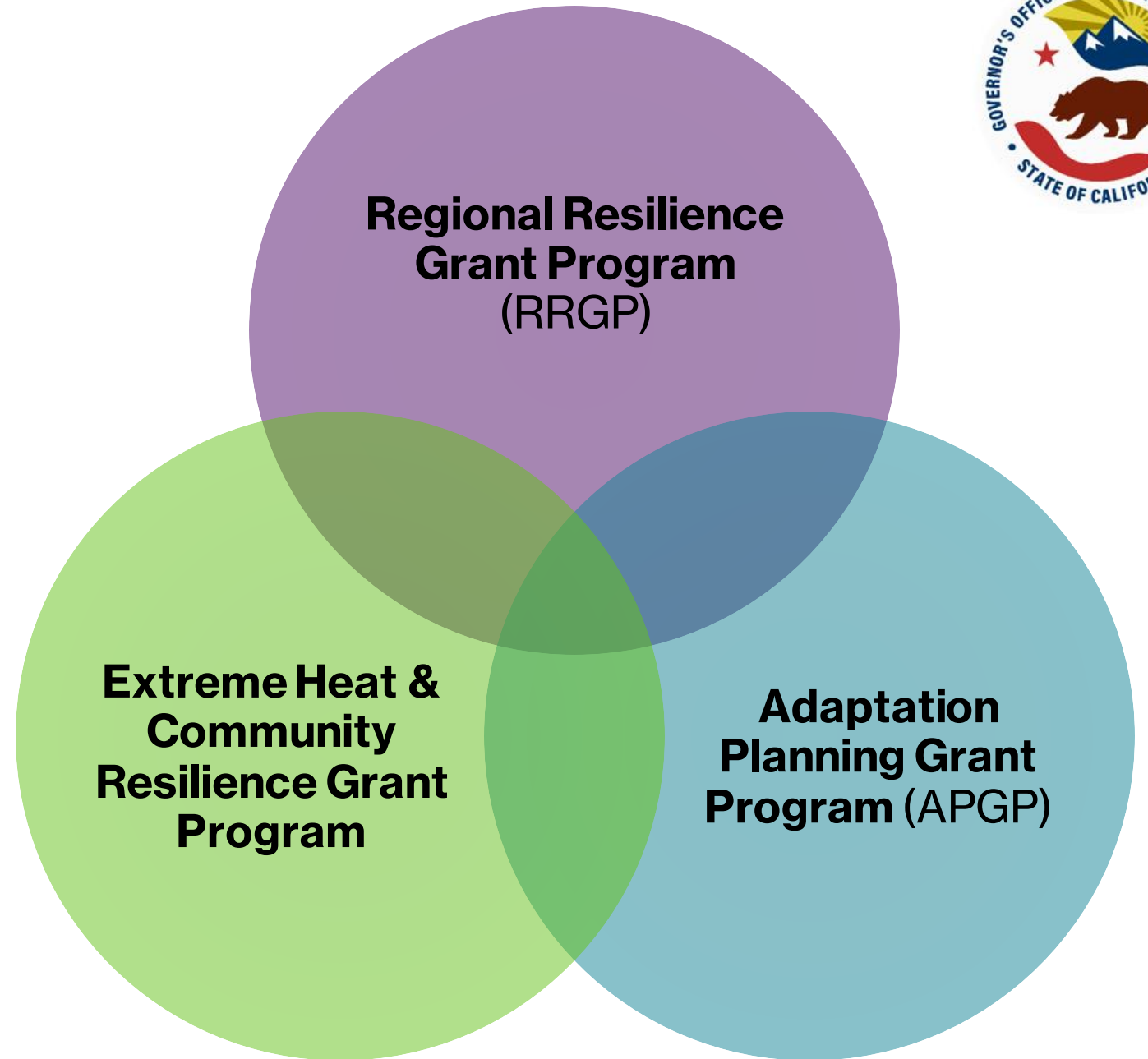


Integrated Climate Adaptation & Resiliency Program (ICARP)

Grant Programs

ICARP Grant Programs

The **2021 & 2022 Budget** authorized ICARP to develop **three new grant programs** to fund local, regional, and tribal climate adaptation and resilience efforts across the state.



Regional Resilience Grant Program Background & Tentative Timeline

This program will award **\$125M** over multiple rounds in regional resilience efforts.

Funding aims to:

- Support **local, regional, and tribal** entities' regional-scale climate resilience solutions.
- Support regions in advancing resilience through three major activities, **capacity-building, planning** and **project implementation**.
- Invest \$21.3 M in round 1, of which at least \$12.5M will support **regional climate adaptation planning** and action plans.

