

MARCH 2018



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RESILIENT LOS ANGELES

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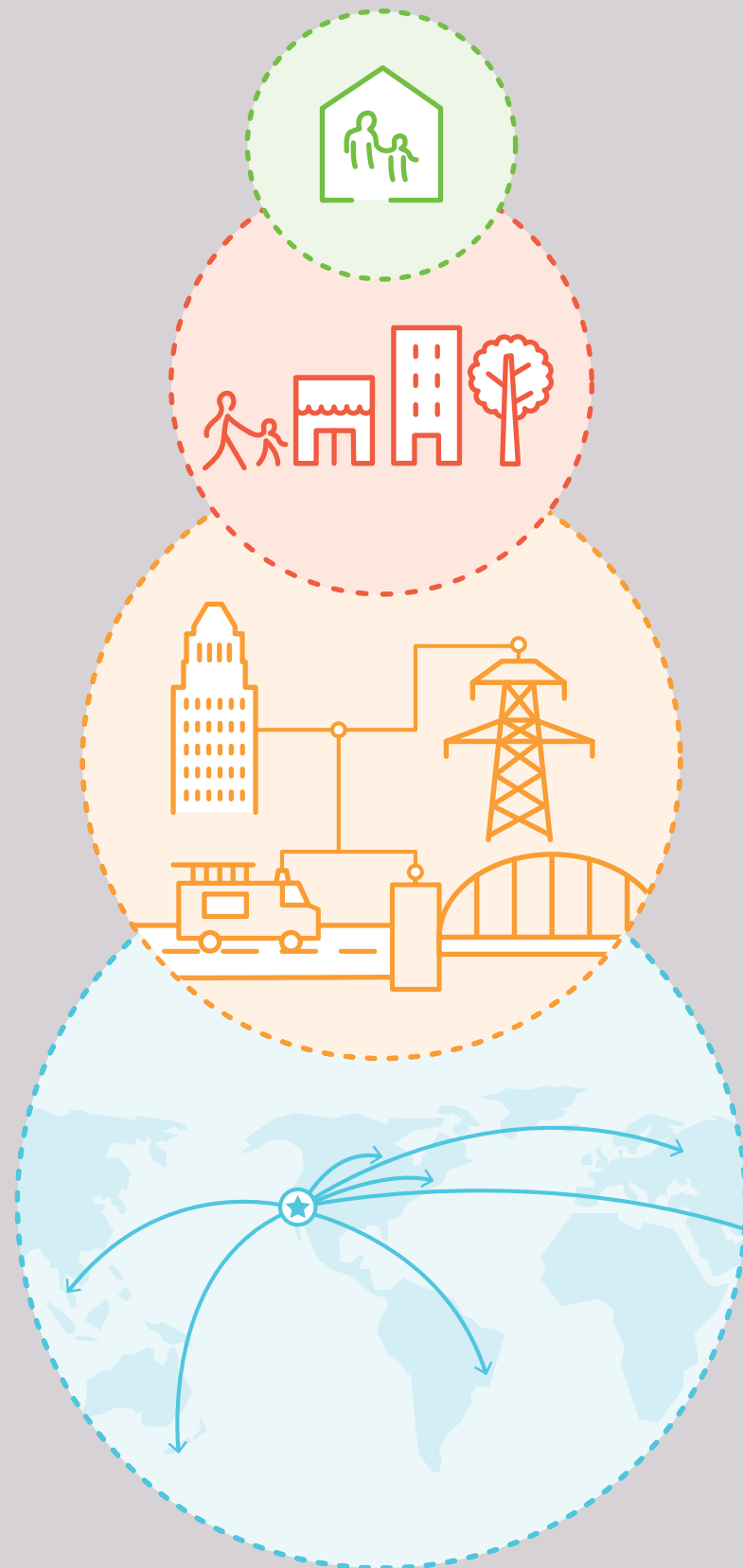
# RESILIENT LOS ANGELES








# 4 CHAPTERS, 15 GOALS, 96 ACTIONS





Resilient Los Angeles is a call to action for every Angeleno to contribute to the resilience of our city at every scale.







**CHAPTER 1**  
**SAFE AND THRIVING ANGELENOS** will call attention to the role that individuals, families, businesses, and property owners can take to both prevent and prepare for future shocks and stresses.

-  **GOAL 1:** Educate and engage Angelenos around risk reduction and preparedness so they can be self-sufficient for at least seven to 14 days after a major shock. pg 31
-  **GOAL 2:** Develop additional pathways to employment and the delivery of financial literacy tools to support our most vulnerable Angelenos. pg 41
-  **GOAL 3:** Cultivate leadership, stewardship, and equity with young Angelenos. pg 46





**CHAPTER 2**  
**STRONG AND CONNECTED NEIGHBORHOODS** will focus on actions that support and strengthen community connectedness and collaboration.

-  **GOAL 4:** Build social cohesion and increase preparedness through community collaboration. pg 56
-  **GOAL 5:** Increase programs and partnerships that foster welcoming neighborhoods. pg 65
-  **GOAL 6:** Prepare and protect those most vulnerable to increasing extreme heat. pg 69
-  **GOAL 7:** Reduce health and wellness disparities across neighborhoods. pg 76

**CHAPTER 3**  
**PREPARED AND RESPONSIVE CITY** will emphasize strategies the City and its partners will take to ensure that Los Angeles is equipped to address current and future challenges.

-  **GOAL 8:** Integrate resilience principles into government to prioritize our most vulnerable people, places, and systems. pg 86
-  **GOAL 9:** Equip government with technology and data to increase situational awareness and expedite post-disaster recovery. pg 95
-  **GOAL 10:** Provide safe and affordable housing for all Angelenos. pg 99
-  **GOAL 11:** Restore, rebuild, and modernize Los Angeles' infrastructure. pg 104

**CHAPTER 4**  
**PIONEERING AND COLLABORATIVE PARTNER** will feature the multidisciplinary innovations and partnerships that will continue to propel Los Angeles forward as a leader among our global peers.

-  **GOAL 12:** Use climate science to develop adaptation strategies consistent with the Paris Climate Agreement. pg 126
-  **GOAL 13:** Foster a healthy and connected Los Angeles River system. pg 132
-  **GOAL 14:** Strengthen regional systems and fortify critical infrastructure. pg 137
-  **GOAL 15:** Grow public, private, and philanthropic partnerships that will increase resources dedicated to building resilience. pg 143

## Letter From Mayor Eric Garcetti



My fellow Angelenos:

Recent catastrophes around the world—hurricanes in the U.S. and the Caribbean, earthquakes in Mexico, fires in the western U.S., flooding in Nepal and Bangladesh—are serious reminders that every community needs focused resilience strategies.

In Los Angeles, we know a major earthquake is a matter of when, not if. And we know that the next one could be more than 10 times worse than the 1994 Northridge earthquake that claimed 57 lives, injured over 9,000, displaced tens of thousands from their homes, and caused \$20 billion in damage.

And earthquakes aren't the only threat we face: The effects of climate change are worsening, and cybercrime is causing more turmoil than ever for businesses, governments, and other institutions around the world.

These threats are emerging quickly, and we can't wait for catastrophes to hit before confronting them. We need a comprehensive, strategically coordinated approach to urban resilience.

That's what *Resilient Los Angeles* is about.

It's a plan that includes strategies to help us fortify our infrastructure, protect our economy, and make our city safer. But it's also about strengthening the bonds of community in our neighborhoods and reinforcing universal values like inclusion and respect—because we can only overcome our greatest threats if we work together.

Los Angeles is already leading on seismic safety with the *Resilience by Design* report developed by my office in 2014. And we're taking aggressive steps to become a model for sustainability with my *Sustainable City pLAN*. *Resilient Los Angeles* builds on those ideas and brings them together into one plan that will guide us toward a more resilient future.

The decisions we make today will shape the city that our children and grandchildren will live in tomorrow—and we have a responsibility to protect their future. This plan will help give us the insight and tools we need to build a more resilient Los Angeles, and I look forward to working with all of you to accomplish that critical goal.

Sincerely,

**Eric Garcetti**  
Mayor

## Letter From Los Angeles' First Chief Resilience Officer

Angelenos have a long history overcoming the challenges they face and forging opportunity and inspiration from them. *Resilient Los Angeles* builds on this foundation by providing solutions to a city that has already accomplished a lot to create the conditions for developing meaning resilience.

At its core, building resilience means strengthening our community fabric today so that we can survive, adapt, and thrive no matter what kind of crisis or catastrophe is in our future. It means thoughtfully examining how all of our systems, communities, and vulnerabilities intersect and affect one another. If left unaddressed, any one of these stresses will not only continue to negatively impact Angelenos' daily lives, but also exacerbate disasters when they occur. We must do everything we can to keep Angelenos safe in their homes and neighborhoods—and in our city—during times of crisis.

*Resilient Los Angeles* represents both a beginning and an end. It is the culmination of a months-long process to cultivate partnerships and develop actions that increase Los Angeles' resilience. It is also the beginning of a greater citywide commitment to continue to collaborate, form new partnerships, and design new initiatives in a continuous process that will contribute to a safer and stronger Los Angeles.

I want to thank the hundreds of partners that have participated in the development of *Resilient Los Angeles*. Experts from Los Angeles' leading academic institutions; professional associations; City departments; and public, private, and nonprofit partners have shaped the next steps in resilience building. We invite every Angeleno to help make our City stronger, safer, and more inclusive.

**Marissa Aho, AICP**  
Chief Resilience Officer

## Letter From 100 Resilient Cities

On behalf of the entire 100 Resilient Cities team, I want to congratulate Mayor Garcetti and the City of Los Angeles on the release of *Resilient Los Angeles*, a major milestone for the City and for our partnership. This ambitious strategy cements Los Angeles' status as a global leader and innovator and will lead to an even stronger and more dynamic city.

As a city of dramatic contrasts, Los Angeles spans a vast range of geographies, climates, conditions, and communities that pose disparate challenges and opportunities. Los Angeles' complexity requires a nuanced but bold vision. *Resilient Los Angeles* has that vision, with a scope and scale that leverage the city's strengths and systems to build a more resilient urban ecosystem. Even amid the many innovative strategies we have already seen across our network, this strategy stands apart. From planning for the individual, family, and business and property owner; to local community networks and neighborhoods; to citywide policies, services, and infrastructure; to partnerships in the region beyond—*Resilient Los Angeles* spans all of the city's systems without losing sight of its constituent parts and the lives of individual Angelenos. While it empowers the individual, the community, the city, and the region, it also emphasizes that the effort is collective, the future dependent on each part of the greater whole. This is what meaningful resilience is about and the only way it can be built.

Los Angeles' approach to building urban resilience within the city, throughout the state, and across the 100RC Network has made it a leader in our global movement. Also groundbreaking is the strategy's ambitious commitment to innovation and leadership in the global resilience movement, with a chapter devoted to partnerships and technological innovation.

We are excited to continue the next stage of our partnership and to collaborate in the implementation of this groundbreaking strategy, which will help ensure a resilient future for Los Angeles and propel the resilience effort worldwide.

**Michael Berkowitz, President**  
100 Resilient Cities



# EXECUTIVE SUMMARY

Los Angeles has always been a global destination for dreamers, doers, thinkers, and creators. We have blue skies and pristine beaches and a rich culture of diversity, creativity, and entrepreneurship. The opportunities of tomorrow are limitless, as we work to build Los Angeles into a vibrant, thriving model city of the 21st century.

Yet this dream comes with the growing pressures of our susceptibility to the impacts of climate change and aging infrastructure. We are all deeply aware that it is a question of when, not if Los Angeles will face the next Big One—whether it's an earthquake, flood, heatwave, fire, or other disaster with long-term impacts. While we have made great strides over the past 25 years, it's time to do more—to strengthen and create new partnerships, to change the way our government collaborates and to empower and secure our communities—so that we can work together to make L.A. a global model of resilience.

Building a more resilient Los Angeles starts with addressing the needs of our most vulnerable populations and neighborhoods. Too often, those who are least equipped to handle the effects of catastrophic events end up suffering the most. And empowering our most vulnerable—children, immigrants, and lower-income residents, among others—is not just about emergency preparedness. It is about directly addressing those underlying daily stresses—such as poverty, financial security, and affordable housing—and ensuring that all Angelenos feel safe and secure in their daily lives. It also means bringing neighbors together to strengthen our collective resources and social bonds and innovating creative solutions along the way.

Let's act today so we are all stronger and safer together tomorrow. *Resilient Los Angeles* lays the groundwork for our collective action, involving everyone from the individual family to our regional partners. This plan will help us protect ourselves against sudden and unexpected events—from earthquakes to flooding—and address our underlying chronic stresses, such as economic security, climate change, and aging infrastructure. Not only does *Resilient Los Angeles* give a voice to the hundreds of diverse stakeholders engaged in defining our resilience goals over the past two years, it provides a roadmap to achieving them. And we will hold ourselves accountable by measuring progress toward these goals for years to come.

**Los Angeles was selected as an inaugural member of the 100 Resilient Cities Network in 2013.** This global network, pioneered by the Rockefeller Foundation, helps member cities around the world become more resilient to the physical, social, and economic challenges of the 21st century. Through the program, Los Angeles hired its first Chief Resilience Officer, Marissa Aho, who has spearheaded a collaborative effort among hundreds of stakeholders across City departments, community organizations, and partners in the nonprofit, academic, and philanthropic sectors. The outcome of these interdisciplinary conversations and research are commitments to a set of actions and to creating and expanding innovative partnerships that discard the silos in which we traditionally work.

Every Angeleno plays a role in strengthening L.A.'s resilience: Each one of us can improve our city's ability to withstand and recover from the impacts of an unexpected shock. And this role stretches from an individual person or family and the choices we make to how our region's jurisdictions work together to achieve common goals.

Our impact has a global reach that extends well beyond City limits: As one of the nation's largest cities and part of a global network, we have a unique opportunity to lead by example and set the standard for effective citywide resilience.

To that end, *Resilient Los Angeles* is organized around key themes at different scales of impact. Often, size and scale can lead to efforts in isolation; a city cannot effectively plan a disaster recovery program, for example, without leveraging the important work of local community partners. By creating a pathway that recognizes roles across various scales of governance, planning, and action, we ensure our collective work is connected—providing opportunities for information sharing and collaboration.

Our proposed actions are about building resilience to both the impacts of unexpected catastrophic events and chronic underlying stresses. Extensive outreach during the resilience strategy planning process resulted in five consistent themes around what resilience in Los Angeles means to our city—resulting in a series of goals and actions that provide a unified call to action that is inclusive, collaborative, and ensures that we are all working together to achieve our city's resilience.

Every Angeleno plays a role in building our resilience. Together, we can make Los Angeles a place where people can continue to follow their dreams for generations to come.

Please check our website for updates, events, and opportunities related to *Resilient Los Angeles*: [lamayor.org/resilience](http://lamayor.org/resilience)

**The 96 actions of *Resilient Los Angeles* will improve outcomes around:**

- **Leadership and Engagement**
- **Disaster Preparedness and Recovery**
- **Economic Security**
- **Climate Adaptation**
- **Infrastructure Modernization**



## *Resilient Los Angeles* actions are organized around the following chapters:

### Safe and Thriving Angelenos

We're building the capacity of individual families and businesses—both to prepare for and to recover from emergency events, and to build long-term financial security. We're also seeking to cultivate and grow L.A.'s future leadership by partnering with young Angelenos to advance equity and stewardship in our communities.

### Strong and Connected Neighborhoods

When disaster strikes, we know that recovery starts in our local communities and networks—and we need to further empower and engage our neighborhood organizations to foster local resilience and social cohesion. These local networks play a critical role in climate adaptation for our most vulnerable communities. We're also taking action to reduce local health and wellness disparities while increasing economic security for all Angelenos.

### Prepared and Responsive City

We are setting measurable goals to build our city's leadership in resilience, integrating tools and technology to prioritize our most vulnerable in decision-making, and fostering faster and more efficient disaster preparedness and recovery. We're also modernizing our city's aging infrastructure for the future and developing ways to provide more safe and affordable housing to improve economic security of Angelenos.

### Pioneering and Collaborative Partner

Our work doesn't stop at our city's borders. We recognize the role we play globally as part of the 100 Resilient Cities network and the leadership we can provide to our region and beyond. We will continue to uphold principles of climate resilience as a city and will engage our public, private, and philanthropic leadership to be a model through advocacy, infrastructure investment, and partnerships.



# RESILIENT LOS ANGELES

Los Angeles is a destination for people from around the world to pursue their dreams. More than four million Angelenos blend cultures, beliefs, traditions, languages, and cuisine into a beautiful mosaic. We value opportunity, imagination, and diversity. Angelenos are entrepreneurs, creators, and innovators whose spirit has made Los Angeles into a world-class cultural and economic hub.

Over the past 25 years, Los Angeles has become a safer and more sustainable city. When faced with challenges, we have collaborated to reduce crime and to invest in new public transit, cleaner air, and greener technology. We have strengthened and grown our cultural institutions, built new schools and parks, and witnessed the revitalization of our downtown. We have made commitments to build more affordable housing, increase the minimum wage, double our transit network, improve air quality, and revitalize our river.

*Resilient Los Angeles* is a commitment to a thriving future for all Angelenos. Resilience is the capacity to survive, adapt, and grow—regardless of adversity and setbacks. Recent events have brought the challenges that cities around the globe face to the forefront—from earthquakes and fires to record-breaking storms and heat waves and from a growing homelessness crisis to aging infrastructure. And we know that our most vulnerable people and places are disproportionately impacted by these challenges.

A resilient Los Angeles is a city that is safe, livable, and prosperous no matter the stresses and shocks. The stronger our foundation is today, the more prepared and connected we are to withstand a major event and to emerge even stronger. And, as many Angelenos know, it is a matter of when, and not if, a catastrophic event will occur.

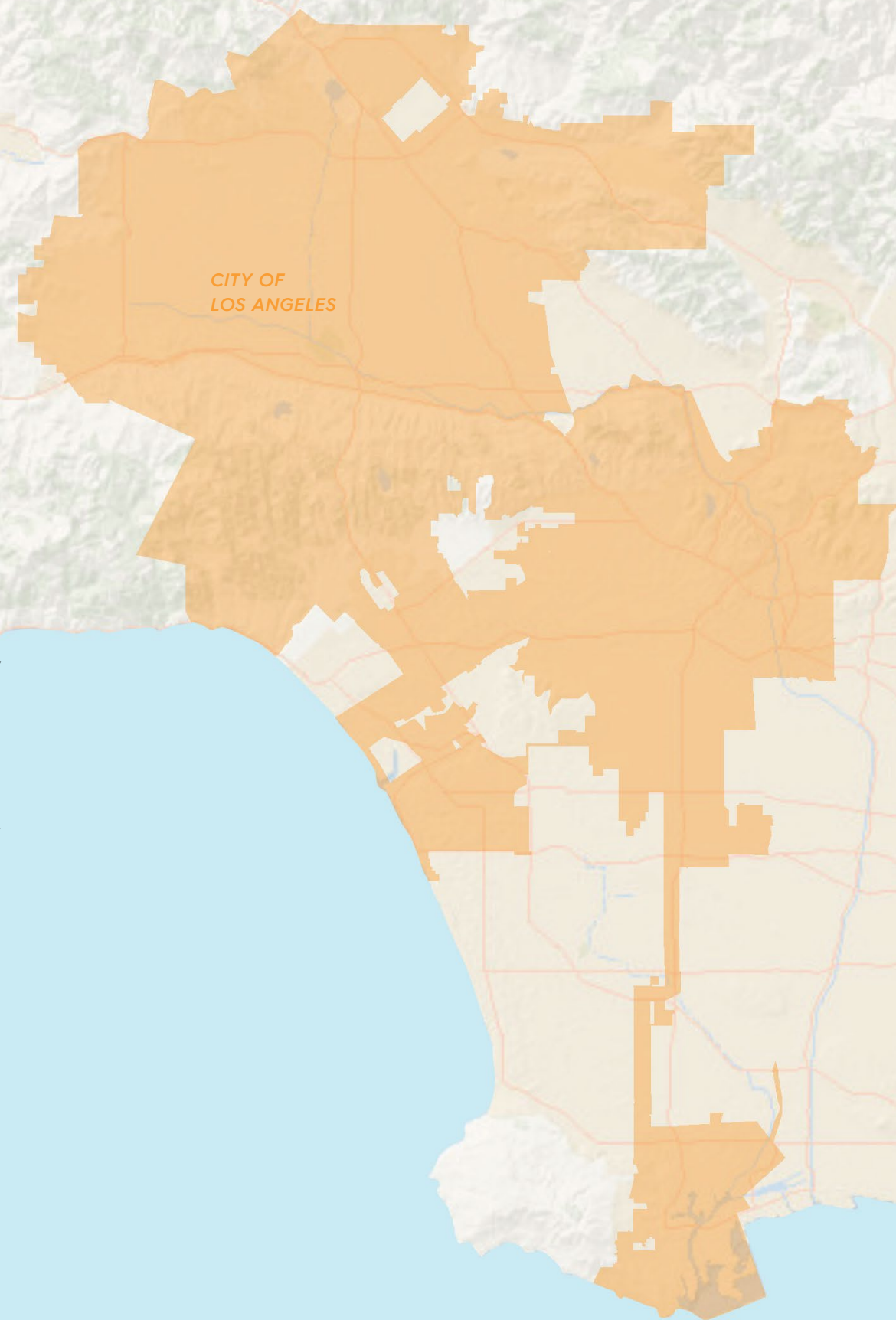
To realize a resilient Los Angeles, we must invest in strategies and actions that address our greatest risks and protect our most vulnerable people, places, and systems. This strategy focuses on five primary themes: 1) Leadership and Engagement; 2) Disaster Preparedness and Recovery; 3) Economic Security; 4) Climate Adaptation; and 5) Infrastructure Modernization.