Timeline

Summer '22

- ✓ TAC Workshop
- ✓ Listening Sessions

Fall '22

- ✓ Draft Guidelines Development

Winter '22 – '23

- ✓ Interagency Work Group
- ✓ Public Comment Period

Spring '23

- ☐ Final Guidelines Development

Summer '23

- ☐ Final Guidelines Release & Solicitation

Fall '23

- ☐ Awards Announced



Key Program Priorities

- Support **regional** projects aligned with ICARP priorities that **reduce climate risks** from wildfire, sea level rise, drought, flood, increasing temperatures, and extreme heat events.
- Support projects or actions that address the greatest climate risks in the region, particularly in the most vulnerable communities.

Eligible Applicants and Activities

APPLICANTS

Eligible

- Local Public Entities
- California Native American Tribes
- Community-Based Organizations

Ineligible

- For-profit entities
- State Agencies

Important Requirements

- Co-applicants required
- Regional focus

ACTIVITIES

Planning

- Assesses regional climate vulnerability
- Prepare an implementation plan to apply resilience planning strategies

Implementation

- A project and intervention that addresses and mitigates the region's greatest climate risk(s)

Ineligible

- Legislative lobbying and lawsuits
- Environmental studies, plans, or documents required for CEQA or NEPA

Adaptation Planning Grant Program Background & Tentative Timeline

- This program will award **\$25M over 3 rounds** in local, regional, and tribal adaptation planning efforts.
- Round 1 **\$8.0 million** is available award amounts ranging between **\$150,000-\$650,000**
- **Funding targets** California Native American tribes, Federally Recognized tribes, economically disadvantaged rural communities (EDRC), and communities that meet the Justice40 Initiative requirements
- No match funding required

Timeline

Spring '22

- ✓ TAC Workshop
- ✓ Listening Sessions

Summer - Fall '22

- ✓ Draft Guidelines Development

Fall '22

- ✓ Public Comment Period
- ✓ Final Guidelines Development

Winter '22 – '23

- ✓ Final Guidelines Release & Solicitation

Spring '23

- ✓ Application Deadline

Summer '23

- ☐ Awards Announced



Key Program Priorities

- Explicitly and meaningfully **prioritize equitable outcomes**
- Encourage communities to **equitably plan for and respond to multiple climate risks**
- Support **integrated social and physical infrastructure planning** to achieve community resilience
- **Build statewide capacity** to plan for and implement equitable planning strategies
- **Embed equity into the planning process**, from project visioning through project evaluation

Eligible Applicants and Activities

APPLICANTS

Eligible

- Local Public Entities
- California Native American Tribes
- Community-Based Organizations & Non-profits

Ineligible

- For-profit entities
- State Agencies

Important Requirements

- Co-applicants required

ACTIVITIES

Eligible

- Identify climate resilience priorities
- Engage in integrated climate planning
- Plan social and physical climate resilient infrastructure projects
- Strengthen local coordination, leadership, knowledge, and skills to implement co-beneficial projects
- Increase access to additional state and federal funding

Ineligible

- Implementation of construction projects
- Environmental studies, plans, or documents required for CEQA or NEPA

Extreme Heat & Community Resilience

Background & Tentative Timeline

This program will invest **\$100M** in local, regional, and tribal **heat reduction and mitigation efforts**. Funding aims to:

- Build capacity for heat action planning in the most heat-burdened communities through **funding and technical support**.
- Implement **California's Extreme Heat Action Plan**.

Timeline

Spring '23

- TAC Workshop
- Listening Sessions

Summer - Fall '23

- Draft Guidelines Development

Fall '23

- Public Comment Period
- Final Guidelines Development

Winter '23 – '24

- Final Guidelines Release & Solicitation

Spring '24

- Application Deadline

Summer '24

- Awards Announced

Extreme Heat & Community Resilience Background & Tentative Timeline



Listening Session Registration



Newsletter Sign Up



ICARP Grants Contact Information

Regional Resilience Grant Program

Dolores Barajas, Program Manager Dolores.Barajas@opr.ca.gov

Adaptation Planning Grant Program

Abby Edwards, Program Manager Abby.Edwards@opr.ca.gov

Extreme Heat & Community Resilience Grant Program

Braden Kay, Program Manager Braden.Kay@opr.ca.gov

For more information: <https://opr.ca.gov/planning/icarp/grants/>

Action Tracks



Build Public Awareness and Notification

Ex. Heat awareness and education strategies, emergency alerts and early warning, and data accessibility and heat modeling



Strengthen Community Services and Response

Ex. Cooling centers and resilience hubs, community infrastructure, and support for local and regional extreme heat response plans



Increase Resilience of Our Built Environment

Ex. Infrastructure, building retrofit, cool roof and pavement technologies, and air conditioning