These are not challenges with simple fixes—but it is possible to reduce risks and vulnerabilities by leveraging each investment we make in our people, places, and systems to address these challenges and advance our resilience goals.

Building the City's resilience will require every Angeleno to play a role through individual participation and collective action. While the future seems increasingly unpredictable, we do know many of our risks and many of the remedies that we can use to address them.

As we work together to create a safer and stronger Los Angeles, we need to strengthen our community fabric by stitching together resources, partnerships, and creative solutions for prioritizing our most vulnerable people, places, and systems.

*Resilient Los Angeles* seeks to move forward this dialogue and invites all Angelenos and potential partners to join in the discussion and to work together to build a city that is safe, livable, and prosperous for all Angelenos.



## L.A. TODAY

**pop. 4,040,904**  
Largest city in CA, the most populous state in the U.S.<sup>1</sup>

**37.8%**  
of L.A.'s population is foreign born<sup>2</sup>

**22%**  
of the population lives in poverty<sup>3</sup>

**62%**  
are renters<sup>4</sup>

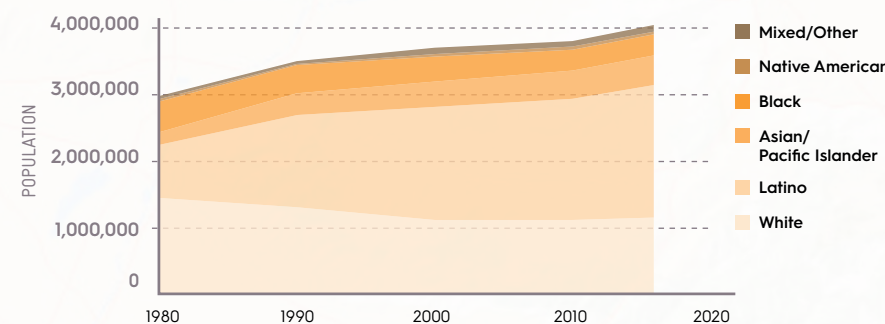
**469 sq. miles**  
The largest city (by area) in the U.S.<sup>5</sup>

**47.3 million**  
visitors to L.A. in 2016<sup>6</sup>

**\$51,538** median household income<sup>7</sup>

**\$1 trillion** L.A. regional GDP<sup>8</sup>

### GROWING DIVERSITY<sup>9</sup>



## Vulnerable Populations and Neighborhoods

When we talk about vulnerable populations and neighborhoods throughout this document, we want to be clear about not projecting a victimhood label on any Angeleno or neighborhood. The diversity of our neighbors and neighborhoods is a source of pride for our city as we continue to strive for additional inclusion and participation from everyone. However, it is important to acknowledge the inequities and disparities that more advantaged Angelenos and affluent neighborhoods do not face, including historical and systemic discrimination, exclusion, marginalization, exploitation, underrepresentation, and disinvestment. Nothing about an individual's

race, ethnicity, gender identity, sexual orientation, age, social class, physical ability or attributes, religious or ethical values system, national origin, immigrant status, linguistic ability, or ZIP code makes them inherently vulnerable. We see acknowledging vulnerability as an assessment of the system's deficiencies, rather than as a judgment of any Angeleno or neighborhood. And while *Resilient Los Angeles* is for every Angeleno, the actions we take to make Los Angeles safer and stronger will prioritize identifying and addressing our greatest vulnerabilities.

# TURNING L.A. INTO THE STRONGEST AND SAFEST CITY IN THE WORLD

*Resilient Los Angeles* focuses on the pressing challenges and opportunities that will shape our city today and for future generations. The City will address our preparedness for disasters, the economic security of all Angelenos, the threats of climate change, and our aging infrastructure. The City will advance this work through initiatives and measurable targets that include:



## Leadership and Engagement

- Expand the Mayor’s Office of Resilience by the end of 2018.
- Designate Departmental Chief Resilience Officers by April 2018.
- Track and report on resilience outcomes that show measurable progress for our most vulnerable populations and neighborhoods by 2022.
- Increase real-time data gathering and sharing tools to improve adaptive capacity, data-driven decision-making, and increased situational awareness by 2022.
- Engage the next generation of leaders in resilience-building by 2028.



## Disaster Preparedness and Recovery

- Bring earthquake early warning technology to all Angelenos by the end of 2018.
- Work with all Neighborhood Councils to develop resilience and preparedness plans by 2019.
- Prepare Angelenos to be self-sufficient for at least seven to 14 days after an emergency by 2022.
- Build a culture of preparedness by training all City departments and employees on disaster preparedness and recovery on an annual basis by 2022.
- Develop post-disaster service restoration targets for critical infrastructure by 2028.



## Economic Security

- Preserve existing affordable housing units and build at least 100,000 new housing units by 2021.
- Reduce the unsheltered population by at least half by 2022.
- Increase access to financial empowerment services and asset-building opportunities by 2022.
- Increase life expectancy for those in our most vulnerable neighborhoods by 2028.
- Develop resilience hubs in our most vulnerable neighborhoods by 2028.



## Climate Adaptation

- Prepare for the impacts of climate change by developing a comprehensive city-wide climate risk and vulnerability assessment by 2019.
- Accelerate reductions in greenhouse gas emissions and meet or exceed climate resilience outcomes consistent with the Paris Climate Agreement by 2020.
- Develop and implement urban heat island reduction plans and demonstration projects in our most vulnerable neighborhoods by 2022.
- Increase access to green space and open space through investments along the Los Angeles River system and in underserved neighborhoods by 2028.
- Increase equitable tree canopy coverage by 2028.



## Infrastructure Modernization

- Advance a coordinated approach to capital planning and infrastructure investment by 2022.
- Apply resilience criteria to projects that prioritize investments in capital planning and critical infrastructure by 2022.
- Invest in green infrastructure and stormwater retention to increase the number of projects that capture water for reuse, improve water quality, and reduce flooding risk by 2028.
- Modernize the power grid to expand renewable energy to 65% of our power source by 2036 while deepening storage capacity and broadening emergency backup systems.
- Invest in our most vulnerable buildings to withstand seismic and climate threats by 2043.





# LOS ANGELES' RESILIENT HISTORY

We can learn a lot about our city's approach to building urban resilience from previous events in our history. Los Angeles' landscape has been shaped by challenges we have faced in the past, and some challenges keep repeating themselves. During the Great Depression, a number of events shaped the future of Los Angeles, from the channelization of the Los Angeles River to the establishment of the Field Act, which increased seismic safety for public school buildings after the 1933 Long Beach earthquake. Following World War II, the auto-oriented development of Southern California's neighborhoods and discriminatory housing policies and lending practices contributed to neighborhood disparities in wealth and opportunity—the effects of which we still see today.

In the early 1990s, Los Angeles experienced peak crime rates, civil unrest, and a damaging earthquake, all within a few years. Approximately 42% of Angelenos have been born or migrated to Los Angeles since the early '90s and did not experience these events in our history. It is important for everyone to know how our history has shaped the City of Los Angeles and how we view challenges and solutions surrounding resilience efforts today. Events in recent years have illustrated the city's vulnerabilities and revealed the day-to-day challenges that affect our ability to be safer, stronger, and more inclusive.



## Learning from History: A Century of Shocks and Stresses

1928

### St. Francis Dam Collapse



The dam was designed and built between 1924 and 1926 by the Los Angeles Department of Water and Power. When the dam catastrophically fails, the resulting flood takes the lives of an estimated 431 people.<sup>10</sup>

Photo: Underwood & Underwood, Security Pacific National Bank / Los Angeles Public Library



1933

### Long Beach Earthquake

An estimated magnitude 6.3 earthquake hits Los Angeles, killing 120 people and destroying hundreds of buildings throughout the region.<sup>11</sup>



1933

### Griffith Park Fire

A fire sparked by a small pile of debris breaks out in Griffith Park, burning 47 acres of land, killing 29 people, and injuring over 150 people.<sup>12</sup>



1929

### The Great Depression

The Great Depression, caused by the stock market crash of 1929, lasts 10 years. This economic downfall has an indelible effect on California, leading to a large influx of Dust Bowl migrants, a rise in unemployment and a period of bank instability.



1938

### Los Angeles Flood



The Los Angeles, Santa Ana, and San Gabriel rivers flood, killing 115 people. The floodwaters wash away banks, roads, bridges, and buildings, causing \$70 million in damages.<sup>13</sup>

Photo: Herman Schultheis, Herman J. Schultheis Collection / Los Angeles Public Library



1929–1934

### Drought

The first of California's most significant historical statewide droughts, this six-year drought occurs within one of the most severe decades-plus dry period in the 1920s–30s.



1943

### Zoot Suit Riots

For 10 days, 200 sailors stationed in Chavez Ravine are joined by civilians and authorities in racially motivated rioting through Downtown and East Los Angeles, originally targeting Mexican American youths wearing popular “zoot suits” but also attacking African Americans and Filipino Americans.<sup>14</sup>



1943–1980s

### Smog and Ozone Depletion

Southern California experiences decades of smog attacks, usually coupled with heat waves. The poor air quality and ozone depletion leads to the establishment of a number of air quality organizations, monitoring technology, and laws to reduce pollution sources.



1945–1973

### Postwar Housing Development

After World War II, the compounding effects of returning veterans starting families, federally backed mortgages under the G.I. bill, record automobile ownership, and the proliferation of mass-produced tract homes created much of L.A.'s infamous sprawl. Racially discriminatory policies, such as redlining and racial covenants, excluded non-whites from many of these homes and contributed to economically and racially segregated neighborhoods. This large portion of Los Angeles' housing stock is now nearing the end of its design life and can not accommodate the City's affordable housing needs.



1965

### Watts Riots

On August 11, 1965, a police confrontation in Watts sparks six days of civil unrest. Seen as an “uprising against an oppressive system,” over 30,000 people participate in the riots, causing 3,438 arrests, 1,032 injuries, 34 deaths, and \$40 million in damage to over 1,000 buildings.



1991–1992

### High Crime Rates

The early '90s Los Angeles experiences peak homicides, with 1,094 in 1992, and peak total violent crime reported, with 89,875 incidents in 1991.



1992

### Sepulveda Basin Flooding

Nearly 100 people and their vehicles are stranded by flooding in the Sepulveda Basin. While there are no fatalities, damage includes roads, properties, and a sewage treatment plant.<sup>15</sup>



1992

### Los Angeles Civil Unrest



A jury acquits four LAPD officers for the beating of Rodney G. King, sparking a national debate about police brutality and racial tensions. Five days of civil unrest follow, during which 63 people lose their lives and looting and fires occur across the city.<sup>16</sup>

Photo: Gary Leonard, Gary Leonard Collection / Los Angeles Public Library



1994

### Northridge Earthquake



A magnitude 6.7 earthquake causes 52 deaths, more than 9,000 injuries, and \$20 billion in property damage, making it one of the costliest natural disasters in U.S. history.



Photo: Cary Moore, Cary Moore Collection / Los Angeles Public Library

2006

### Heat Wave

Temperatures remain above 100°F for nearly two weeks, peaking at an L.A. County record of 119° in Woodland Hills. Estimated deaths in the region due to extreme heat range from 150 to 450 people.<sup>17</sup>



2007

### Griffith Park Fire



A fire in Griffith Park takes two days to contain, burning 817 acres and forcing the evacuation of hundreds of people in the area.

Photo: Eric Beteille



2008

### Great Recession

The Great Recession hits Los Angeles along with the rest of the globe, causing significant economic challenges such as unemployment and loss of financial security for many Angelenos.



2012

### Drought

Along with the rest of California, Los Angeles enters the most severe drought of the last 1,200 years.



2013–2018

### Deepening Housing Affordability Crisis

In the past 15 years, Los Angeles has added 230,000 new residents but only 40,000 new homes. The median cost of a home in L.A. has doubled, and median rent has increased by 5% in the last five years.



2016–2017

### Homelessness

The City of Los Angeles sees a 20% increase in homelessness, to 34,189 people, as the City works with partners to house more than 9,000 formerly homeless Angelenos.<sup>18</sup>



2016–2018

### Peaceful Protests



Hundreds of thousands of Angelenos join numerous marches across the country held to celebrate diversity, grassroots activism, and a commitment to climate change.

Photo: Office of Mayor Garcetti





# LOS ANGELES RESILIENCE EFFORTS

Several major planning efforts are currently contributing to the city's resilience by creating a safer, healthier, and more equitable Los Angeles. *Resilient Los Angeles* integrates and leverages these efforts by highlighting existing complementary actions, expanding initiatives to include a resilience lens, and identifying new opportunities to protect people and safeguard the environment.



Photo: LA Metro

## Making Critical Investments in Los Angeles' Future

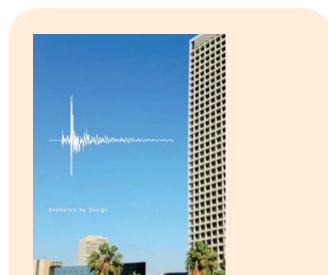
In 2016 and 2017, Los Angeles voters passed three critical measures and one proposition that will transform the region.

**MEASURE M:** Voters passed \$120 billion in funding for the expansion of transit lines and other transportation improvements, including first-mile/last-mile improvements.

**MEASURE H/PROPOSITION HHH:** Voters overwhelmingly passed two homelessness initiatives to help combat the crisis: Measure H will pay for services that

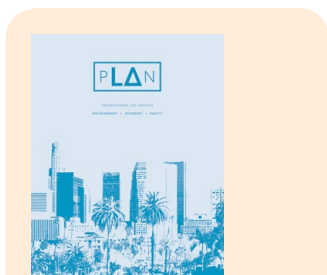
are expected to help lift 45,000 people out of homelessness, and Proposition HHH will help build an estimated 10,000 units of permanent supportive housing over the next decade.

**MEASURE A:** Voters approved \$94.5 million in annual property tax (without an end date) to create and maintain parks, open space, and natural water resources. The tax also addresses disparities in access to parks and open space.



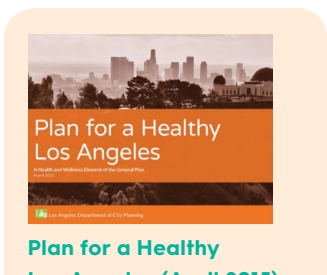
### Resilience by Design (December 2014)

Mayor Garcetti releases *Resilience by Design* to address Los Angeles' greatest earthquake vulnerabilities, including seismic retrofits for buildings and steps to secure our water supply and communications infrastructure. The report presents the recommendations of the Mayoral Seismic Safety Task Force and suggests strategic solutions to protect the lives of our residents; improve the capacity of the City to respond to earthquakes; prepare the City to recover quickly from earthquakes; and protect the economy of Los Angeles and the rest of Southern California.



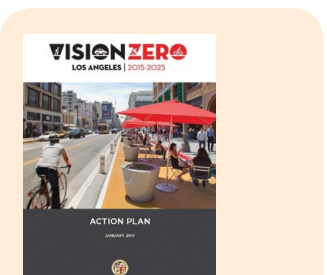
### Sustainable City pLAN (April 2015)

The *Sustainable City pLAN* sets the course for a cleaner environment and a stronger economy, with a commitment to equity as its foundation. The pLAN is made up of short-term targets (by 2017) and long-term targets (by 2025 and 2035) across 14 categories that will advance our environment, economy, and equity.



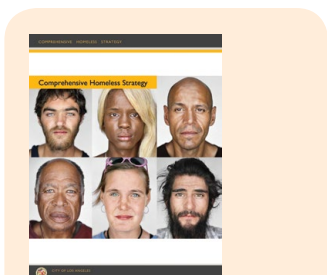
### Plan for a Healthy Los Angeles (April 2015)

The *Plan for a Healthy Los Angeles* elevates health as a priority for L.A.'s future growth and development, establishing a policy framework to make Los Angeles a healthier place to live, work, and play.



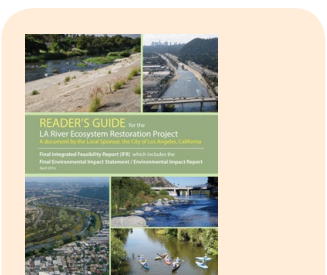
### Vision Zero (August 2015)

The Mayor launches Vision Zero, calling for City departments to pursue a goal of eliminating traffic-related deaths by 2025. In adopting this goal, Los Angeles joins a growing coalition of U.S. cities committed to eliminating traffic deaths while increasing safe, healthy, and equitable mobility for all.



### Comprehensive Homeless Strategy (January 2016)

The most comprehensive homelessness strategy in City history, the report marks a milestone in the transformation of how Los Angeles addresses homelessness through a regional approach. This report outlines recommendations to address homelessness over the next 10 years and serves as a blueprint in the prioritization and allocation of homelessness funding.



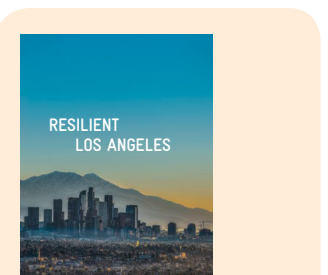
### LA River Ecosystem Restoration Project (June 2016)

Building on more than a decade of river revitalization planning, the Los Angeles City Council adopts the *L.A. River Ecosystem Restoration Project Feasibility Study*. The project restores 11 miles of the river starting near Griffith Park to Downtown Los Angeles while maintaining existing levels of flood-risk management.



### San Pedro Bay Ports Clean Air Action Plan Update (November 2017)

The Clean Air Action Plan Update sets the course for eliminating harmful air emissions from port-related sources. The 2017 update builds on the clean air achievements of the 2006 plan and sets out measures to reduce greenhouse gases from port-related sources to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050.



### Resilient Los Angeles (March 2018)

Mayor Garcetti's *Resilient Los Angeles* is a strategy to build the city's resilience through leadership and engagement, disaster preparedness and recovery, economic security, climate adaptation, and infrastructure modernization. The strategy is a call to action for all Angelenos to contribute to the city's resilience at every scale—from individual homes and neighborhoods to City leadership and beyond.





## Developing a Resilient Los Angeles

Los Angeles was selected as an inaugural member of the 100 Resilient Cities Network in 2013. Since then, Angelenos have come together to develop *Resilient Los Angeles*, a strategy by and for Angelenos that leverages the city's strengths and advances new partnerships to prepare Los Angeles to address current and future challenges.

To create this document, the City conducted in-depth research and analysis on the challenges we face as a city and incorporated input from community members, City staff, and subject-matter experts. Chief Resilience Officer Marissa Aho spearheaded a collaborative effort to engage stakeholders across City departments, community organizations, and partners in the nonprofit, academic, and philanthropic sectors.

Aho and her team reached out to Angelenos through various surveys, meetings with key advisory groups comprising City staff, discussions with external focus groups, and one-on-one meetings with community members. The team evaluated shocks and stresses facing Los Angeles, analyzed perceptions of resilience, and identified the best practices to combat potential challenges. In all, hundreds of stakeholders across the city contributed to this process.

*The team evaluated shocks and stresses facing Los Angeles, analyzed perceptions of resilience, and identified the best practices to combat potential challenges.*

Drawing on this research, the City identified priority areas to target resilience-building efforts. Working groups including City staff, academics, community organizations, and other experts met regularly to identify promising solutions and refine existing courses of action in *Resilient Los Angeles*. The team also held several workshops with stakeholders to discuss innovative, community-driven approaches to build resilience, addressing topics such as Los Angeles River Resilience and Neighborhood Resilience Hubs. The recommendations developed through this process have been incorporated into *Resilient Los Angeles*.



## The Power of Partnerships

Building resilience is fundamentally about creating and expanding partnerships. Everyone has a role to play in making Angelenos and our city safer and stronger. *Resilient Los Angeles* is the result of hundreds of existing and emerging partnerships. At every scale, Angelenos are contributing to the city's overall resilience every day. We challenge every resilience-builder to identify new potential partners that may be missing from today's discussions, plans, and projects and invite these future partners to join you.

*Everyone has a role to play in making Angelenos and our city safer and stronger.*

We also recognize that the release of *Resilient Los Angeles* marks the next step and an important milestone in the city's effort toward resilience. *Resilient Los Angeles* describes numerous opportunities for new and expanded collaborations among the private, public, nonprofit, and academic sectors to create a significant impact in building resilience. It will take persistence and an ongoing commitment from Angelenos and partner organizations to continue the work and to identify new potential challenges, opportunities, and partnerships. We invite you to join us in future discussions, plans, and projects. Because we cannot predict exactly what challenges the future will bring, we all must commit to continued engagement and collaboration.







# INTRODUCING SHOCKS AND STRESSES









The context of Los Angeles results in unique risks and vulnerabilities that impact the city’s ability to sustain and strengthen its resilience. In resilience terms, **shocks** are sudden or acute events that threaten or impact Los Angeles’ immediate well-being. These can include earthquakes, extreme weather events, infrastructure failures, or civil unrest. **Stresses** are daily or chronic challenges that weaken our natural, built, or human resources. Examples include climate change, aging infrastructure, inequity, and homelessness. Stresses can amplify the effects of shocks when they occur, particularly for vulnerable populations.

The shocks and stresses shown on this page are featured throughout *Resilient Los Angeles*. Look for the icons identifying the vulnerabilities to which Angelenos and our city are most susceptible.

 Shock  Stress

## Disaster Preparedness and Recovery

Multiple hazards and threats could affect Los Angeles with little to no notice, and these disruptions could impact a few or all Angelenos. However, the magnitude of the impact can be reduced through greater awareness of these potential disasters and preparedness measures that can be taken in advance to bounce back quickly when disaster strikes.

-  Earthquake
-  Riot/Civil Unrest
-  Fire
-  Public Health Emergencies
-  Landslides
-  Chemical Emergencies
-  Cybercrime and Terrorism
-  Tsunami









## Economic Security

Inequities in access and opportunities, both generationally and suddenly, strain the community fabric on a daily basis—worsening disparities and impacting Angelenos’ health, wealth, and quality of life. Understanding and reducing daily stresses will increase the capacity of Angelenos to withstand additional challenges.

-  Inequity
-  Disparities in Employment
-  Education
-  Disparities in Health
-  Homelessness
-  Disparities in Access to Open Space
-  Lack of Affordable Housing
-  Disparities in Access to Transit
-  Crime and Violence
-  Food Insecurity

## Climate Adaptation

Los Angeles is taking action to reduce the impact of future climate change, while also preparing for and adapting to the already-changing environment. Over the past few years, Los Angeles has experienced a new normal, with record-breaking drought, heat, and storms; climate projections illustrate the future challenges with urban heat island, unpredictable snowpack, and sea level rise.

-  Climate Change
-  Drought
-  Air Quality/Pollution
-  Severe Weather and Flooding
-  Urban Heat Island
-  Sea Level Rise
-  Extreme Heat
-  Extreme Cold

## Infrastructure Modernization

Los Angeles has a vast, complex, and aging infrastructure. The City is investing billions of dollars to restore, rebuild, and modernize the aging infrastructure to prevent existing infrastructure from failing and to meet the needs of a large and dynamic city.

-  Aging Infrastructure
-  Infrastructure or Building Failure

## HOW TO READ AN ACTION

**Resilient Los Angeles includes four chapters, 15 goals, and 96 actions for Angelenos, neighborhoods, the City, and our partners to implement. Approximately one-third of the actions are steps that are currently underway, another third are actions that build on existing efforts using a resilience lens, and the final third are new actions that address gaps and further resilience-building in Los Angeles.**

The 96 actions within *Resilient Los Angeles* follow a consistent format and are organized by scale and goal. Each action has a title and description and identifies associated shocks, stresses, timeframe, and partners. At the end of *Resilient Los Angeles*, all of the actions are listed in the order they appear and by theme.

### Action Description

Each description presents specific policies or programs the City and its partners will deploy to help achieve resilience goals, as well as important context that explains why the Action is needed.

### Resilience Value

Action descriptions highlight the resilience value of each action, explaining how the action will make L.A. stronger and better able to withstand multiple shocks and stresses. By aiming to maximize resilience value, policies and programs throughout this report consider the impact of multiple shocks and stresses in order to approach risks in an integrated way. This approach can save money and help promote a safe and thriving city.

## 90 LAUNCH AN EARTHQUAKE EARLY WARNING SYSTEM

**By the end of 2018, the City will deploy earthquake early warning technologies that will provide Angelenos with advance warning of earthquakes through smartphones, desktops, and other notification systems.**

In partnership with the USGS, the City is developing a ShakeAlert portal, a technology developer program, and pilot programs that will integrate earthquake early warning technology into City systems.

This will allow the City to communicate quickly and directly to Angelenos through smartphones, desktops, and notification systems such as public address systems. Los Angeles has the highest concentration

of earthquake early warning sensors in the country, making the City an ideal site for pilot programs and attracting state and federal partners that continue to invest in the West Coast system as a whole.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

ITA / EMD / LADWP / LAWA / POLA / LAFD / LAPD / GSD / USGS / California Seismic Safety Commission / CalOES / Metro / LAUSD / Dr. Jones Center for Science & Society / Private-sector partners

### Shocks/Stresses

These icons represent the acute shocks and chronic stresses to which Los Angeles is susceptible. See pages 22-23 for a listing of all shocks and stresses along with their icons.

### Timeframe

The timeframe for implementing each action is identified as short term (five years or less), medium term (five to 10 years), or long term (more than 10 years).

### Partners

Implementation partners include key public, private, nonprofit, and civic collaborators that will advance *Resilient Los Angeles* actions in the years ahead. Partnership is not exclusive and is meant to be a starting point.





# SAFE AND THRIVING ANGELENOS



**GOAL 1:** Educate and engage Angelenos around risk reduction and preparedness so they can be self-sufficient for at least seven to 14 days after a major shock



**GOAL 2:** Develop additional pathways to employment and the delivery of financial literacy tools to support our most vulnerable Angelenos



**GOAL 3:** Cultivate leadership, stewardship, and equity with young Angelenos





## WHAT'S YOUR ROLE?

A resilient city begins with you. Each Angeleno has skills, talents, and passions that contribute to our thriving community. These skills are needed to prepare and plan for “blue-sky days” just as much as they are needed to respond and recover quickly when faced with a disruption or crisis. As we collectively work toward achieving a more resilient Los Angeles, we can all take action to strengthen our personal resilience and the resilience of those around us. Much like an oxygen mask on an airplane, the first step toward a more resilient city is increasing your own resilience so that you are better able to help others who may need your assistance.

Angelenos will face future challenges both known and new as we contend with a changing climate and the knowledge that it's not a matter of if but when a large earthquake will hit our region. By continuing to build resilience in our families and friends, our businesses, and our youth, Angelenos are strengthening the foundation of our city as a whole.

Simple actions we take now will increase our safety and security today while preparing us for the challenges of tomorrow. Angelenos will build personal resilience by staying healthy, connected, and financially secure and by investing in sustainable and resilient measures to make our homes and our workplaces stronger and safer. We will build community resilience by working with businesses and community organizations to provide critical services. We will strengthen our supply chains and train employees to be safe and prepared. We will build a more resilient future by teaching young people about local risks and vulnerabilities and empowering them to be innovative problem-solvers who will continue to tackle these challenges.

*A resilient Angeleno is capable of withstanding a crisis.*





# GOAL 1: EDUCATE AND ENGAGE ANGELENOS AROUND RISK REDUCTION AND PREPAREDNESS SO THEY CAN BE SELF-SUFFICIENT FOR AT LEAST SEVEN TO 14 DAYS AFTER A MAJOR SHOCK

## 1 LAUNCH A COORDINATED PREPAREDNESS CAMPAIGN THAT ENCOURAGES ANGELENOS TO TAKE ACTIONS THAT IMPROVE THEIR RESILIENCE

Consistent public education messaging and resources—coordinated by City departments, regional emergency management agencies, and preparedness organizations—will teach Angelenos how to protect themselves and their communities in advance of a crisis.

City departments, regional agencies, and nonprofit organizations provide emergency preparedness guidance to the public, such as direction to keep emergency supplies in their homes, businesses, and cars. This guidance is critical to helping Angelenos understand

actions they can take to be self-sufficient when critical services are disrupted after a hazardous event or disaster. Efforts will centralize and streamline existing preparedness campaigns and communications to reach more Angelenos with the most-up-to-date and consistent

information on risks, vulnerabilities, and emergency preparations. New technologies, including an earthquake early warning system, will be integral components of the coordinated outreach and education campaign.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

EMD / LADWP / POLA / LAWA / LAUSD / LACTD / County OEM / ARC / Schools and Universities / CalOES / USGS





## RESOURCES AND INCENTIVES TO BUILD RESILIENCE

The City and its partners currently provide resources and incentives that promote sustainable water and energy usage and reduce disaster risks. The resources and incentives include education, training, rebates, and giveaways.

### SEISMIC SAFETY THROUGH BRACE + BOLT GRANT PROGRAM

The State of California's Brace + Bolt grant program recently expanded to include additional ZIP codes in the Los Angeles area. These \$3,000 grants help to offset the costs of seismic retrofitting, including structural reinforcements like bracing and bolting that make buildings safer in the event of an earthquake.

### REDUCE WATER AND ENERGY USE THROUGH LADWP INCENTIVES

Los Angeles Department of Water and Power (LADWP) programs offer incentives to make homes and businesses more energy and water efficient. These actions achieve sustainable and resilient outcomes by conserving resources and reducing energy and water demand when LADWP resources may be constrained. Methods and available incentives for conserving and reusing water in homes and businesses include sustainable gardening techniques

for native and drought-tolerant species, efficient irrigation, rainwater capture and reuse, and local water efficiency ordinances. Los Angeles currently offers energy efficiency and solar incentives to help Angelenos reduce bills and save energy and is considering additional incentives to drive down the cost of installing new technology, such as energy storage.

### CULTIVATE THE CITY'S URBAN FOREST THROUGH CITY PLANTS

Angelenos are essential partners in growing and maintaining a healthy urban forest. To help establish and maintain healthy trees, the City partners with external organizations to educate residents and property owners about the health and economic benefits of trees. These organizations offer resources to assist with tree species selection, tree planting, maintenance, and appropriate water use. Education efforts highlight available City resources such as free shade trees offered through City Plants, which both plants and gives away over 15,000 trees per year.

### REDUCE WILDFIRE RISK THROUGH BRUSH CLEARANCE

The Los Angeles Fire Department (LAFD) works year-round with Angelenos to ensure hillside vegetation within 200 feet of any structure/building located within the Very High Fire Hazard Severity Zone is cleared. Brush clearance requirements and the inspection process for properties within this zone are provided by LAFD at local fire stations and online.

### ADVANCE EARTHQUAKE INSURANCE COVERAGE OPPORTUNITIES

The City will work with local, state, and federal partners to increase the number of properties covered by earthquake insurance. The City will use insurance coverage data to identify neighborhoods with coverage levels that are less than the average for California and target pilot programs and educational resources in these neighborhoods.

## LOW PARTICIPATION IN EARTHQUAKE INSURANCE

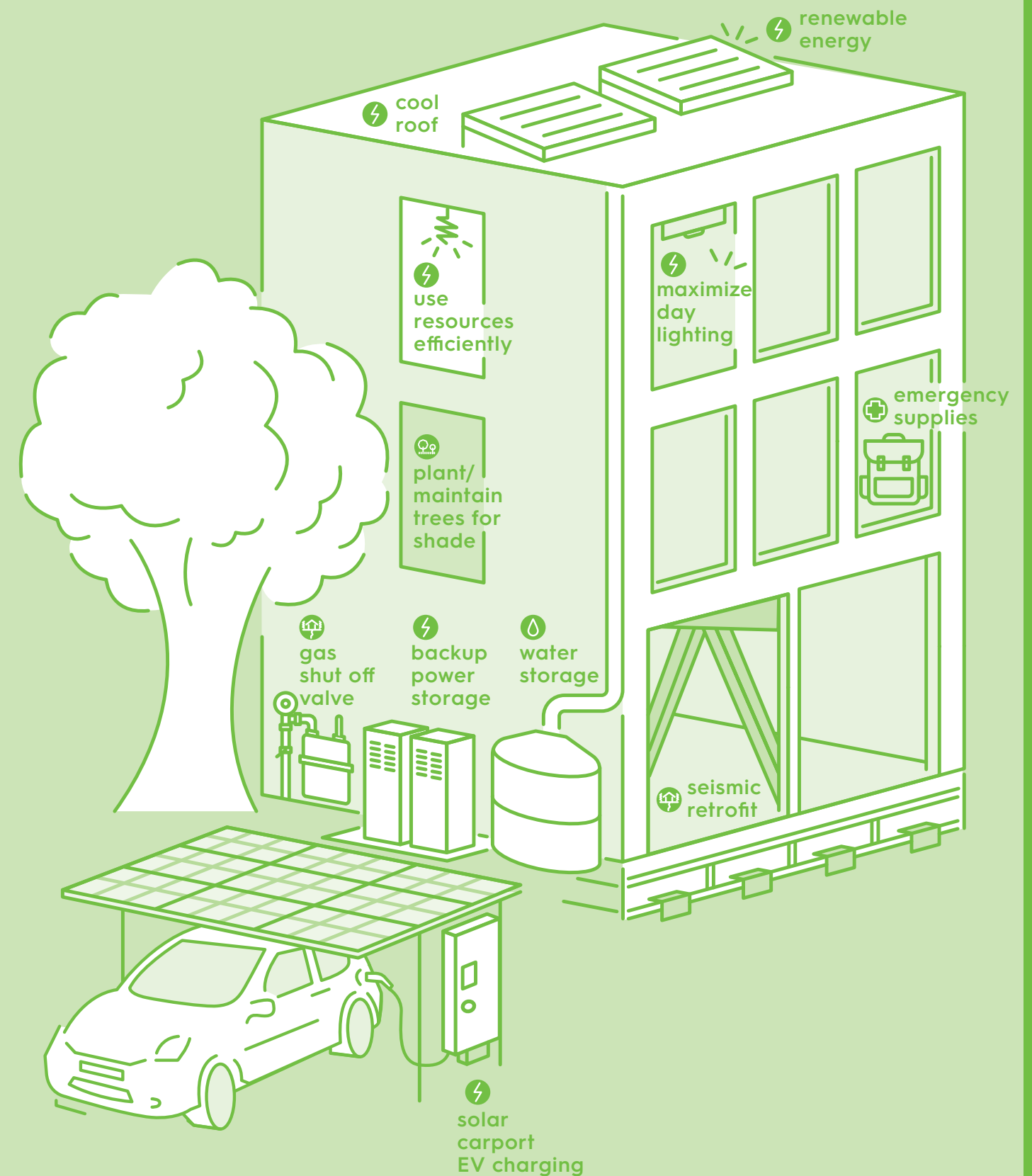
The 1994 Northridge earthquake dramatically affected California's earthquake insurance market. By January 1995, 93% of the California homeowners insurance market had canceled or restricted earthquake insurance policies for homeowners.<sup>19</sup> In response, the California Legislature formed the California Earthquake Authority in 1996, a consortium of 21 insurance companies that provide homeowner, condominium, mobile home, and renters insurance for earthquakes. In recent years, changes to earthquake insurance coverage have aimed to increase choices and participation, but earthquake insurance is perceived as expensive and participation remains low, indicating that there is still a long way to go in closing the coverage gap.

Currently, only about 10% of California residents have earthquake insurance. Coverage in the Los Angeles area is slightly higher, at approximately 16%.<sup>20</sup> By comparison, the New Zealand earthquake insurance market has approximately 95% participation, which proved fundamental to the ongoing recovery efforts in the city of Christchurch after it experienced a devastating magnitude 6.3 earthquake in 2011.<sup>21</sup> This event highlighted the gap between actual and perceived coverage in New Zealand, even with 95% participation.



Photo: Tim Clary | AFP | GettyImages

## RESILIENT BUILDING





## 2 EXPAND WORKFORCE PREPAREDNESS TRAINING OPPORTUNITIES AND PROGRAMS TO QUICKLY RESTORE ESSENTIAL CITY SERVICES AFTER A MAJOR SHOCK

A prepared and well-trained City workforce will be taught to incorporate resilience thinking into ongoing work to be better prepared to serve as Disaster Service Workers assisting Angelenos during interruptions, disasters, and crises.

With more than 45,000 employees, the City of Los Angeles is the third largest employer in Los Angeles County. In times of disaster, City employees are deployed as Disaster Service Workers (DSW), yet 40% of City employees are of retirement age and many live outside of the city or county. Compounding these issues, many City staff may not have received recent disaster preparedness training, and some may need to attend to their own families or damaged properties. In advance of a major disaster, it is essential to assess the risks and vulnerabilities that will likely impact this workforce's ability to support critical operations and recovery efforts.

To do so, the City will review existing practices, protocols, and lessons learned

from the 1994 Northridge earthquake. The City will also update and expand the existing DSW program to include City partners, contractors, and vendors where feasible. Ultimately, the efficacy and resilience of DSW relies on attention paid to changes in the City workforce, ensuring adequate participation and education levels to meaningfully support recovery efforts following a disaster.

**Transferring Institutional Knowledge**  
Like many organizations, the City of Los Angeles is predicted to experience a dramatic shift in its workforce as baby boomers continue to retire. A resilient and informed workforce understands a variety of City functions and is able to carry on

when employees retire or are unable to work in an emergency. The City is currently updating recruiting policies and programs to respond to this workforce shift, which will help attract and train new employees. For instance, in 2013, LADWP started the New Engineering Associate Training (NEAT)—a one-year, on-the-job training program in which new engineering associates learned about all major areas of the power system and received training in design, operations, and construction topics. Comprehensive training programs like NEAT pass on institutional knowledge and expose employees to the breadth of system functions. This transfer of institutional knowledge is essential for good day-to-day working practices, but becomes invaluable in a crisis.

**SHOCKS/STRESSES**

**TIMEFRAME**

**PARTNERS**

Personnel / EMD / City departments

## PULSEPOINT TECHNOLOGY FOR FIRST RESPONDERS

The LAFD has partnered with the PulsePoint Foundation and the Wireless Foundation to develop a life-saving emergency response smartphone app for Los Angeles. PulsePoint increases citizen awareness of cardiac events and recruits qualified Angelenos for potentially life-saving CPR. Targeted toward off-duty professionals and citizens trained in CPR, the PulsePoint app alerts users when a sudden cardiac arrest occurs in a nearby public place, directs them to the patient location, and provides CPR guidance while LAFD paramedic units are en route. This technology, paired with expanded CPR training for Angelenos, is one example of how Angelenos can support first responders with new technology and expanded training.

Outreach efforts will focus on expanding participation in neighborhoods with historically fewer trainings and resources. Partnerships with community groups and City departments will also increase access to training for teens. Teen CERT educates students about disaster preparedness for hazards that may impact their neighborhoods and trains them in basic disaster response skills. In turn, Teen CERT members are prepared to help themselves, their families, and their schools during a major disaster and when professional responders are delayed or not readily available. Teen CERT empowers students with decision-making and problem-solving skills and strategies to help make informed decisions regarding prevention-mitigation, preparedness, response, and recovery actions to reduce loss of life and property.



LAFD holds pre-game hands-only CPR event at Dodger Stadium  
Photo: LAFD Photo | Jeremy Oberstein

## 3 INCREASE THE NUMBER OF ANGELENOS WITH PREPAREDNESS RESOURCES AND TRAINING IN OUR MOST VULNERABLE COMMUNITIES

Expanded use of citywide technologies and tools, such as NotifyLA and CERT training, will help prepare more Angelenos to plan for and respond to an emergency and, in turn, also support fellow Angelenos and first responders.

**Connect more people to the NotifyLA alert system to receive emergency communications**  
The Emergency Management Department (EMD) will expand participation in the NotifyLA system through creative marketing, additional training, and supportive technical assistance opportunities that encourage more Angelenos to register their cell phones. The existing NotifyLA system is not automatic and requires

proactive participation by Angelenos. Partnerships led by EMD will increase the functionality of the service and allow the City to provide information and directions to assist more Angelenos during emergencies. For example, the technology can send evacuation orders to specific neighborhoods in the event of a wildfire or flood, or transmit a mass alert instructing residents to purify water after a major earthquake. These kinds of notifications

will help protect Angelenos when other communication tools may be unavailable.

**Expand Angelenos' ability to support first responders through technology and training**  
The City will collaborate with software developers, designers, and others to develop technologies such as smartphone apps, websites, and software that use the wealth of existing City data and mapping tools to support first responders.

**SHOCKS/STRESSES**

**TIMEFRAME**

**PARTNERS**

EMD / ITA / LAFD / LAPD / RAP / City departments / Preparedness organizations

## EXPAND THE NUMBER OF ANGELENOS WITH CERT TRAINING

Through public-private partnerships, pilots, and expanded training opportunities, the City will collaborate to make Community Emergency Response Team (CERT) training accessible to more Angelenos. By training to be CERT members, Angelenos can expand their own capacity to respond to an emergency. In 31 years, the LAFD has trained more than 70,000 Angelenos to be CERT members through instruction on basic first aid, evacuation tactics, and how to suppress small fires. Additionally, CERT members are trained in collaboration with City agencies to support neighborhood evacuations, search tactics, and communication skills such as the use of radios.