Utilize Nature-based Solutions

Ex. Community greening and gardens, urban forestry, and greenbelts

Extreme Heat and Community Resilience Program Background

OPR, through ICARP, received funding in the state budget to support local, regional, & tribal communities. Funding to support:

- Planning & implementation grants
- Planning to prevent & mitigate the impacts & public health risk of heat
- Investments in heat reduction & mitigation infrastructure

Prior Engagement Findings: ICARP Technical Advisory Council Workshop

Barriers to heat resiliency:

Limited funding
opportunities

Lack of awareness for
funding opportunities

Little staff
capacity/expertise

Need for accessible
planning resources

Prior Engagement Findings: ICARP Technical Advisory Council Workshop



Connect applicants with adjacent funding sources

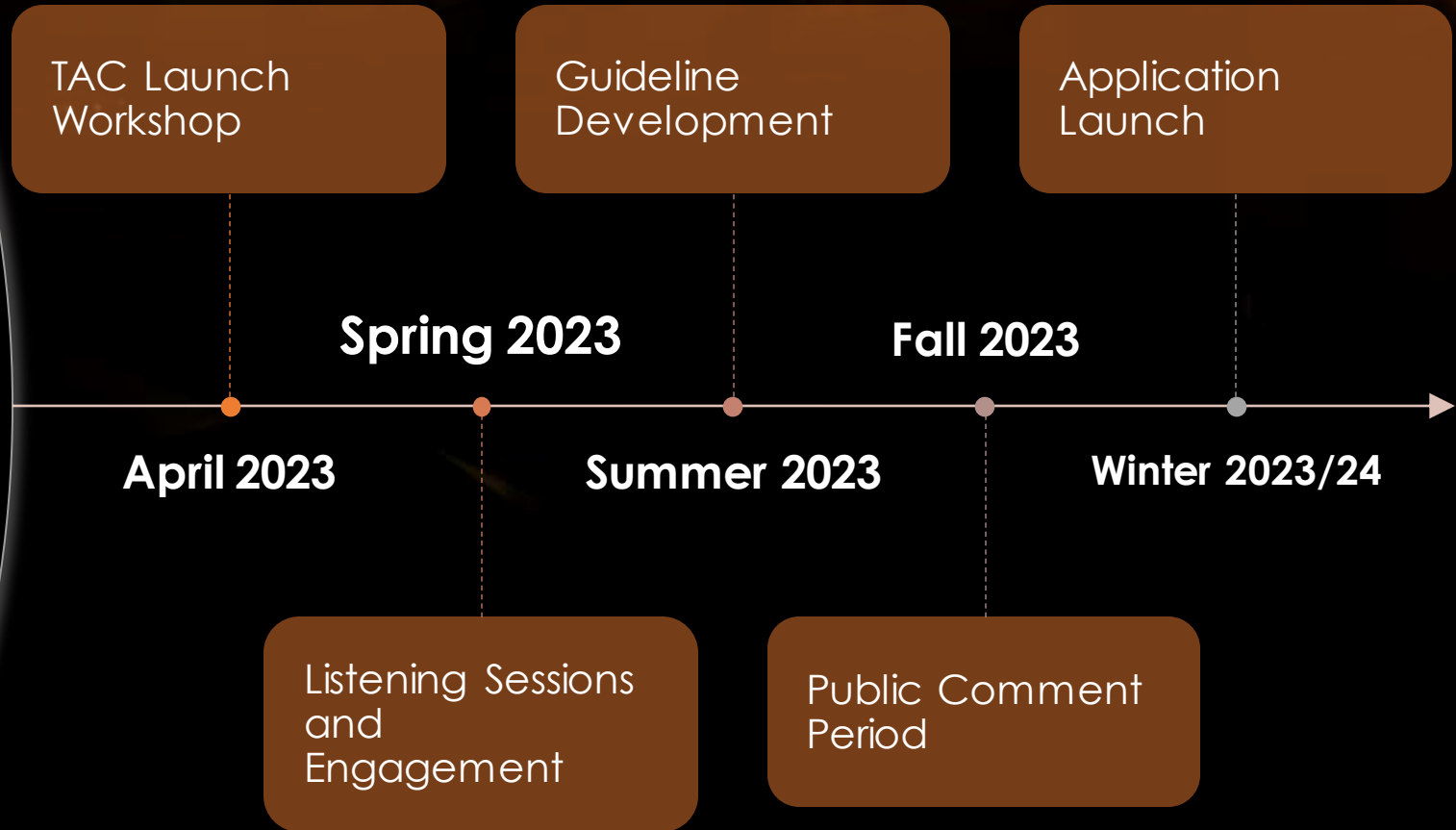


Center vulnerable community members in grant development and projects



Facilitate and reward meaningful partnerships for applicants

Tentative Timeline



Stay In Touch

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Listserv Sign Up

Tell us how we did!

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