## THE ORIGINS OF CERT

The CERT program originated in Los Angeles over a quarter century ago and has since become a national model. The program originated in 1985 when a group of LAFD officials traveled to Japan to learn how the Japanese responded to disastrous earthquakes. The deadly Kyoto earthquake struck during their visit, and LAFD officials discovered firsthand that community members play a significant role in post-disaster support and response. Later that year, during a separate trip to Mexico in the wake of the 8.1-magnitude

Mexico City earthquake that killed more than 10,000 people, LAFD officials observed that untrained civilians became first responders when the quake struck, often digging with their bare hands to help free trapped victims. The following year, the LAFD created a pilot program to teach a core group of community members about basic fire suppression, first aid, search, and evacuation techniques. In 1993, CERT became part of the Federal Emergency Management Agency (FEMA) offerings to communities nationwide.<sup>22</sup>



## SOUTH LOS ANGELES TEEN CERT COLLABORATIVE

The South Los Angeles Teen CERT Collaborative has trained 500 youth volunteers in five years and has established a best-practice program that has been honored by the Obama administration. This program, which teaches the Five Cs—Commitment, Community, Collaboration, CPR, and CERT—is a best practice in integrating youth development and resilience-building.

## Safe and Thriving Angelenos

# 4 TEACH ANGELENOS HOW TO PROTECT THEMSELVES FROM CYBERATTACKS

**Partner with local, state, and federal experts to develop and promote cybersecurity education and awareness campaigns.**

Cyberattacks do not only affect large institutions; individuals can also be susceptible to cyberattacks. The City will produce a series of trainings that focus on basic steps individuals can take to improve online security. These steps include password improvement, multifactor authentication, use of free mobile security apps, safe browsing habits, and in-person verification for any email or other communication that asks for a transfer of funds. The Los Angeles region loses more than \$5 million per month to cyberattacks targeting

individuals and small businesses.<sup>23</sup> The City can significantly mitigate those losses by improving Angelenos' technological literacy and providing essential training in cybersecurity.

### Citywide Cybersecurity Awareness Training

More than 30,000 City employees, contractors, and student workers have access to City computer systems. The City will require all personnel with access to these systems to undergo an online cyber security awareness training program. This training will foster better awareness

of security protection and policies for computer users, educate users on best practices, and prevent the introduction of malicious intrusions into City computer systems. The training will include a basic series of required modules that can be supplemented by department heads with additional training based on the types of information handled by particular departments or employees. In the future, the City may require annual training to ensure that employees remain vigilant against cyberattacks and are kept up to date on the most current methods of protection.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

ITA / LAPD / DHS / Private sector

## TERRORISM AND CYBERSECURITY

Threats and acts of terrorism have far-reaching and deeply intimate impacts. They have increasingly disrupted places where we work, learn, and gather. The attack on public employees in nearby San Bernardino was one of the deadliest on U.S. soil since 9/11, leaving 14 people dead and 22 seriously injured. The preservation of civil rights and civil liberties is key to Los Angeles' approach to fighting terrorism. Early efforts by the Interagency Coordination Group, which included partners such as the Los Angeles County Sheriff's Department, Los Angeles Police Department (LAPD), and U.S. Department of Homeland Security (DHS), promoted an approach of building interagency trust

and developing strategies to formulate a "whole community" approach. The Los Angeles framework includes three pillars: prevention, intervention, and interdiction.<sup>24</sup>

The City also continues to strengthen defenses to cybersecurity threats. In 2013, the City created the Cyber Intrusion Command Center (CICC) to lead cybersecurity preparation and response across City departments. The CICC created the Integrated Security Operations Center as its security operations center and aggregated data from the City, proprietary departments, private vendors, and the FBI and other federal partners.



CERT teams participate in the Great ShakeOut earthquake drill  
Photo: Office of Mayor Garcetti



Photo: Office of Mayor Garcetti



## 5 GROW PARTNERSHIPS BETWEEN THE PUBLIC, PRIVATE, AND NONPROFIT SECTORS TO PROVIDE CRITICAL SERVICES TO VULNERABLE ANGELENOS IN TIMES OF CRISIS

The City will deepen private, nonprofit, and government partnerships to address the needs of all Angelenos, including the City’s most vulnerable—young people, the elderly, and those with medical needs—to ensure they are prepared for, and supported, following emergency situations.

The City will map key community services at the neighborhood level that can help Angelenos to identify where to turn in a crisis for additional support. The City will use data to grow partnerships with organizations that are poised to support the most vulnerable in the face

of a disaster. We will also focus on the senior populations by ensuring there are updated emergency preparedness plans at all community centers and increasing awareness of the Emergency Alert Response System, which provides seniors with assistance from a 24-hour emergency

response center. Finally, we will also leverage the Department on Disability’s (DOD) technical assistance program to ensure that all partner organizations incorporate accessibility plans for people with disabilities.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

EMD / EMD DAFN Subcommittee / DOD / DOA / CalOES / LA County OEM

## 6 INCREASE ACCESS TO EMERGENCY PREPAREDNESS AND MITIGATION RESOURCES FOR BUSINESSES

Foster private-sector investments in risk-reduction measures, particularly by local businesses, to address vulnerabilities and improve our ability to bounce back after a major disaster.

The City will expand partnerships with the private sector that increase business resilience by encouraging businesses of all sizes to better understand their risks and vulnerabilities and take simple actions to address them. When these businesses are able to bounce back after an interruption, they are better prepared to get employees back to work, serve their customers, and assist their neighbors in times of need.

The City will disseminate information by reaching out to the networks throughout local business communities, including chambers and associations, Business Source Centers, and Business Improvement District (BID) leaders to disseminate information about emergency preparedness, recovery planning, and supply-chain assessments. Business resilience requires the private sector to

look beyond individual preparedness to examine dependencies and interdependencies that prioritize telecom, utility, and suppliers that provide access to basic goods.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

EMD / EWDD / Business Operations Center / Local BIDs / Business chambers / Associations and local organizations / USGBC / LAFPC / ITA / LA CyberLab



## BUILDING RESILIENCE-LA: A PRIMER FOR FACILITIES

In 2016, the U.S. Green Building Council, Los Angeles Chapter (USGBC-LA) created “Building Resilience-LA: A Primer for Facilities.” This guidebook was written for owners and operators of buildings in our region who want to incorporate resilience into operations and maintenance activities over time. From emergency planning to community building, the guide provides a step-by-step process to prepare for disasters in ways that yield immediate benefits. The guidebook is available online at [www.resilience.la](http://www.resilience.la).

Mayor Eric Garcetti states, “Building Resilience-LA assembled a strong coalition with representation from academia, architecture, engineering, and community-based organizations. Its inclusion of social resilience has energized Los Angeles’ discussion of these pressing issues and promises to help our city ensure that our residents, businesses, and institutions can prepare for and respond

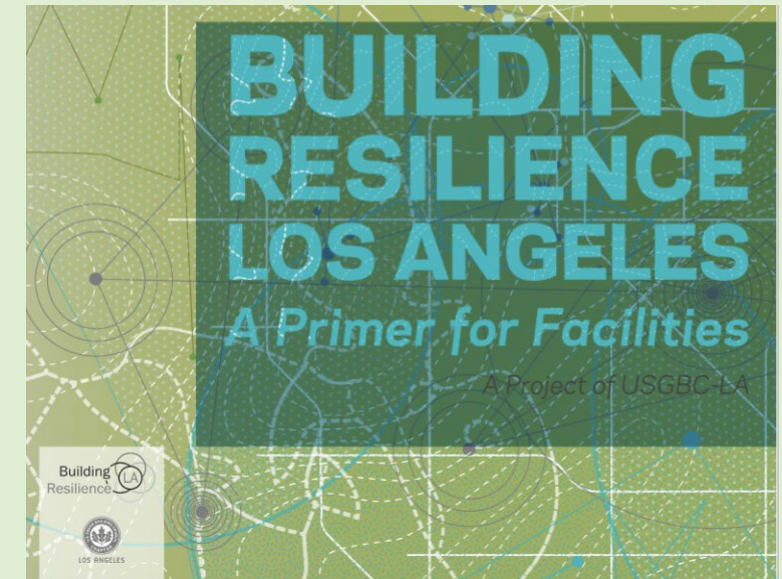


Photo: USGBC-LA

to earthquakes, the effects of climate change, and many other stressors with flexibility and equity. The City of Los Angeles is proud to be a part of

the Building Resilience-LA coalition. Its work will make Los Angeles a stronger, healthier, and more connected place to live.”

## 7 PROVIDE ANGELENOS ACCESS TO ADDITIONAL TRAUMA RESOURCES

The City will develop additional trauma resources for Angelenos to increase their ability to cope today and in the event of a catastrophic event.

The City will work with local universities and trauma experts, including the Mayor’s Crisis Response Team volunteers, to do outreach throughout Los Angeles to educate people, via the Community Resiliency Model (CRM), on such items as:

- Tracking the effect of trauma on the central nervous system.
- Sharing resources with others who have experienced trauma (family, friends,

and support systems, including religious organizations and victim services).

- Mindfulness-based behavioral therapy of grounding, which eases the effects of trauma on the individual and therefore the community in which they live.

The goal of CRM is to “help create ‘trauma-informed’ and ‘resiliency-focused communities.’”<sup>25</sup> In just a few hours,

participants can learn the three steps of CRM while also learning how to train others in the three-step resilience model. In addition, the City will hold an annual resource fair to distribute information about personal resilience-building tools, sustainable mental health treatment, and other City services available to community members to ensure they are connected to all available resources.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

Mayor’s Crisis Response Team / Headington Institute / EMD / LAFD / ARC / DMH / Academic partners



## 8 GROW PARTNERSHIPS THAT EXPAND SUPPORT FOR ANIMALS AFTER A MAJOR SHOCK

The City will promote technology and programs that will assist in the temporary sheltering and reunification of animals with their owners or natural environments.

By expanding partnerships with nonprofits and foundations, the City can work to develop programs that help locate and shelters animals before a disaster. As part of a disaster response plan, this effort will help the City and its partners protect animals and reunite pets with owners. The Department of Animal Services (DAS) aims to successfully reunite animals by using photos taken at the time of impound and

compare them with disaster records—both in physical and digital copies. The department also urges all pet owners to microchip their pets to streamline the reunification process. To activate facilities for the continued housing of displaced animals, shelters will determine their availability for intake and proceed accordingly. Further, remote shelters will be set up near the busiest evacuation centers, with

equestrian centers contacted for activation in coordination with the Los Angeles County Animal Control. These efforts will also seek to protect wild and exotic animals that could appear in urban areas by working with the California Department of Fish and Wildlife (CDFW), as well as coordinated response, including LAFD and the L.A. Zoo, to protect and evacuate L.A. Zoo animals.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

DAS / LA Zoo / EMD / LAFD / LA County Animal Control / CDFW / Animal protection organizations / Nonprofit organizations / Foundations



A horse is evacuated during the Creek Fire  
Photo: LAFD Photo | Greg Doyle



# GOAL 2: DEVELOP ADDITIONAL PATHWAYS TO EMPLOYMENT AND THE DELIVERY OF FINANCIAL LITERACY TOOLS TO SUPPORT OUR MOST VULNERABLE ANGELENOS

## 9 EXPAND ACCESS TO FINANCIAL LITERACY AND SECURITY RESOURCES FOR ALL ANGELENOS

Leverage existing workforce development, financial, and career coaching programs to provide Angelenos with the tools to be financially sustainable and to be able to withstand shocks and stresses.

Increased financial literacy and security for all Angelenos strengthens their ability to withstand a minor or major disruption without the need for immediate assistance. Angelenos' ability to maintain sufficient shelter, store food and water for a week, and miss multiple days of work depends on their ability to save enough to address these immediate needs.

The City is committed to assisting our most financially vulnerable Angelenos with targeted workforce development programs, financial coaching, job coaching, career pathway programs, and other supportive services that are provided at each of the City's 17 WorkSource Centers and through the network of community-based organizations. These education and training opportunities include job skills, technical

skills, management skills, and financial literacy to allow Angelenos to effectively leverage new and existing partnerships. The City will work with partners to further develop and coordinate opportunities to increase financial literacy and embed financial empowerment practices in other programs that will reach vulnerable and marginalized Angelenos.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

EWDD / Personnel / DOA / HCID / DOD / LAPL / WDB / CBOs / Financial institutions





## VENTANILLA DE ASESORÍA FINANCIERA PROGRAM

In 2016, the Ventanilla de Asesoría Financiera (Financial Empowerment Window) program was launched in partnership between the City of Los Angeles, the Consulate General of Mexico, Citi Foundation, and the Youth Policy Institute (YPI). The program provides free, culturally and linguistically competent financial counseling and education resources at the Consulate General of Mexico in Los Angeles. More than 17,000 Mexican Consulate visitors received financial education or financial coaching services at the Ventanilla de Asesoría Financiera

in the first 16 months of the program, in addition to gaining access to free tax preparation, matched savings accounts, and other financial empowerment services from YPI.

Learning from Ventanilla de Asesoría Financiera, the City will work with other partners to create and expand financial empowerment programs and services that assist immigrants in becoming more financially secure. This model is being replicated in other parts of the country as a way to integrate immigrants into the financial mainstream.



The fifth annual Teens Exploring Technology Hustle N' Code Hackathon  
Photo: Office of Mayor Garcetti



## ECONOMIC RESILIENCE

Quickly recovering from or adjusting to the impacts of a shock or stress requires economic means. Having a rainy day fund allows typical operations to continue when regular income is disrupted or decreased. This is the first step in being more economically resilient. An individual or family must have enough savings to weather unexpected expenses, such as emergency medical or legal fees, or a major economic event, such as the loss of a job.

A 2016 survey revealed that nearly 70% of Americans have less than \$1,000 in their savings accounts and 34% have no savings at all.<sup>27</sup> These statistics suggest that a large amount of work needs to be done to boost our economic resilience.<sup>28</sup>

Many individuals find it difficult to amass significant long-term savings given the city's high prices for basic necessities like housing, transportation, and food. Angelenos without savings are especially vulnerable to costly sources of short-term financial relief, such as high-interest predatory loans. This only compounds the effects of economic shocks and stresses by trapping borrowers in debt for years. It is important that Angelenos have the tools and opportunities to bolster their economic resilience to build financial security, literacy, and overall wealth. Economically stable and secure Angelenos are key to a more economically prosperous and resilient Los Angeles.

## 10 ESTABLISH A CAPITAL PROJECT PIPELINE THAT CREATES LIVING-WAGE JOBS FOR LOS ANGELES' MOST DISADVANTAGED

The region will work together to leverage once-in-a-generation investment in public infrastructure toward increasing jobs for Angelenos in neighborhoods that are disproportionately unemployed.

The unemployment rate in some Los Angeles neighborhoods is more than double the citywide unemployment rate.<sup>26</sup> Meanwhile, these neighborhoods are experiencing investments in transit, water and power infrastructure, sidewalks,

housing, and open spaces due to regional and city investments over the next 10 years. These public investments provide an opportunity to advance equitable outcomes through increased employment opportunities. The City will work with City

departments, regional partners, and private-sector partners to include local and targeted hire programs into these projects.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

EWDD / DOT / LADWP / RAP / LAWA / POLA / Metro / LA County

## 11 COLLABORATE WITH ANCHOR INSTITUTIONS TO TARGET INVESTMENT

Work with local institutions to develop policies that encourage local hiring, contracting, and procurement to ensure that economic opportunities generated by major employers are accessible to nearby communities.

To expand the economic opportunities accessible to local residents, the City will work with anchor institutions to advance policies and programs that both encourage and facilitate local hiring, contracting,

and procurement. Los Angeles is home to numerous world-renowned anchor institutions, such as universities and hospitals, that can significantly increase economic opportunities for neighboring communities

that surround them. For example, anchor institutions could increase local hiring while the City better aligns workforce training programs with the needs of these major employers.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

EWDD / Major employers and anchor institutions



## 12 INCREASE ACCESS TO FREE WI-FI TO HELP REDUCE TECHNOLOGY DISPARITIES

The City will partner with internet providers to expand Wi-Fi access to all Angelenos, with a focus on vulnerable populations.

In today's digital age, high-speed internet access is essential for Angelenos to communicate, make a living, and access critical emergency information before, during, and after a disaster. The Los Angeles Information Technology Agency (ITA) estimates that up to 30%

of Angelenos do not have access to high-speed internet.<sup>29</sup> The City will build on existing efforts that expand wireless internet access, with a focus on reaching vulnerable populations and developing applications for both everyday and post-disaster use. Expanded access will

target locations such as public libraries, bus shelters, streetlights, and publicly accessible cell phone kiosks, as well as areas that serve Angelenos experiencing homelessness.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

ITA / EMD / DPW / DOT / LAPL / Internet providers / Metro



Photo: Office of Mayor Garcetti



## RAISE THE WAGE LA

Beginning July 1, 2016, the minimum wage in the City of Los Angeles was raised to \$10.50 per hour and will continue to increase annually until it reaches \$15.00 per hour on July 1, 2021. The Office of Wage Standards (OWS) of the Bureau of Contract Administration is responsible for implementing and administering the guidelines of the Los Angeles Minimum Wage and Minimum Wage Enforcement Ordinances in the City of Los Angeles. The OWS ensures that employers in the city comply with the appropriate minimum-wage rates specified by the ordinance through community outreach and investigation of potential wage-theft violations.

## 13 IDENTIFY, CULTIVATE, AND INCUBATE HIGH-GROWTH SECTORS WHILE PROMOTING ECONOMIC MOBILITY

Grow promising new industries, while partnering with colleges and trade-oriented institutions, to skillfully train local labor to qualify for these fields.

To promote economic mobility for a greater number of Angelenos and align job training programs with the City's next wave of innovation, the Economic and Workforce Development Department (EWDD) will work with the Workforce Development Board (WDB) and economic development industry and workforce leaders to continue to identify policy tools

and training programs that can fuel the growth of promising new homegrown industries. This coordinated approach will ensure that the City's existing economic and workforce development programs stay ahead of the curve and that the economic returns from Los Angeles-based research and development flow back into our local communities. EWDD operates

17 WorkSource Centers and two portal offices, which provide free employment and training services to Angelenos, including specialized training to support high-growth industry sectors like bio-science and green technology. These centers will continue to adapt workforce skill-building while promoting equitable access for all Angelenos.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

EWDD / WDB / LAEDC / Universities / CBOs / Emerging industry leaders

## 14 EXPAND PARTNERSHIPS THAT ENCOURAGE REINTEGRATION AND SUCCESSFUL REENTRY OF PREVIOUSLY INCARCERATED INDIVIDUALS

Continue to develop resources and partnerships to reverse the cycles of long-term unemployment, instability, and displacement that grip the formerly incarcerated community.

Each year, more than 45,000 people are paroled to Los Angeles County and over 163,000 individuals pass through the County Jail system. The majority of these individuals return to the City of Los Angeles, and research shows that up to 70% of formerly incarcerated individuals identify employment as their biggest hurdle to successful reentry. A recent study

estimated that between 85% and 89% of formerly incarcerated individuals are unemployed at any given time.<sup>30</sup> However, formerly incarcerated individuals are much less likely to return to jail if they obtain employment. The recidivism rate in California plummets from 65% to as low as 3% when formerly incarcerated individuals are paired with jobs soon after

release. The City will continue to work with partners to reduce the barriers to successful reentry by expanding resources and job opportunities. The City's current transitional employment program for formerly incarcerated individuals has a recidivism rate of just 1.5%.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

City departments / Caltrans / Board of State and Community Corrections / Loyola Law School



## GOAL 3: CULTIVATE LEADERSHIP, STEWARDSHIP, AND EQUITY WITH YOUNG ANGELENOS

### 15 BUILD PARTNERSHIPS THAT STRENGTHEN THE EDUCATION-TO-CAREER PIPELINE

Expand partnerships to prepare more young Angelenos to succeed in postsecondary education, ultimately connecting them to career opportunities.

Beginning fall 2017, the Los Angeles College Promise will increase the number of community college graduates and promote economic mobility by preparing more young Angelenos for quality jobs. L.A. College Promise will cover one year of tuition for Los Angeles Unified School District (LAUSD) and charter school graduates at nine Los Angeles Community College District (LACCD) colleges. It will also provide these students

with academic and student support services—such as career coaching and mentorship opportunities—to help them complete their education. In addition, HIRE L.A.’s Youth initiative will expand to connect 20,000 young Angelenos with summer internships or year-round, full-time employment by 2020, up from 15,000 in 2017. This partnership among the City, local schools, workforce development programs, community colleges, and

community-based organizations provides workforce training and other job preparation services and then links youth with local employment opportunities. The City will work to expand opportunities for young people in promising careers related to resilience by seeking additional partnerships with employers in fields such as clean technology and community preparedness.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

LAUSD / EWDD / City departments / WDB / LACCD / LA Area Chamber of Commerce / Local businesses / UNITE LA / Private philanthropy

### 16 STRENGTHEN OPPORTUNITIES FOR YOUNG ANGELENOS TO CONNECT WITH CIVIC LEADERSHIP PROGRAMS

Double the number of young people participating in civic opportunities by working with partners to expand civic engagement programs.

The City of Los Angeles works with thousands of young people each year through myriad programs supported by the Mayor’s Office and City departments with support from additional partners. These programs provide young Angelenos with opportunities for civic engagement, leadership development, as well as exposure to career and mentor opportunities. These and other programs should be available to any young Angelenos who are interested in participating.

#### MAYOR’S YOUTH COUNCIL

The Mayor’s Youth Council is a one-year program for Los Angeles high school students designed to promote civic engagement and inspire the next generation of civic leaders. The Youth Council empowers members to advocate for causes important to their communities and elevate their voices in City Hall. Topics include civic leadership, community landscaping, grass-roots organizing, civic engagement at the college level, public speaking, professional development, and community service.

#### CIVIC UNIVERSITY

A program offered by Cal State LA’s College of Professional and Global Education, in partnership with the Mayor’s Office and the Mayor’s Youth Council, Civic University aims to increase Angelenos’ understanding of how their local government system works in support of building a well-informed and engaged civic community.

#### NEIGHBORHOOD COUNCIL CIVIC YOUTH LEADERSHIP ACADEMY

The City’s Department of Neighborhood Empowerment offers a leadership program designed for youth and

young adults aged 14 to 24, called the Neighborhood Council Civic Youth Leadership Academy. Classes are held over the summer and culminate in a community civil-engagement project.

#### SUMMER NIGHT LIGHTS AND FALL FRIDAY NIGHTS

The Summer Night Lights (SNL) program is a public and private partnership led by the City of Los Angeles Mayor’s Office of Gang Reduction & Youth Development (GRYD) and The GRYD Foundation. Summer Night Lights is part of the GRYD Comprehensive Strategy, which is dedicated to diminishing the influence of gangs and gang violence. SNL operates at 32 park locations across the City of Los Angeles, keeping recreation centers and parks open and adding extended programming between the hours of 7 p.m. and 11 p.m. during the summer. With the assistance of Youth Squad members, SNL expands the typical menu of activities at each site, offering sports, art, recreational activities, resource fairs, health screenings, workshops, jobs, and connections to resources that residents can use year-round. From September to November, Fall Friday Nights extends the SNL services at select locations.

#### LOS ANGELES FIRE DEPARTMENT GIRLS CAMP

Girls ages 14 through 18 are invited to explore the possibility of a future career with the LAFD. Led by active-duty LAFD female firefighters and cadets, this two-day program includes hands-on activities with firefighting tools and equipment and offers the chance to learn about firefighting as a career.

#### LOS ANGELES FIRE DEPARTMENT YOUTH ACADEMY AND CADET PROGRAM

The Fire Instruction Recruitment and Education (F.I.R.E.) program introduces firefighting as a career option for young Angelenos and has grown to include four High School Fire Academies from East Los Angeles, West Los Angeles, San Pedro, and the Valley. Students learn about basic engine company operation and equipment, basic truck company operations, and truck tools and equipment. The next step in the learning process is the Fire Cadet Program, which teaches young men and women about firefighting and emergency medical services as potential career paths.

#### LOS ANGELES POLICE DEPARTMENT PROGRAMS

The LAPD operates a number of programs aimed at engaging and enriching youth and community relationship-building. The largest of these programs is the LAPD Cadet program, which is designed to offer youth an opportunity to develop skills that will help them throughout their lives while working with the LAPD. The program is offered at each of the 21 community police stations across the City, as well as at seven specialized divisions. The Police Orientation and Preparation Program, Police Activity League, and Police Academy Magnet School Program are similar programs focused on various aspects of youth crime prevention that rely on educational, athletic, and other recreational activities to cement a bond between police officers and the youth in our community.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

Mayor’s Youth Council / DONE / LAPD / LAFD / RAP / GRYD Foundation / MFLA / City departments / LAUSD / Academic partners / Community partners





## 17 INCREASE ECONOMIC OPPORTUNITIES BY GENERATING AWARENESS AND USE OF CITY PROGRAMS AND SERVICES THAT REDUCE VIOLENCE

The City will leverage and enhance the existing Gang Reduction Youth Development (GRYD) model to train outreach staff to provide targeted engagement around public safety and service needs in communities most impacted by crime or that commonly face barriers to employment.

The GRYD model is a comprehensive strategy that involves the provision of prevention services, gang-intervention services, violence-interruption activities, and involvement in proactive peacemaking activities that together strengthen young Angelenos, their families, and their communities, resilience to the influence of gangs.

The GRYD SNL and Fall Friday Night (FFN) programs keep City recreation centers and parks open with extended programming into the evenings during the summer and fall. A core component to these programs are the Youth Squad members, who engage with the community all

through programming throughout the summer. Recently, the Youth Squad 360 program has supported Youth Squad members as they pursue their educational and career goals through job readiness training and financial empowerment. The objective of our Youth Squad 360 Initiative is to help current and former Youth Squad members achieve long-term stability and success at home, at school, and in the workplace. There is an opportunity to expand job-readiness training with financial empowerment tools from the Youth Squad 360 program to the greater GRYD community.

At the same time, the City is focused on reducing gun violence through partnerships and gun buyback programs. To expand gun violence prevention, education, and outreach efforts to children, youth, and their families, the City will partner with the LAUSD and other public and private organizations. This comprehensive partnership will combine educational and outreach programs, training, increased prevention and intervention strategies, and expanded gun buybacks and other programs that remove unwanted or illegal guns from homes and the streets.

**SHOCKS/STRESSES**

**TIMEFRAME**  
 Short Term

**PARTNERS**  
GRYD prevention and intervention agencies / RAP / LAUSD

## 18 DEPLOY EMPLOYMENT DEVELOPMENT PROGRAMS AND PARTNERSHIPS TO PREVENT AND REDUCE YOUTH HOMELESSNESS

The City will continue to identify new workforce program opportunities and expand existing workforce development programs serving youth who are homeless or at risk for homelessness.

The City will continue to expand its programs that provide workforce training, employment opportunities, and financial literacy to homeless youth and those who are at risk. These programs include the City YouthSource Centers, the Los Angeles Regional Initiative for Social Enterprise (L.A. RISE), Hire L.A., the Summer Youth Employment Program, and the L.A. Cadet program.

According to national data, between 31% and 46% of youth who exit foster care experience homelessness at least once by age 26.<sup>31</sup> Foster youth who are at the age to transition out of foster care, and under the supervision of the County Department of Children and Family Services or Probation Department, will not be discharged without a housing option. However, foster youth are not tracked

after they exit the foster care system—and if a youth's location is unknown after discharge, their case is terminated. While L.A. County predominantly serves foster youth, the City also will monitor County strategies to reduce homelessness for individuals formerly in foster care and explore opportunities for the City to partner with the County to support this work.

**SHOCKS/STRESSES**

**TIMEFRAME**  
 Short Term

**PARTNERS**  
LAHSA / EWDD / LAPD / RAP / LA County / CBOs



Photo: Office of Mayor Garcetti

### GUN BUYBACK PROGRAM

The City has committed to expanding its gun violence prevention initiatives, and have set a new goal—to take at least 25,000 guns off the streets of Los Angeles over the next five years. The City will make this happen through a number of measures—including expansion of the City's long-running gun buyback program via partnerships with non-profit organizations such as GunXGun, which will crowdsource additional support for buyback efforts—and supporting expansion and development of the LAPD's Crime Gun Intelligence Center, which was created through a \$1 million federal grant. The Center will allow the City to coordinate local and federal resources to get more guns off the streets of Los Angeles.





## 19 WORK WITH YOUNG ANGELENOS TO REDUCE CRIME AND VIOLENCE, ESPECIALLY WHERE TEENS AND YOUTH ARE VICTIMS

The City will strengthen support for programs that engage young Angelenos in promoting awareness of teen and youth safety.

Using a combination of expanded services, increased training, and targeted awareness campaigns, the City will work to reinforce strategies aimed at reducing crime and violence, particularly against youth and teenage victims. By engaging service providers, government partners, law enforcement, schools, community based organizations, and others, the City will bolster community discussions that engage youth leaders and adult supporters to unite against teen and youth violence.

The City's GRYD program has been laser focused on strengthening youth, family, and community resiliency to the influence of gangs by fostering public-private collaborations and supporting community-based prevention, intervention and

juvenile reentry services. In 2017 GRYD reduced Gang-Related Violent Crime in its target areas by nearly 10%, and GRYD Incident Response prevented an estimated 185 gang-related violent crimes over a two-year period, including an estimated 10 fewer homicides. The City will continue to refine and target GRYD's efforts to promote youth safety across impacted communities citywide.

These efforts will also include citywide expansion of first responder training in identifying and providing support to commercially sexually exploited children and victims of domestic violence, and community outreach that raises public awareness around teen dating violence and child trafficking.

The National Human Trafficking Resource Center lists California as the state with the highest number of reported sex-trafficking victims, with 682 cases reported in 2017. In 2018, the City's Commission on the Status of Women and the Mayor's Office jointly launched a media campaign "Look Again," which seeks to raise awareness and educate the public on child sex trafficking/human trafficking. Developed in partnership with the LAPD, TBW/Chiat/Day, and others, the campaign included a PSA feature at Los Angeles World Airports, posters on exteriors of DASH and Metro buses; and an agreement with Regal Cinemas to feature the PSA in theaters in Los Angeles.

### SHOCKS/STRESSES



### TIMEFRAME



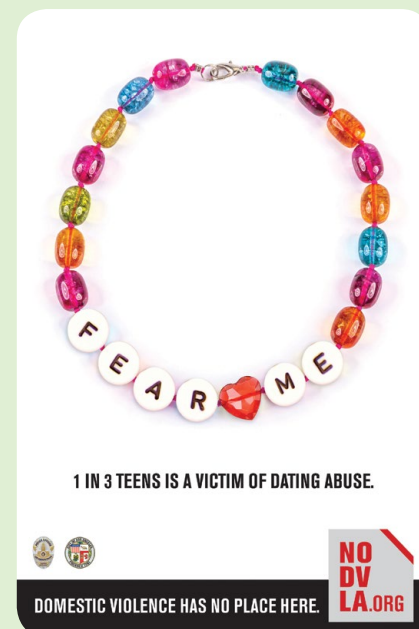
### PARTNERS

Peace Over Violence (Youth Over Violence) / LAPD / LA City Attorney's Office / LAUSD / private-sector media partners / Commission on the Status of Women / City departments

## DOMESTIC VIOLENCE HAS NO PLACE HERE

One in three teens is a victim of dating abuse. To promote teen dating violence awareness, the Mayor's Office and the advertising agency Quigley-Simpson joined forces on a Valentine's Day-inspired public education campaign titled Domestic Violence Has No Place Here. The campaign was developed in observance of National Teen Dating Violence Awareness Month, with feedback from domestic violence community service

providers and stakeholders. It featured provocative statements such as "I Own You," "Fear Me," and "Without Me You Are Nothing" printed in English and Spanish on bus benches and bus shelters citywide. These ads inform the public of domestic violence statistics as well as sharing information about the Mayor's Office domestic violence awareness campaign website, [www.NoDVLA.org](http://www.NoDVLA.org).



## 20 DEVELOP THE NEXT GENERATION OF STEWARDS OF LOS ANGELES TO BE LEADERS IN CLIMATE AND DISASTER RESILIENCE

Working closely with the Los Angeles Unified School District (LAUSD) and other partners, the City will develop and implement programs that educate young Angelenos about new and increasing risks and vulnerabilities they face and empower them to find the best solutions.

The City will continue to support and collaborate with LAUSD and other educational partners to promote initiatives that increase the awareness of resilience challenges—including climate resilience, conservation, disaster resilience, public health and safety, and equity—while

building students' skills in science, technology, and other fields critical to addressing these challenges. For example, by learning about earthquakes and our water and energy systems, students can take action by participating in the newest science research or conserving

both energy and water every day. Future collaborations may also include increased civic responsibility and public safety, including preparedness and injury prevention education as well as developing innovations that address mitigation, response, and recovery.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAUSD / LAFD / EMD / LADWP / BOS / DCP / RAP / LADPH / External partners and funders



Citizens build a seismic sensor as part of a Risk Lab workshop in Cypress Park  
Photo: Pacifico and CALTECH Community Seismic Network

## RISK LABS

In 2016, the Mayor's Office, Caltech, Dr. Lucy Jones, Pacifico, and Mujeres de la Tierra held the first Los Angeles Risk Lab in Cypress Park. The lab focused on understanding seismic risks through science experiments and expert discussions. The City will look for opportunities to partner on future labs addressing additional risks, including increased heat, drought, or sea level rise.





# STRONGER AND CONNECTED NEIGHBORHOODS



**GOAL 4:** Build social cohesion and increase preparedness through community collaboration



**GOAL 5:** Increase programs and partnerships that foster welcoming neighborhoods



**GOAL 6:** Prepare and protect those most vulnerable to increasing extreme heat



**GOAL 7:** Reduce health and wellness disparities across neighborhoods





## DO YOU KNOW YOUR NEIGHBORS?

One-third of Americans say they've never interacted with the people living next door.<sup>32</sup> If you haven't met your neighbor, what are you waiting for? Building strong and connected neighborhoods starts with you. There are a number of ways to meet and collaborate with your neighbors, and many are highlighted in this chapter.

Because Los Angeles is nearly 500 square miles, with a landscape that spans beaches and mountain ranges, no two neighborhoods have the same risks, vulnerabilities, or opportunities. In Los Angeles, one size does not fit all. We must work together to identify the greatest shocks and stresses within each neighborhood. Some of these risks include sea level rise in Venice, wildfires in Chatsworth, landslides in Hollywood, power outages in San Pedro, and increasing extreme heat in El Sereno.

Disparities in health, wealth, and access to goods and services exist in far too many of our neighborhoods. Addressing inequality through inclusive policies, programs, and practices—and working with trusted community partners—will increase neighborhood-based resources and stewardship, ultimately creating greater social cohesion.

*A resilient neighborhood adapts to change.*





## GOAL 4: BUILD SOCIAL COHESION AND INCREASE PREPAREDNESS THROUGH COMMUNITY COLLABORATION

### 21 INTEGRATE RESILIENCE INTO COMMUNITY PLAN UPDATES BY INCLUDING A RISK AND VULNERABILITY ANALYSIS WITH POLICIES AND IMPLEMENTATION MEASURES THAT ADDRESS EACH NEIGHBORHOOD

Engage with neighborhoods through the Community Plan updates to evaluate community-specific assets, risks, and vulnerabilities and develop tailored, neighborhood-scale resilience priorities to inform key policy and implementation decisions.

The City of Los Angeles will be working to update all 35 Community Plans by 2024. Through the Community Plans update process, the City will work with communities to incorporate principles that address the most prevalent risks

in each area. By integrating risk and vulnerability assessments—as well as specific neighborhood-scale resilience strategies—into existing community planning processes, we can provide the long-range planning needed to address

each neighborhood's individual challenges and opportunities. No two neighborhoods in Los Angeles are alike, and addressing specific assets, risks, and vulnerabilities will make communities even stronger.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

DCP / DONE / EMD /  
Neighborhood councils / Small businesses /  
Faith-based organizations

Photo: HR&A Advisors



Photo: Department of City Planning



## 22 CONNECT COMMUNITY ORGANIZATIONS WITH EXPERTS AND RESOURCES TO GUIDE AND EFFICIENTLY SUPPORT THE DEVELOPMENT OF NEIGHBORHOOD RESILIENCE HUBS

The City will provide tools and networks to encourage the creation of Neighborhood Resilience Hubs by streamlining regulatory and policy processes and by connecting organizations with partners that can provide guidance, technical assistance, and financial capacity.

Neighborhood Resilience Hubs are physical spaces, housed within trusted community organizations, that facilitate social and climate resilience along with disaster preparedness and recovery. Ultimately, Hubs will play a critical role in addressing chronic community stressors during blue-sky days as well as in facilitating emergency response and recovery in times of crisis.

Chosen for their ease of accessibility by biking or walking and for their capacity to reach vulnerable populations, Hubs will be fortified with the most up-to-date electricity, water, communications, and seismic technologies to ensure that critical services are maintained during and after a disaster. This will allow Hubs to facilitate disaster response and recovery efforts. On an everyday basis, Hubs will also foster social cohesion while addressing chronic community stressors through outreach, education, and connections to existing social and environmental stewardship programs and services.

### KEY ELEMENTS OF NEIGHBORHOOD RESILIENCE HUBS

#### Create a Hub Planning Toolkit

The City will connect with known and trusted community organizations that people are most likely to turn to in times of crisis or disaster. The City will support these trusted organizations in identifying tools and resources necessary to launch Neighborhood Resilience Hubs. For example, a Hub Planning Toolkit will

include best practices and key elements of hub planning and engagement, with suggestions for fostering community-led discussions around risk and vulnerability, prioritization of programmatic elements, and ongoing operations and management.

#### Create an Online Resilience Resource Hub

A website will provide resilience-related information from the City and its partners—such as disaster preparedness tips and links to workforce development programs—so that all Angelenos can access the variety of social services already provided by agencies and organizations across Los Angeles. The Online Hub will also be a forum through which physical hubs can forge partnerships with other existing organizations, allowing service providers to more effectively reach Angelenos with the greatest need.

#### Establish Neighborhood Resilience Hubs Advisory Group

The advisory group will be a collaborative outreach effort between nonprofit partners and representatives from City departments.

#### Support Neighborhood Resilience Hub Pilots

The City will work to expand public-private partnerships and educational opportunities that support pilot programs and demonstration projects. Collaborative partners will include community organizations such as Strategic Concepts in Organizing and Policy Education (SCOPE), the U.S. Green Building Council—Los Angeles Chapter (USGBC-LA), Global Green, and others who are pioneering hubs in Los Angeles.

#### Compile Available Public and Private Funding Sources

The City and its partners will highlight available public and private funding sources while articulating expected funding gaps.

### SHOCKS/STRESSES



### TIMEFRAME



Long Term

### PARTNERS

Neighborhood Councils /  
Community organizations / Tenant groups /  
Faith-based organizations / City departments



Emerging nodes of neighborhood resilience before, during, and after a crisis that provide a gathering place for tools and training, supplies and communication facilitation, and ultimately facilitate faster recovery through city and community relationships.



## 23 LAUNCH THE CAMPUS RESILIENCE CHALLENGE

Promote and encourage innovative actions that advance physical resilience and social cohesion by engaging local institutional partners.

Los Angeles is home to numerous world-renowned institutions, including universities, hospitals, and film studios, that are well-positioned to be leaders and role models in resilience because of their size and impact on surrounding communities. Building on existing efforts with California State University, Los Angeles; California State University, Northridge; University of California, Los Angeles (UCLA); and others, the City will

partner with these academic institutions to develop and launch a Campus Resilience Challenge. Participants will participate in a Campus Resilience advisory group, share training and resilience planning and implementation resources, and receive recognition from the City. Many of these institutions have already signed Second Nature's Climate Commitment to carbon neutrality and resilience. The Challenge will first be offered to universities and

colleges and then be extended to other academic institutions and private-sector campuses. By convening major institutions and promoting idea-sharing, the Campus Resilience Challenge will encourage innovations in community resilience-building while establishing a network of institutions that can communicate resilience awareness to surrounding neighborhoods.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

Academic and private-sector campuses / City departments

## 24 PROMOTE NEIGHBORHOOD PLANNING PROGRAMS TO SUPPORT ALL LOS ANGELES NEIGHBORHOODS IN DEVELOPING PREPAREDNESS PLANS

Encourage community-level stewardship and resilience by publicizing and disseminating program materials that will help neighborhoods develop plans and strategies that increase neighborhood disaster readiness and resilience.

Neighbors rely on one another in times of crisis. Since we know it is a matter of when, not if a disaster will strike, it is essential that every Los Angeles neighborhood has a plan in place to prepare for and recover from an emergency.

There are many types of neighborhood planning programs—provided both by the City and community preparedness organizations—each tailored to time, capacity, and subject matter.

Using any process available, Angelenos must understand the resources they can use to adapt and respond to risk. Mapped assets may be physical, such as parks and buildings; social, such as community groups; and human, such as residents or employees.

**SHOCKS/STRESSES**



**TIMEFRAME**



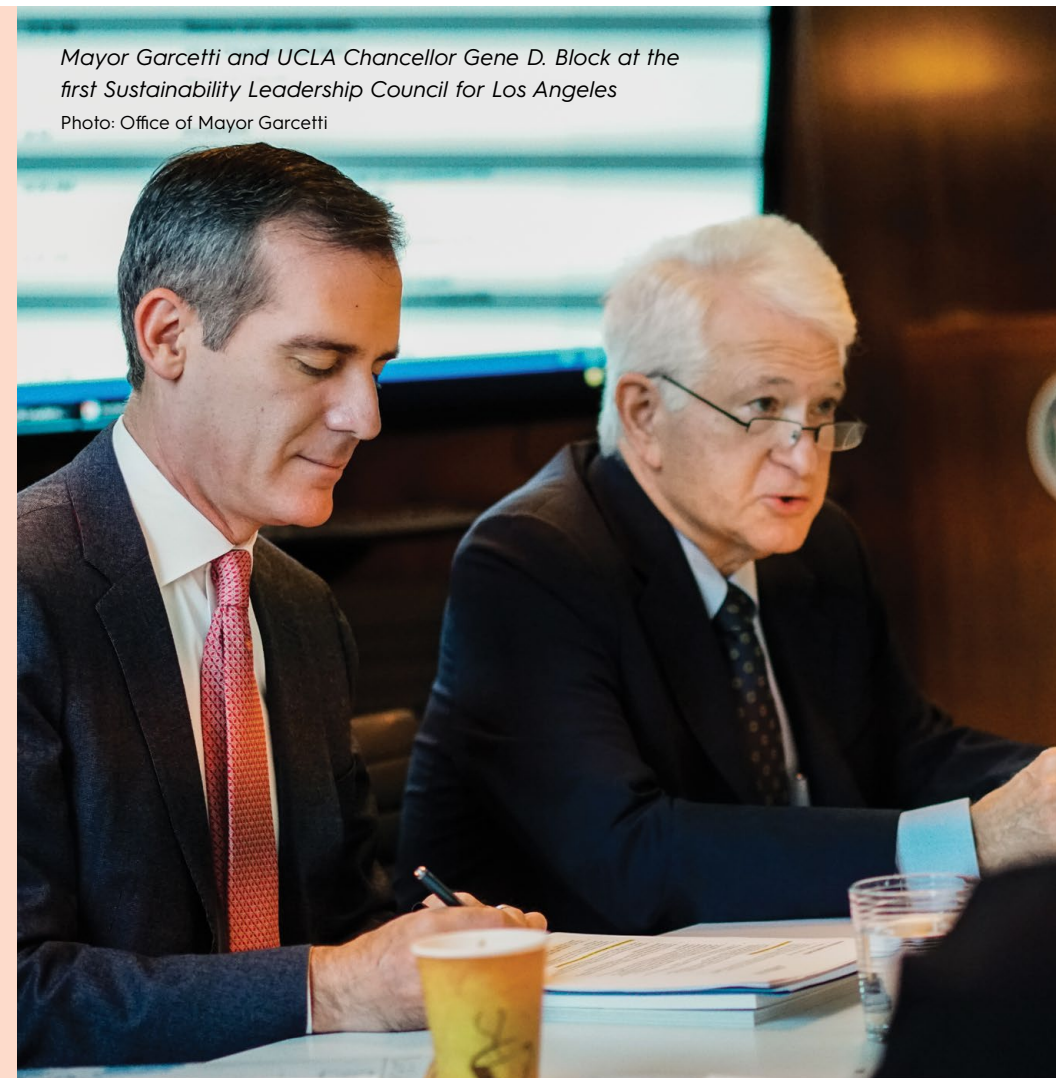
**PARTNERS**

Neighborhood councils / DONE / EMD / ARC / Cool Blocks



### SUSTAINABLE LA GRAND CHALLENGE

UCLA is collaborating with the City of L.A. through the Sustainable L.A. Grand Challenge, which brings together cross-disciplinary faculty and researchers with the goal of transitioning the Los Angeles region to 100% renewable energy, 100% local water, and an enhanced ecosystem and human health by 2050.



Mayor Garcetti and UCLA Chancellor Gene D. Block at the first Sustainability Leadership Council for Los Angeles  
Photo: Office of Mayor Garcetti

Photo: Tyler Lowmiller



### PLANNING FOR NEIGHBORHOOD PREPAREDNESS

#### READY YOUR L.A. NEIGHBORHOOD (RYLAN)

The City of Los Angeles is developing a neighborhood disaster planning toolkit that builds on the City's existing five steps to neighborhood resilience planning. Neighborhoods can increase their preparedness and neighborhood coordination by defining the area, recruiting leaders, analyzing specific risks and vulnerabilities, building a team, and developing a plan. The updated toolkit will be available in spring 2018.

#### COOL BLOCKS

Cool Blocks is an action-based program that informs Angelenos of actions they can take to improve disaster preparedness, adopt water stewardship practices, and reduce their carbon footprints. The Neighborhood Council Sustainability Alliance has partnered with the City of Los Angeles and the Empowerment Institute on a Cool Blocks pilot program in Los Angeles neighborhoods.

#### PREPARE LA

The American Red Cross of Southern California is conducting a multiyear planning effort with neighborhoods in Los Angeles to support community leaders in developing resilience plans. Participating neighborhoods include Koreatown, Van Nuys, Westlake, Pico-Union, Pacoima, and South Los Angeles.







# 25 INCREASE NEIGHBORHOOD OUTREACH AND EDUCATION AROUND WILDFIRE AND MUDSLIDE RISK REDUCTION IN OUR MOST VULNERABLE NEIGHBORHOODS

In partnership with Neighborhood Councils and CERT teams, the City will expand outreach and education focusing on areas most vulnerable to wildfire and mudslides.

The Los Angeles Fire Department (LAFD) has a number of existing programs that help educate Angelenos on reducing fire and flood risks, including Brush Clearance; Ready, Set, Go!; and The Nine Steps to Flood Recovery. Through a coordinated multi-departmental effort and in partnership with Neighborhood Councils and CERT teams, the City will expand

outreach and education in communities with high fire-hazard risk, including areas with steep topography or located at the wildland-urban interface. Educational efforts will focus on ways to reduce fire risk and how to respond when a fire or mudslide does occur to help communities stay safe and ensure that firefighters can focus resources on preventing loss of

lives and damage to property. Increasing community-level knowledge around wildfire and mudslide risk will help build capacity within neighborhoods to protect against and be prepared for these events, including proactive risk reduction, evacuation, response, and recovery actions.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAFD / EMD / LADWP / LADBS / Neighborhood Councils / CERT Teams

## FIRE RISK

In 2017, Los Angeles County faced six large fires—defined by the California Department of Forestry and Fire Protection (CalFire) as those greater than or equal to 300 burned acres—including the Lake, Placerita, La Tuna, Rye, Creek, and Skirball fires. These fires alone burned more than 30,000 acres of both urban and wildland, destroying or damaging nearly 250 structures, contributing to California's worst fire season in recorded history.<sup>33</sup>

As Los Angeles' Mediterranean climate—characterized by dry summers and seasonal winter rain—adjusts to a new normal in the face of climate change, longer and hotter periods of drought followed by heavy rains will intensify the existing conditions for wildfires. These climatic factors are further exacerbated by Los Angeles' hilly and peri-urban terrains, which, while often attractive for residential uses, are at risk of overcrowding as the population grows.

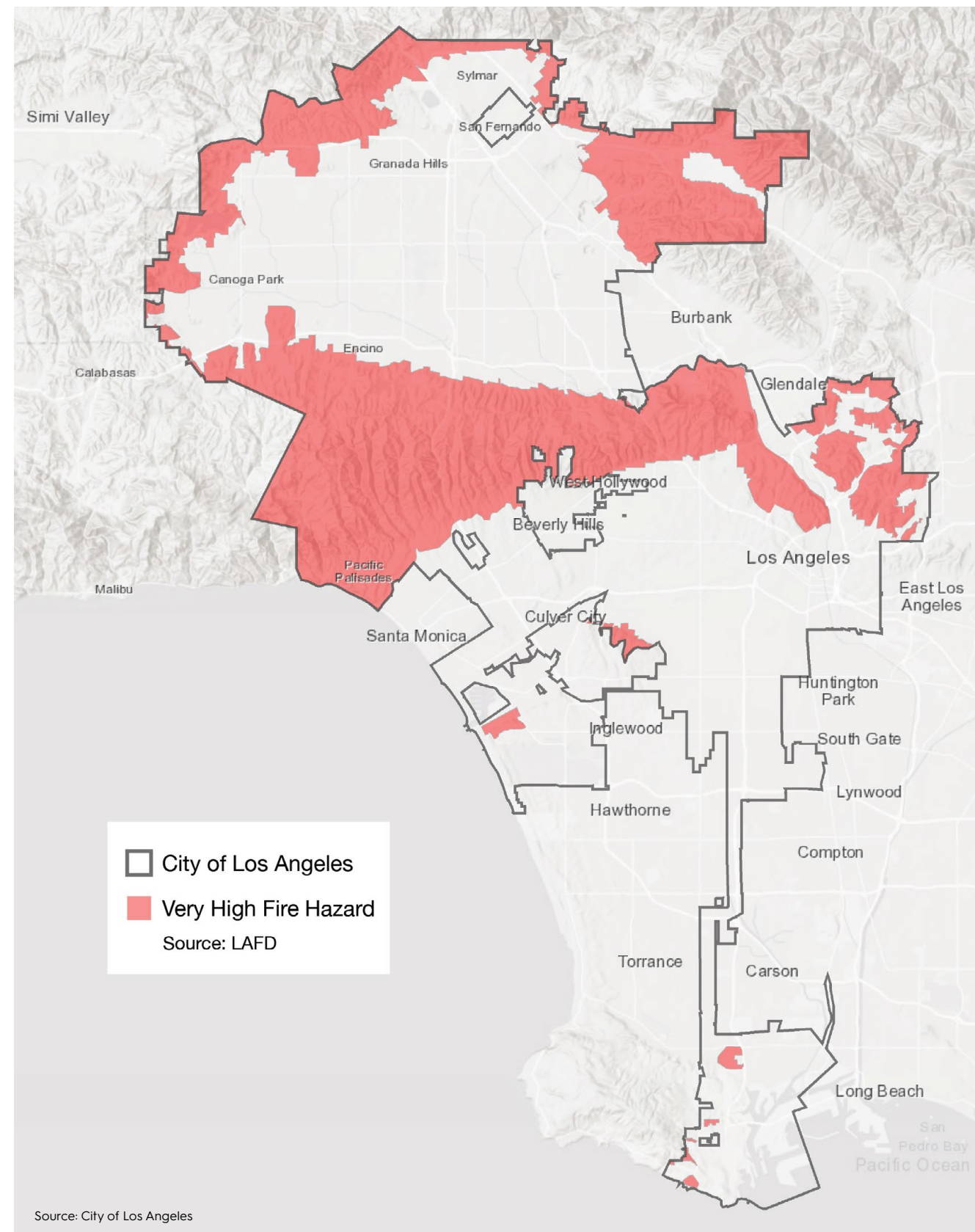
As a consequence of these changing conditions, wildfires in Los Angeles are likely to become both more frequent and devastating. A prime example of this is the 2017 Thomas Fire and the devastating landslide, which occurred when an intense rain event shortly followed the fire. The Thomas Fire is the largest wildfire in recorded CalFire history and engulfed nearly 300,000 acres, over 1,000 structures, and claimed 22 lives (inclusive of mudslide fatalities) in neighboring Ventura and Santa Barbara Counties.<sup>34 35</sup> This single fire event demonstrates the dangerous possibility of increased loss of life and irreversible damage to property, biodiversity, and air quality.

Photo: Office of Mayor Garcetti



## FIRE ZONE MAP

The Very High Fire Hazard Severity Zone comprises most of the hilly and mountainous regions of the City of Los Angeles.



Source: City of Los Angeles





## 26 LAUNCH THE “NEIGHBORLY” MICROGRANTS PROGRAM TO BUILD SOCIAL CONNECTIONS BETWEEN NEIGHBORS

Start a microgrant program that funds community-driven projects to encourage neighbors to work together to build resilience in their neighborhoods.

The Neighborly program will build and expand interpersonal relationships block by block and building by building, allowing people to connect on the most basic level. Activities supported by Neighborly grants can vary based on the block or

community—from throwing a block party to creating a community garden—but all grants will encourage Angelenos to learn about one another and create a sense of pride in where they live. This foundational work can develop leaders and help

residents become more active and engaged in the civic life of Los Angeles, more empowered to weather challenges, and better positioned to maintain their sense of community.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

DONE / Neighborhood Councils / Community organizations

Photo: Office of Mayor Garcetti



## GOAL 5: INCREASE PROGRAMS AND PARTNERSHIPS THAT FOSTER WELCOMING NEIGHBORHOODS

### 27 PROMOTE DIVERSITY IN COMMUNITY LEADERSHIP BY PURSUING POLICIES AND PROGRAMS THAT DEVELOP MORE LEADERS REFLECTING THE COMMUNITIES THEY REPRESENT

The City will cultivate and empower diverse voices that represent Angelenos of varying age, race, gender, sexual orientation, and abilities in the City’s leadership.

Diversity is our city’s greatest strength, and leaders should reflect the range of experiences and perspectives that make Los Angeles strong. Cultivation of leaders begins at the local level; by leveraging

Neighborhood Councils, Commissions, Departments, and other partnerships, the City can expand opportunities for local leadership growth. Advancement in representation can be integrated in everything

we do by modeling and promoting gender equity, diversity, and inclusion in City leadership through department leadership and practices, commission appointments, partnerships, and procurement.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

DOD / DOA / City Clerk / DONE / Neighborhood Councils



## 28 EXPAND ACCESS TO CITY SERVICES FOR HOMELESS, MARGINALIZED, AND VULNERABLE COMMUNITIES

Continue to simplify the process for individuals and families experiencing homelessness, marginalization, and/or vulnerability, to access housing services by improving the Coordinated Entry System (CES) and empowering public-facing City departments to be resources in neighborhoods throughout Los Angeles.

The No Wrong Door Approach allows people to access services in any neighborhood. When Angelenos experience homelessness, trying to find the location of services without access to technology and resources can be challenging—especially in a new neighborhood.

However, if the services are coordinated, then the myriad systems that can assist Angelenos experiencing homelessness can be better integrated.

Scaling up the CES is one of the major initiatives in the City’s homelessness strategy, which includes more than 62 recommendations to address homelessness over the next 10 years. Through the implementation of the No Wrong Door approach to City services, Angelenos without homes can access resources in any neighborhood, from any agency. The City is equipping departments with tools and information to help them assist

individuals in accessing housing services. These tools and the CES expansion will include the integration of outreach teams, enhanced data sharing and tracking, and specialized services for the most vulnerable Angelenos. The expansion of emergency shelters into 24-hour operations with co-location of local CES providers is also being pursued.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAHSA / RAP / DPW / HCID / LAFD / LAPD / Homeless services agencies / City departments

## CITY OF IMMIGRANTS

Los Angeles celebrates its diversity. Angelenos hail from more than 150 countries and speak over 200 languages. More than 40% of Angelenos were born in a foreign country, and 66% are either immigrants or the children of immigrants. Of the nearly 3 million undocumented immigrants who live in California, slightly over 1 million reside in Los Angeles County and most have lived here for an average of 10 years.<sup>36</sup> Immigrants contribute to and improve the economy, making up 32% of California’s GDP. Yet, California households headed by immigrants have a per capita income one-quarter below average, and households headed by undocumented immigrants make close to \$12,000 less annually, leaving them particularly at risk for exploitation and abuse.<sup>37</sup>

While immigrants are a vibrant part of society in Los Angeles, foreign-born Angelenos also present a challenge when it comes to emergency preparedness and integration. Linguistic barriers, coupled with incomes which may be below the poverty level and heightened fears stemming from recent immigration-enforcement actions, leave our immigrant population more isolated. Immigrants are also more likely to stay within their communities and lack trust in government. All of these factors place a stress not only on the immigrant population residing in Los Angeles, but also on their family members and the population of Los Angeles as a whole.



Photo: Office of Mayor Garcetti

## 29 CONTINUE TO SUPPORT AND EXPAND THE LOS ANGELES JUSTICE FUND

The City will strengthen its partnership with the Los Angeles Justice Fund to provide critical assistance to Los Angeles’ immigrant populations.

In Los Angeles County, more than two-thirds of people appearing in immigration court face a judge and federal prosecutor without legal representation. The Los Angeles Justice Fund is a multi-million public-private partnership that aims to promote due process and justice by increasing access to legal representation and counsel for individuals and families dealing with immigration court removal proceedings. A partnership between

the City of Los Angeles, L.A. County, the California Community Foundation, and the Weingart Foundation, the Los Angeles Justice Fund provides funding to nonprofit legal service organizations currently engaged in immigration court cases and who represent populations in detention centers. The fund will serve vulnerable populations including victims of human trafficking and DACA recipients.

Organization began to receive funding in the fall of 2017. The fund also supports pilot programs that seek to expand the pool of immigration attorneys available to provide representation. These efforts prioritize vulnerable populations, including women and children.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LA County / California Community Foundation / Weingart Foundation

## 30 INCREASE PARTICIPATION FROM AND PLAN WITH NEW ANGELENOS TO ENCOURAGE WELCOMING NEIGHBORHOODS

As part of its effort to become a certified Welcoming City, the City will advance innovative and collaborative policies that ensure immigrants, migrants, and refugees feel welcome in all Los Angeles neighborhoods.

The City of Los Angeles will build on existing efforts that foster a welcoming environment for immigrants, further enriching the diversity that is Los Angeles’ great strength by becoming a certified Welcoming City. The City will work with the nonprofit Welcoming America and

additional partners to document our best practices and establish additional strategies that address leadership, equitable access, civic engagement, connected communities, education, economic development, and safety through the certification process.

Special attention will be paid to leverage existing and create new neighborhood-based programs that address our most vulnerable populations and increase community participation in the program development process.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

Cultural Vistas / Welcoming America / Welcoming Communities Transatlantic Exchange / City departments





## NEW AMERICANS CENTER

In 2018, the Los Angeles Public Library (LAPL) launched New American Centers, expanding their Path to Citizenship program that began in 2012. LAPL partnered with the U.S. Citizenship and Immigration Services to provide naturalization information and civic engagement opportunities to support the City's immigrant population, regardless of status. The New Americans Centers function as a community go-to for services around citizenship, including eligibility screenings, naturalization workshops and green card renewals, Know Your Rights workshops, small business support, family preparedness workshops, family location services, and ESL conversation classes. Additional services around local civics instruction, inter-cultural communication, records locating, business licensing, and mentoring are provided. This initiative reflects the LAPL's continued efforts to welcome everyone and to provide a lifeline of support for isolated or marginalized populations by providing people with information and resources.



Photo: Office of Mayor Garcetti

## 31 EXPAND AN INCLUSIVE NETWORK OF SERVICES THAT STRENGTHEN INDIVIDUALS, FAMILIES, AND COMMUNITIES TO COMBAT ALL FORMS OF VIOLENT EXTREMISM

**Build the capacity of nonprofits and community partners to provide services that promote social inclusion.**

The City of Los Angeles is a leader in creating robust strategies to build healthy communities and strengthen the social fabric against all forms of hate and bias that can lead to violence. In 2015, this approach was codified in the Los Angeles Framework, which addresses all forms of violent extremism. The City is focused on advancing community resilience through network-building,

engagement, trust-building efforts, and community-driven preventative programs. This work is based on objectives pivotal to ensuring effective community engagement around social inclusion, including:

- Developing a collective vision for community-driven impact.
- Consolidating resources in an accessible online platform.

- Creating a culturally appropriate service referral system.
- Building capacity of community-based organizations by facilitating relationships.
- Raising awareness and elevating civil society as a leading voice.

### SHOCKS/STRESSES

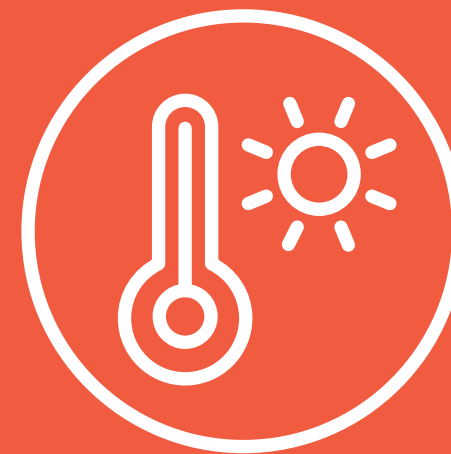


### TIMEFRAME



### PARTNERS

HRC / Community based organizations / Educators / Interfaith communities / Private entities / Government resources



## GOAL 6: PREPARE AND PROTECT THOSE MOST VULNERABLE TO INCREASING EXTREME HEAT

### 32 DEVELOP AN URBAN HEAT VULNERABILITY INDEX AND MITIGATION PLAN TO PREPARE FOR HIGHER TEMPERATURES AND MORE FREQUENT EXTREME HEAT

**Develop a framework for prioritizing neighborhoods, engaging stakeholders, creating policies, identifying funding sources, and recommending budgets in support of changes that will lead to a heat-resilient Los Angeles.**

The City will support and participate in community-led efforts to identify barriers and opportunities to accelerating extreme heat mitigation. TreePeople and Climate Resolve will bring their expertise in partnership-building and complex urban environmental problem-solving to co-facilitate the creation of a Los Angeles Urban Heat Island Mitigation Plan. The plan will include policy frameworks and

directives; a neighborhood prioritization framework; engagement toolkits for communities, businesses, and other stakeholders; and other elements as they are identified. The plan will also engage with the public health community to incorporate a method for identifying populations most at risk of heat-related health problems and develop plans for outreach and intervention on high-heat

days. The plan will be informed by stakeholder engagement, including from City departments and community members, and it will identify City policies that can be changed, augmented, or created to support heat mitigation. Concurrently, an advisory group will provide advice on engaging communities in adopting heat mitigation practices and behaviors.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

TreePeople / Climate Resolve / Global Cool Cities Alliance / CSUN / UCLA / University of Miami / Yale University / LAUCC / City departments / LADPH



**URBAN HEAT ISLAND AND EXTREME HEAT**

While working to reduce greenhouse gas emissions and fight climate change, the City of Los Angeles is also taking proactive steps to adapt to rising temperatures and minimize their impact on residents.

Densely populated cities in warm climates like Los Angeles' often experience the urban heat island effect. A combination of dark pavement cover, clusters of buildings, traffic, and lack of trees creates high temperature hot spots known as heat islands. The *Sustainable City pLAN* set the target to curb this phenomenon by reducing urban heat by 1.7°F by 2025 and 3° by 2035. Key strategies to reach this goal include:

- Requiring cool roofs for all new and refurbished homes. In 2013, Los Angeles was the first major city to enact this requirement. LADWP provides cool roof rebates to help Angelenos offset the cost.
- Laying down cool pavement. Los Angeles is the first city to pilot cool pavements for on-road use.
- Building up the city's green infrastructure, such as trees for shading and cooling.

Temperatures have been rising and breaking records in recent years. Notably, 2015 replaced 2014 as the hottest year on record in California.<sup>38</sup> Climate scientists

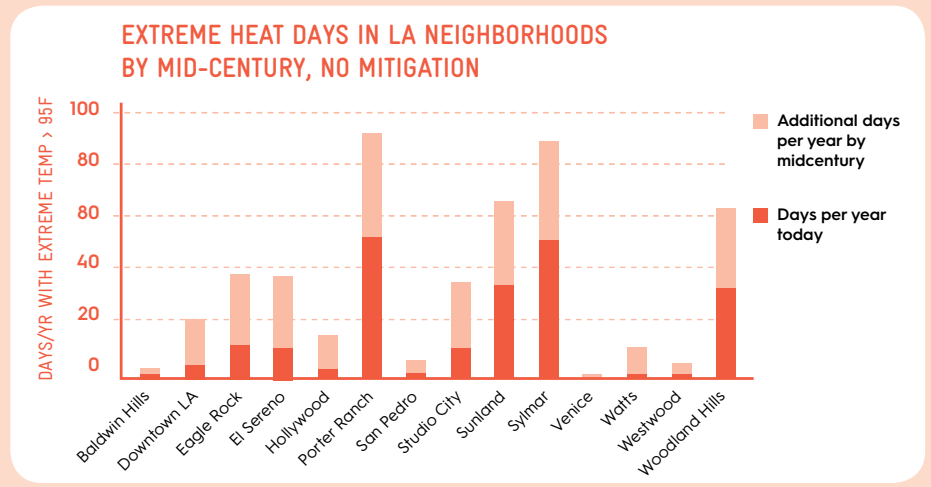


Image source: [www.kcet.org/climate-change-la/temperature-study](http://www.kcet.org/climate-change-la/temperature-study)

at UCLA project that this warming trend will continue and that the region will be at least 3° warmer between 2040 and 2060, even with reductions in greenhouse gas emissions.<sup>39</sup> By 2100, Los Angeles' average annual temperature may increase as much as 8° degrees under a business-as-usual emissions scenario. Angelenos will also face more extreme heat days, which are days with temperatures over 95°. All Los Angeles communities are projected to experience additional extreme heat days each year; however, some neighborhoods will experience at least twice as many as they do today.<sup>40</sup>

The city's urban landscape is covered with paved surfaces that absorb heat. This heat then reradiates and warms surrounding air, creating an urban heat island effect, which can add as much as 6-10° to the background temperature.<sup>41</sup> The rising local temperatures and increase in the number of heat waves, as well as the increase in both the severity and the length associated with a single heat wave, also significantly impact public health. Hospital admissions spike on peak heat-wave days, with particular impacts for cardiovascular, respiratory, and heat-related illness.<sup>42</sup>

**33 DEVELOP AND LAUNCH A NEIGHBORHOOD RETROFIT PILOT PROGRAM TO TEST COOLING STRATEGIES THAT PREPARE FOR HIGHER TEMPERATURES**

**A neighborhood retrofit pilot program to test heat-adaptation strategies will inform future citywide implementation efforts—including increased vegetation cover, reflectivity, and community empowerment tools.**

In partnership with experts, the City will support the development of a neighborhood retrofit pilot program that will test cost-effective cooling strategies to increase vegetation cover and reflectivity. The retrofit program will demonstrate cooling, public health improvements, and other benefits for

residents. It will also feature education and engagement supporting community action and behavior changes. This will be achieved by engaging community members in creating retrofit designs that are neighborhood-appropriate and by offering educational how-to workshops to support simple strategies such as planting

trees and employing naturally cooling materials on roofs and other surfaces. Through this pilot program, our partners will seek to introduce new climate and social science, decision-support tools, and tangible demonstrations that will accelerate Los Angeles' transition to extreme heat resilience.

**SHOCKS/STRESSES**



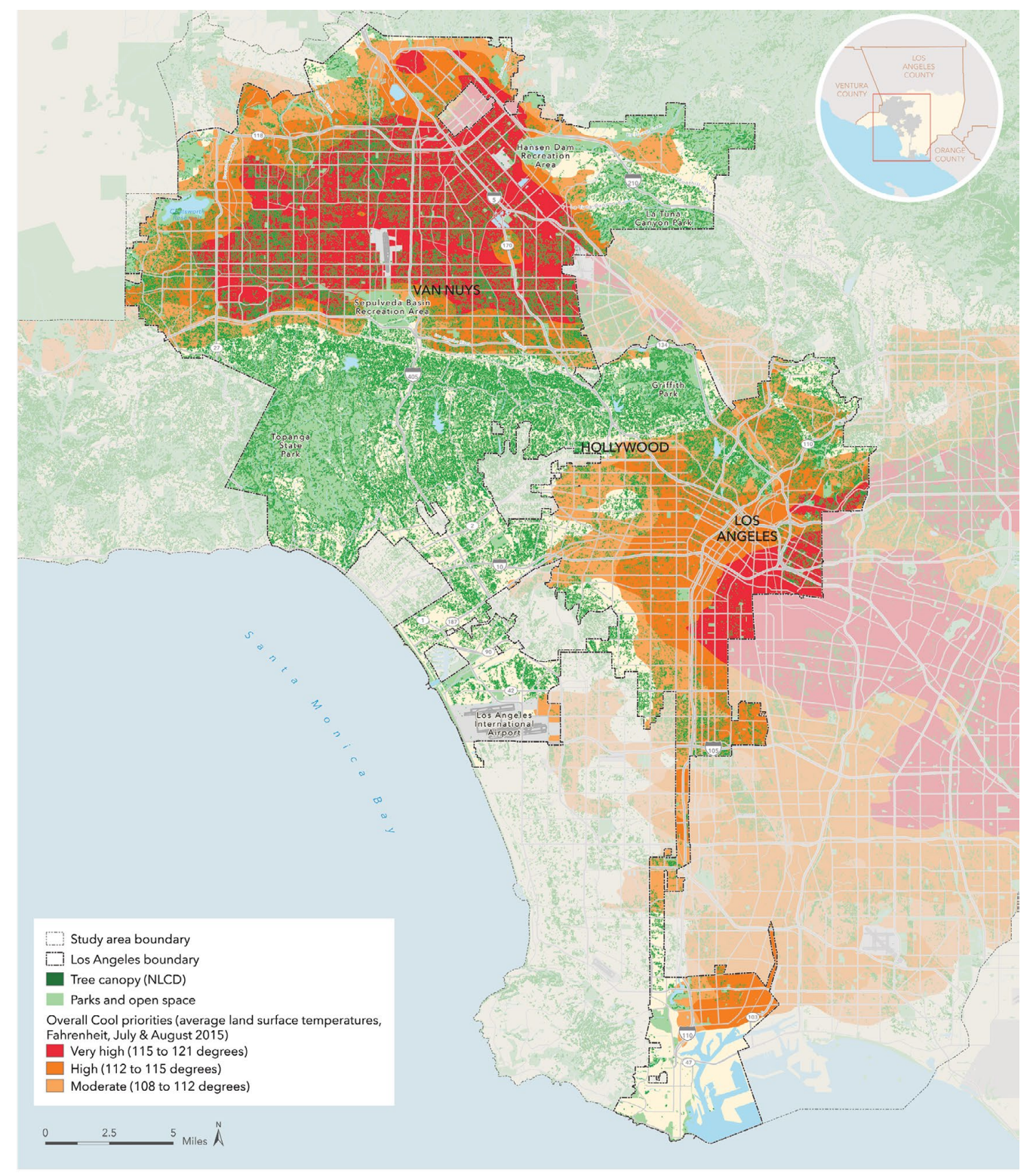
**TIMEFRAME**



**PARTNERS**

- TreePeople / Climate Resolve / Global Cool Cities Alliance / CSUN / UCLA / University of Miami / Yale University / LAUCC / City departments / LADPH

**URBAN HEAT ISLANDS AND TREE CANOPY**



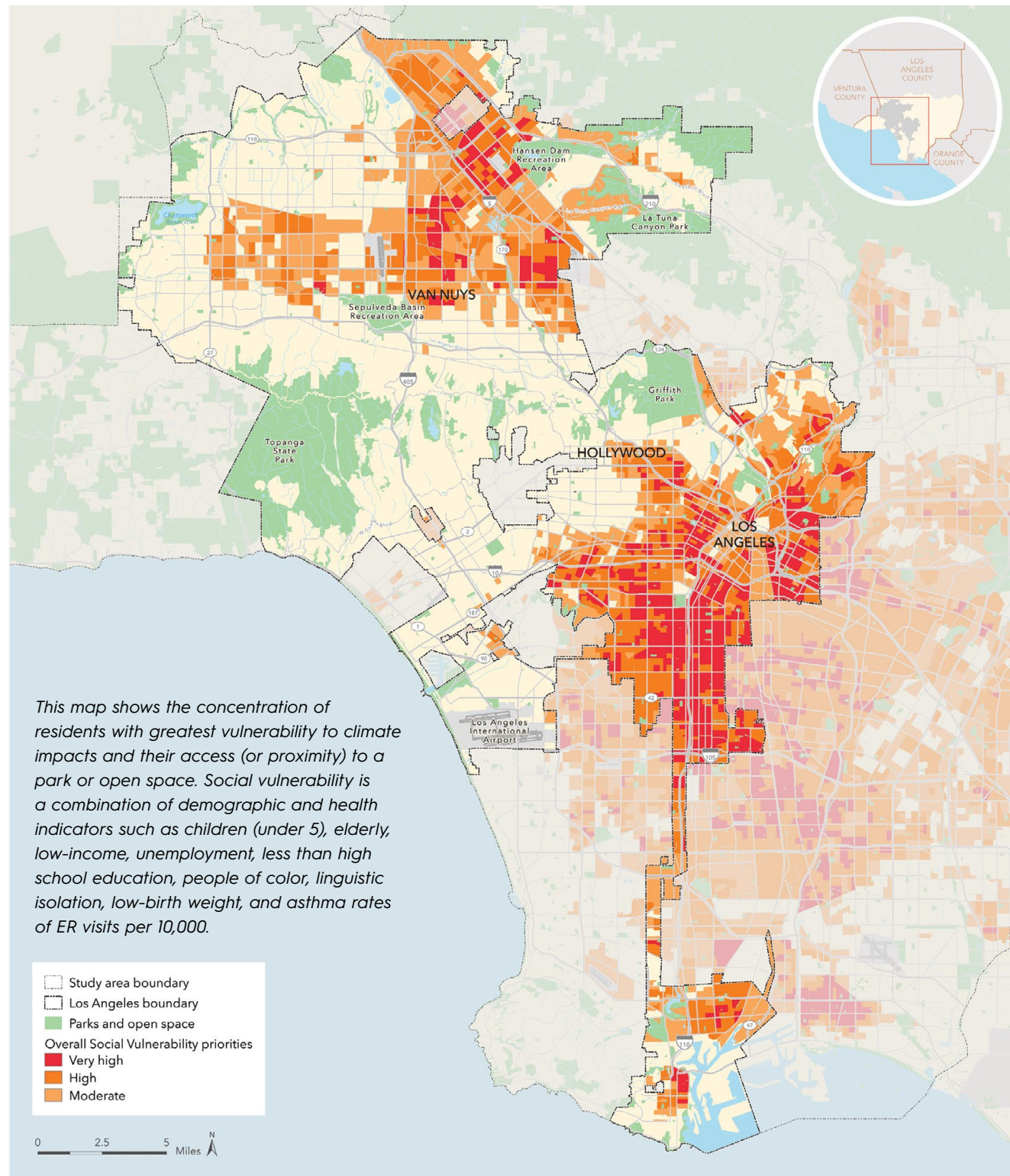
**Cool Overall Priorities**  
CLIMATE-SMART CITIES™: LOS ANGELES

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## SOCIAL VULNERABILITY WITH PARKS AND OPEN SPACE



# Social Vulnerability Overall Priorities

## CLIMATE-SMART CITIES™: LOS ANGELES



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## Stronger and Connected Neighborhoods

### 34 PLANT TREES IN COMMUNITIES WITH FEWER TREES TO GROW A MORE EQUITABLE TREE CANOPY BY 2028

The City will support tree-planting programs and direct urban forestry resources to areas with low canopy cover to improve air quality and reduce the impact of increasing heat.

Our city's urban forest is the largest in the nation, but it is also inequitably distributed. Communities with low tree canopy cover also tend to be burdened by poor air quality, higher risk of heat- and pollution-related health risks, and lower average household incomes. A robust tree canopy can provide critical shade and evaporative cooling benefits and can also improve air quality, stormwater management, energy efficiency, and

overall health. By investing in an equitable canopy cover for Los Angeles, we will improve the resilience of our most vulnerable communities against extreme heat, the proliferation of urban heat islands, poor air and water quality, flood risk, and other cumulative impacts.

Groups like City Plants will be key collaborators in establishing neighborhood buy-in and directing these valuable

investments to areas that need them the most. Increasing the resilience of the urban forest will also help ensure an equitable canopy cover for generations to come. Impacts such as pests can be fatal to trees, and their effects are only exacerbated by drought and extreme heat. The City's Tree Committee was recently formed to spearhead multidepartmental actions to increase the health and resilience of the urban forest.

## SHOCKS/STRESSES



## TIMEFRAME



## PARTNERS

BSS / BOS / RAP / City Plants / TreePeople / LA Conservation Corps / Northeast Trees / Private sector



Los Angeles youth volunteer to plant trees at a City Plants community event  
Photo: City Plants



## 35 EXPAND THE CITY'S NEIGHBORHOOD COOLING CENTER PROGRAM

Develop a comprehensive cooling center program to establish additional location and programming goals that prioritize vulnerable populations, consider co-location with other services, ensure transit accessibility, incorporate sustainability goals, and encourage development of potential private-public partnerships.

The City provides Angelenos relief during a heatwave by extending cooling centers hours at public facilities, such as community centers and libraries. Cooling centers offer Angelenos a cool place to stay and access services and programs. To ensure that these centers are available to those most impacted by heat and vulnerable to its negative health consequences, the City will evaluate the program based on future

heat projections and a heat vulnerability index and will incorporate best practices from case studies. Recommendations will explore how to expand cooling center programming, increase outreach and access to facilities, and partner with public agencies and private businesses. Using new and existing tools, such as the City's real estate asset-management system, the City will prioritize activating cooling centers based on updated

criteria—including facility amenities, proximity to transit, and other services. Cooling centers will also be a priority location for applying other resilience actions in this strategy, such as combined solar and storage projects and community cooling strategies. The Emergency Management Department (EMD) and other departments will work to identify existing cooling center opportunities.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

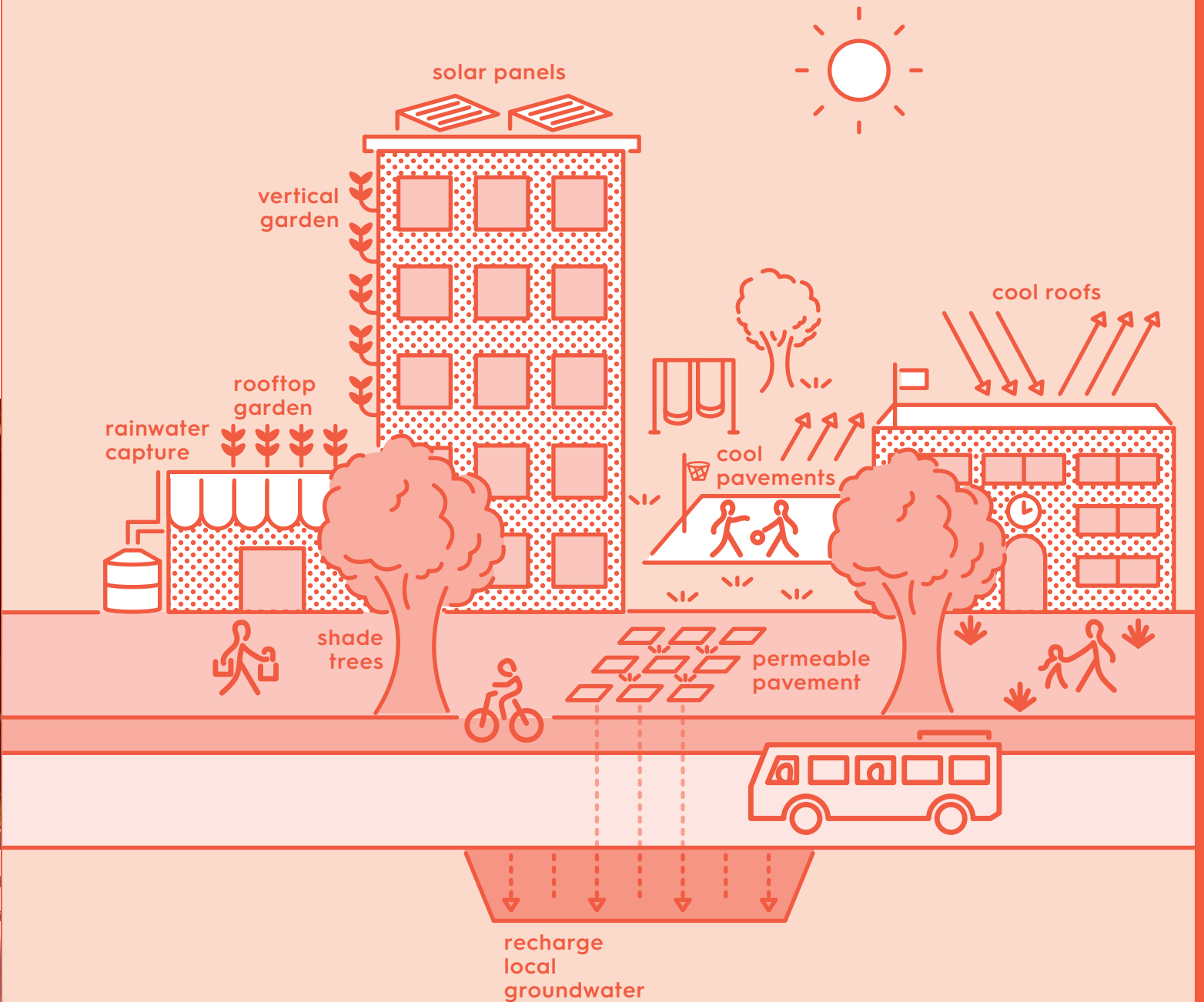
EMD / RAP / LAHSA / LADOT / DOD / DOA / County DPH / County OEM



Applying cool pavement as part of a pilot program  
Photo: Bureau of Street Services

## PREPARE FOR RISING TEMPERATURES

Light-colored cool roofs and pavement, shade trees, and evaporative cooling from plants and vegetation all help reduce the urban heat island effect







# GOAL 7: REDUCE HEALTH AND WELLNESS DISPARITIES ACROSS NEIGHBORHOODS

## 36 INCREASE THE HEALTH AND WELLNESS OF ANGELENOS THROUGH 2028 OLYMPIC AND PARALYMPIC PARTNERSHIPS

The City will develop local programs and enhanced public spaces that promote access to sports for young Angelenos, women, the elderly, and in neighborhoods with limited access to sports programs and open space.

In 2028, Los Angeles will host the Games for the third time. Bringing the Olympic and Paralympic Games to Los Angeles will create a new Olympic legacy for the next generation of Angelenos and deliver

access to sports and fitness programs to every community in the city. Sports programs can teach valuable lifelong skills, including how to stay healthy and participate on a team. The City will work

with partners to prioritize investments which bring youth and adult sports to every part of L.A. and inspire, or reinspire, athletes committed to healthy, inclusive, and successful lives.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

RAP / DOA / Youth sports organizations / International Olympic Committee / City of Paris / Other community organizations

## HEALTH DISPARITIES

Angelenos experience stark disparities in terms of health outcomes. Average life expectancy varies greatly by geography, with the highest at 84.7 years (in Bel Air, Brentwood, and the Pacific Palisades) and the lowest at 72.8 years (in Watts).<sup>43</sup>

These disparities are also pronounced when broken down by specific health conditions. In 2015, over 30% of adults in South Los Angeles reported their health to be fair or poor compared with 10% in West Los Angeles. The obesity rate in South Los Angeles is 34% among adults, compared with 23% across Los Angeles County.<sup>44</sup> Over 30% of children in South Los Angeles, Southeast Los Angeles, Boyle Heights, and neighborhoods near the Port of Los Angeles are obese, compared with

less than 12% of children in Bel Air-Beverly Crest and Brentwood-Pacific Palisades.<sup>45</sup> Food insecurity also varies by community, with over 32% of households with incomes less than 300% of the federal poverty level considered food insecure in both the south and east areas of L.A. County. The proportion of adults with chronic conditions of obesity, diabetes, hypertension, high cholesterol, and current depression was higher for each condition among those living in food-insecure households.<sup>46</sup>

Health is also impacted by crime. Only 40% of adults in South L.A. reported they believe their neighborhood is safe from crime compared with over 97% of adults in West L.A.<sup>47</sup> Average annual homicide rates in some higher-income neighborhoods

were nearly zero, compared with more than 20 homicides per 100,000 residents in Southeast Los Angeles, South Los Angeles, and West Adams-Baldwin Hills-Leimert.<sup>48</sup>

Disadvantaged communities in L.A. also face significantly higher exposures to many types of air pollution, which can cause a wide array of health effects such as adverse birth outcomes; lung function-development decrements and respiratory disease in children; and diabetes, cardiovascular disease formation and exacerbation, and the potential for cognitive decline in older adults. Communities with the highest proportion of households that are low income are also the most likely to have hospitalizations for heat illness on extreme heat days.



Photo: LADOT | Jim Simmons



## 37 EXPAND PARTNERSHIPS AND PROGRAMS TO REDUCE NEIGHBORHOOD FOOD DISPARITIES

To contribute to the overall health and preparedness of Angelenos, the City will seek to improve food security through expanded partnerships and programs.

Today, Angelenos with greater access to grocery stores and neighborhood markets stocked with affordable, healthy food are more likely to have healthier diets and, in turn, better health. In many communities across Los Angeles, less than 20% of adults reported eating the recommended serving of fresh produce,<sup>49</sup> while over 25% reported eating fast food at least once a week.<sup>50</sup> In July 2016, the Department of Aging (DOA) conducted a needs assessment and found that one out of three seniors reported being food insecure. To increase food security for seniors, the department provides

Congregate Meals at over 100 dining centers and Home Delivered Meals for homebound seniors, five days a week. The City's Good Food Purchasing Policy ensures meals are of high quality, from sustainable sources, and locally grown.

More than 900 small grocers throughout Los Angeles are a neighborhood's only or best option for increasing local food choice. Community organizations such as COMPRA Food, Food Forward, L.A. Kitchen, and Everytable are changing the food-distribution landscape in L.A. by improving access to healthy foods. This

effort supports the City's goal to ensure every Angeleno lives within half a mile of fresh food by 2035.

The City will work with partners to integrate into the program planning for food security after a disaster and to ensure that policies are being developed to increase food security today. Every neighborhood needs to assess the stresses that impact their food choices when access to food may be severely limited due to disruptions in the supply chain, refrigeration, or a steady paycheck.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DOA / LAFPC / EWDD / EMD / Community organizations / Private-sector partners

## 38 EXPAND MOBILE CITY SERVICES FOR VULNERABLE POPULATIONS

The City will work to increase access to City services—both in high-need locations and through mobile programs—in an effort to reduce immediate barriers and improve flexibility in providing services in the face of future shocks or major events.

The lack of access to public personal hygiene facilities continues to be a significant barrier for individuals experiencing homelessness. To address this need, the

City has allocated funding to a number of initiatives, including expanding operating hours at the public restrooms along the Venice Beach Boardwalk and Skid Row;

launching the mobile shower program; and developing a shower program at pool facilities, specifically targeting individuals and families residing in cars.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

ITA / DPW / RAP / DOA / DOD / Private partners

## 39 INVEST IN HEALTHY AND SAFE HOUSING TO IMPROVE PUBLIC HEALTH AND INCREASE EQUITY

The City will work to ensure that all residents have access to healthy and safe living conditions through programs that reduce environmental toxins such as lead in homes and encourage the expedient repair of potentially dangerous buildings.

Many low-income neighborhoods experience higher levels of environmental pollution than more affluent parts of the city, and low-income renters are more vulnerable to building damages and deficiencies that go unrepaired. It is critical to continue supporting programs that enhance public health, particularly those that focus on disadvantaged communities.

The City will work to ensure that all Angelenos have access to healthy and safe living conditions through programs that reduce environmental toxins such as lead in homes and encourage the expedient repair of potentially dangerous buildings. In addition to making homes safe from pollutants and hazardous conditions, it is vital to ensure that buildings and neighborhoods remain

habitable and safe in a hotter, drier Los Angeles. The Los Angeles Department of Water and Power (LADWP) and the Southern California Gas Company (SCG) currently fund a variety of incentives to make buildings cooler and more energy- and water-efficient. It is important to ensure that those resources, and new ones if needed, are available to all Angelenos.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

HCID / City Attorney / LADWP / SCG / LA County / State of California / Nonprofit environmental justice advocates



Photo: Office of Mayor Garcetti



Opening the new Los Angeles State Historic Park just outside of downtown  
Photo: Office of Mayor Garcetti



## 40 INCREASE ACCESS TO OPEN SPACE IN UNDERSERVED NEIGHBORHOODS

The City will work with partners and use a data-driven approach to prioritize resources and expand access to open space in underserved neighborhoods.

Beautiful parks, open spaces, and green spaces improve quality of life and health outcomes and promote social cohesion. Adding more green space to communities can also mitigate the effects of climate change. Unfortunately, not all neighborhoods have the same access to open space. Measure A gives us a once-in-a-lifetime opportunity ensure that investments are prioritized for underserved neighborhoods and that they achieve multiple benefits. The intent of the proposition is to provide funds to benefit property and improve the quality of life by

preserving and protecting parks, safe places to play, community recreation facilities, beaches, rivers, open spaces, water conservation, youth and veteran career development, and the urban tree canopy.

To accomplish this, the City will develop a data-driven strategy to prioritize investments in underserved neighborhoods. Specifically, the Department of Recreation and Parks (RAP) is developing an equity-based framework to prioritize capital projects to improve access to open space.

This framework will help ensure that resources are invested in high-need areas. Moreover, the City is committed to increasing public access and recreational opportunities along the L.A. River by supporting projects such as the G2 parcel in Taylor Yard, the Central Service Yard Master Plan, 6th Street Viaduct Park, Albion Park, and Caballero Creek Park. The City is also exploring innovative partnerships, such as partnering with the Los Angeles Unified School District (LAUSD), to create Community School Parks to increase access to open space.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

RAP / City departments / Nonprofit organizations / LAUSD

## Stronger and Connected Neighborhoods

## 41 INCREASE STABILITY THROUGH INVESTMENTS IN AFFORDABLE HOUSING, JOBS, AND OPEN SPACE IN COMMUNITIES ADJACENT TO THE LOS ANGELES RIVER

The City will partner with communities to cultivate additional tools and policies for land use and economic development to improve economic mobility and wellness with high-quality jobs, affordable housing, and increased access to open and natural spaces.

The City will work with Los Angeles River communities to ensure that revitalization efforts create benefits for existing residents and businesses while mitigating destabilizing impacts such as displacement. The City will also explore new actions to protect and promote affordable housing by considering options for developments on publicly owned land, expanding the scope of the River Improvement Overlay District, establishing community mitigation funds, and piloting new public-private partnership programs to deliver affordable

housing. For example, the City could pilot a transfer of development rights program along the river to concentrate development at residential nodes near transit. This would create additional flood channel capacity, green infrastructure, and open spaces between nodes. As the revitalization of the Los Angeles River is realized, it is important to ensure that the open space, restoration, and connective access projects along the corridor aid in improving the health, culture, and quality of life for river-adjacent neighborhoods.

The City will also explore innovative financing techniques to help sustain a resilient river system. For instance, the L.A. City Council is exploring an Enhanced Infrastructure Finance District (EIFD) along the river, which would allow for the capture and reinvestment of tax-increment increases in a specified geographic area. EIFD funds could be used for brownfield acquisition and cleanup, park development, affordable housing, and job creation.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DCP / EWDD / DCA / State agencies

## 42 IMPROVE THE HEALTH AND WELL-BEING FOR ALL AGES THROUGH IMPROVEMENTS IN MOBILITY

By adopting age-friendly policies around mobility, the City will improve the health and well-being of all Angelenos.

From 2010 to 2030, L.A.'s population of people over 65 is expected to nearly double, from 1.1 million to 2.1 million. The City will actively seek to reduce health disparities and improve well-being for everyone by considering the needs of our aging population. By adopting policies and programs that promote an age-friendly city, we will ensure that mobility improvements benefit our most vulnerable people and improve our neighborhoods.

Purposeful Aging Los Angeles seeks to prepare the Los Angeles region for a rapidly aging population through an innovative, sustained initiative that unites public and private leadership, resources, ideas, and strategies. In May 2016, the City of Los Angeles was officially designated as an Age-Friendly City by the World Health Organization (WHO). The goals of this initiative will be data driven and shaped by the Department of Aging, the Mayor's

Office, and a Citywide Task Force. The Task Force will help develop a WHO-required needs assessment and strategic plan and help ensure specific actions are taken by several city departments consistent with the directive. Examples of programs that promote age-friendly cities include the redesign of our streets and sidewalks to take into account an aging population. These upgrades have resilience value as they also benefit everyone in the City.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DOA / RAP / LA County / AARP / WHO / Nonprofit organizations / Community organizations





# PREPARED AND RESPONSIVE CITY



**GOAL 8:** Integrate resilience principles into government to prioritize our most vulnerable people, places, and systems



**GOAL 9:** Equip government with technology and data to increase situational awareness and expedite post-disaster recovery



**GOAL 10:** Provide safe and affordable housing for all Angelenos



**GOAL 11:** Restore, rebuild, and modernize Los Angeles' infrastructure





## PLANNING FOR TODAY AND TOMORROW

When key resilience values like adaptability, flexibility, and resourcefulness are integrated into a local government's services and systems, they improve how the city functions. A well-run and livable Los Angeles improves Angelenos' quality of life both on a daily basis and in times of crisis. It strengthens systems, services, and assets to withstand and respond to disruption and help all Angelenos thrive in recovery.

The City of Los Angeles' resilience-building efforts are driven by the need to take the long view and assess the long-term impacts of the choices we make today. We aim to address the challenges we have inherited from those who came before us and to leave the city better than we found it.

Los Angeles prides itself on its size and diversity. This is a city with over four million residents, over one million buildings, and 500,000 active businesses across neighborhoods that span nearly 500 square miles. Providing reliable services on this scale requires vast and complex infrastructure, much of which is aging and in need of replacement or repair. To create a more resilient city, our government must invest in infrastructure projects with the adaptability and flexibility to serve Angelenos well into the future. A resilient city looks to the future and rebuilds based on lessons learned from the past. It addresses many hazards and achieves multiple benefits so that it is prepared to function and respond in the face of uncertainty and distress.

*A resilient city is able to bounce back when faced with adversity.*





# GOAL 8: INTEGRATE RESILIENCE PRINCIPLES INTO GOVERNMENT TO PRIORITIZE OUR MOST VULNERABLE PEOPLE, PLACES, AND SYSTEMS

## 43 MAKE RESILIENCE-BUILDING A PERMANENT PART OF THE CITY OF LOS ANGELES' SYSTEMS AND SERVICES

To continue to adapt in the face of shocks and stresses, Los Angeles will expand the Office of Resilience, integrate resilience-building into departmental strategic planning, and measure and track citywide resilience metrics.

### Expand the Office of Resilience to lead the implementation of Resilient Los Angeles

The Office of Resilience and the Chief Resilience Officer will lead the implementation of Resilient Los Angeles; foster partnerships that advance the City's resilience goals; and engage Angelenos in resilience-building actions that increase their well-being, health, safety, preparedness, and stewardship. As an inaugural member of 100 Resilient Cities (100RC), Los Angeles is one of more than 24 cities and states making resilience-building a permanent practice in governance in the United States.

### Integrate resilience into City department strategic plans, policies, and programs and by appointing Departmental Chief Resilience Officers

Implementing Resilient Los Angeles will require each City department and General Manager (GM) to innovate, collaborate, and plan. To ensure accountability and alignment with Resilient Los Angeles, the implementation of actions in this strategy will be incorporated into GMs' annual performance reviews and budget proposals. Departmental Chief Resilience Officers will also be appointed to work in collaboration across the city. Furthermore, additional interagency working groups and taskforces will promote coordination and collaboration across agencies to address specific shocks and stresses as well as our

most serious resilience challenges, such as those concerning lifelines, seismic safety, and critical infrastructure.

### Measure and track citywide resilience metrics

Los Angeles is one of the first 100RC cities to pilot the City Resilience Index, a comprehensive tool that measures a city's resilience in a systematic, globally applicable way. This holistic baseline understanding will allow the City to track resilience outcomes, the implementation of Resilient Los Angeles, and the institutionalization of resilience within City systems and services over time. Measuring and tracking these outcomes in the long term will allow the City to focus on achieving progress toward accomplishing resilience goals.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

City departments

#### Prepared and Responsive City

## 44 REQUIRE RESILIENCE AS A GUIDING PRINCIPLE FOR LAND USE DECISIONS IN THE LOS ANGELES GENERAL PLAN AND ZONING CODE UPDATES

The City will incorporate resilience as a guiding principle in planning documents that inform land use and development in Los Angeles.

The City is well-positioned to integrate resilience into long-range planning for multiple initiatives that are already underway. These include updating the citywide General Plan, which provides the foundation for land-use decisions in the city and the Zoning Code. The General Plan should

incorporate climate adaptation, hazard mitigation and recovery, and efforts to increase equity and leverage long-range capital planning for infrastructure investment. To promote citywide resilience, the City will incorporate a guiding principle into the General Plan to encourage

land-use decisions that improve the ability of individuals, neighborhoods, economic systems, and the environment to recover from disasters, climate change, and economic shifts.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

DCP / City departments / Neighborhood Councils



Photo: Sam Swayze, Bureau of Engineering



## 45 INTEGRATE RESILIENCE AND SUSTAINABILITY PRINCIPLES INTO CITY CAPITAL PLANNING

The City will create a framework for coordinating, prioritizing, and evaluating capital projects based on resilience and sustainability criteria to align infrastructure investments across departments.

### Develop a framework for increased collaboration in long-range capital planning

To limit disruption, save money, and ensure that major capital projects make L.A. stronger and safer in the face of shocks and stresses, the City will design a process by 2022 that facilitates long-term capital planning across multiple agencies. A coordinated, long-term vision is needed to leverage new and existing funds to achieve multiple benefits for infrastructure planning. Recent initiatives, such as Mayor Garcetti's Water Cabinet, the Office of Sustainability, Vision Zero, Great Streets, and LARiverWorks, have fostered increased collaboration in infrastructure planning and implementation. A number of projects underway exemplify the coordinated and resilient approach, including the Sixth Street Viaduct, which integrates innovative design features for open space and connectivity, and the planned automated people mover,

which will link LAX to the region's public transportation network. The City will build on these projects as models in creating a more coordinated resilient planning framework. This work will prioritize increased collaboration from the project to systemwide scales through a comprehensive, facilitated process.

### Establish a task force to assess critical infrastructure and prioritize investments

The City's new Critical Infrastructure Task Force will convene key departments to assess the lifespan of critical infrastructure based on risks and vulnerabilities, establish reasonable timeframes for facility upgrades, and prioritize investments. This collaborative interdepartmental effort will engage the City's budgetary process in addition to federal, state, and local grant opportunities to leverage available resources for long-term, citywide improvements.

### Incorporate multihazard risks and vulnerabilities into long-term capital planning

The City will incorporate climate concerns, seismic risk, and other vulnerability considerations into infrastructure projects and planning. It will do this by using tools and criteria to evaluate multihazard variables and analyze interdependencies with other systems. Hazards and risk analysis will be incorporated into each phase of an infrastructure project in the city, including planning, design, construction, and operations. Identifying both the likelihood of failure based on hazards and risks, as well as the life-safety and economic consequences of each hazard and risk and their interdependencies, will inform how the project timeline is prioritized. New maps will be developed that identify risks and vulnerabilities, and prioritized actions will be integrated into long-term capital planning projects and programs. The City will also evaluate and modify engineering

design manuals and criteria as required, based on hazard zones, threats, risks, and vulnerable infrastructure. This process will be informed periodically by experts with the most up-to-date climate and seismic risk data and trends, who will also recommend changes to the City's design criteria for capital planning projects.

### Develop innovative finance opportunities for capital improvements

The City has an opportunity to increase funding and coordination of capital improvements through innovative financing models such as Public, Private, Philanthropic Partnerships (P4). Additionally, a new Chief Infrastructure Finance Officer could develop and implement a proactive framework for capital improvement financing and funding, including coordination of grants, bonds, and P4 partnerships.

### Use data and technology tools to prioritize climate resilience policies and practices

The City will integrate tools that inform decision-makers of the environmental, equity, and economic costs and benefits to prioritize investments and influence policies and practices. Currently, the City is piloting and integrating the following analytical and mapping tools into its decision-making process:

#### Cost-Benefit Analysis Tools

The City is using a cost-benefit software tool, Impact Infrastructure's Autocase, to determine how to maximize potential benefits and minimize costs early in the infrastructure project design process. Autocase uses data from site design to provide financial, social, and environmental returns on investment for each design option. The City of Los Angeles Department of Public Works (DPW) is piloting this triple-bottom-line cost-benefit analysis to evaluate and

rate infrastructure projects to ensure that projects improve the environment, public health, and quality of life for Angelenos. The City can also evaluate projects using the Institute for Sustainable Infrastructure's Envision rating system to ensure that sustainable practices and designs are incorporated.

#### The Trust for Public Land's Climate-Smart Cities

In October 2016, the Trust for Public Land (TPL) launched a version of its Climate-Smart Cities tool for Los Angeles, which uses City data to identify locations and strategies for incorporating green infrastructure and open space to mitigate the effects of climate change. TPL is training City staff and partners to use the Climate-Smart Cities tool and working with the Mayor's Office to ensure compatibility with the City's GeoHub and Open Data portal. The initial five-year partnership aims to expand the available data sets and train City staff and the public to access and use the tool. Geo-coded data and maps will allow the City to tailor climate-mitigation measures and investments by neighborhood.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

LADOT / DPW / LADWP / POLA / LAWA / GSD / LADBS / DCP / CAO / ITA / RAP / Technical partners



### A NEW APPROACH TO ADDRESSING CLIMATE IMPACTS

One Water L.A. is a collaborative effort to develop an integrated framework for managing the city's watersheds, water resources, and water facilities in an environmentally, economically, and socially beneficial manner. One Water L.A. used the Environmental Protection Agency's Climate Resilience Evaluation and Awareness Tool (CREAT) to identify that approximately 50% of the city's

stormwater and wastewater infrastructure components are vulnerable to various climate risks. An additional 10% investment in capital costs would help the City to avoid 90% of future expenses and costs resulting from climate-related impacts. This process identified a number of recommendations that can be applied to infrastructure citywide.



### INCREASING THE CAPACITY OF CITY FACILITIES TO REDUCE FLOODING RISK

The City of Los Angeles DPW is modernizing the Venice Pumping Plant to mitigate the risk of a potential sewage spill that could result from insufficient capacity to manage major flooding events. The DPW will construct a new, two-mile-long force main sewer to supplement the existing force main sewer, which was built in 1960 and has been in continuous service for the past 54 years without any maintenance.

During severe wet weather, peak flows to the Venice Pumping Plant have exceeded the capacity of the only existing force main sewer, conveying wastewater from the plant to the Hyperion Treatment Plant. Without additional capacity, there is a risk of sewage overflow into city streets and surface waters in Venice and the surrounding area.



## 46 INTEGRATE ADDITIONAL RESILIENCE MEASURES IN THE IMPLEMENTATION OF LOS ANGELES RIVER WATERWAY REVITALIZATION EFFORTS

The City will explore institutionalization, funding, and governance strategies that integrate resilience objectives and expedite river revitalization initiatives.

The City will explore the following key institutionalization, funding, and governance strategies to integrate resilience objectives into waterway revitalization initiatives:

- The City Council's Arts, Parks and River Committee has been exploring the establishment of an Enhanced Infrastructure Finance District (EIFD) related to the river to provide tax increment financing for river revitalization.
- As proposed by the LARRMP, the City will work with partners to establish a Joint Powers Authority (JPA), or other authority-sharing arrangement to serve as the entity with responsibility for Los Angeles River restoration, right-of-way management, maintenance, permitting, development, operation, and public liability. Establishment of a JPA would clarify jurisdictional authority and facilitate a collaborative, comprehensive approach to river revitalization efforts.

- The JPA, or another public entity, will evaluate potential funding sources that support resilience objectives along the Los Angeles River, including EIFDs, which enable local governments to set aside and bond against incremental property tax revenue for capital projects such as affordable housing, infrastructure, and open space.
- The L.A. River Cooperation Committee will explore ways to augment its existing evaluation criteria with a resilience lens. This committee is the joint City, County, and USACE working group that coordinates, evaluates, and recommends river-adjacent projects to be approved by the City, LACFCO, and USACE. To promote resilience objectives, criteria will be established to prioritize projects that have multiple benefits, encourage coordination, and address risks and vulnerabilities.
- To encourage economic activity along the river and bolster economic opportunity for existing residents, the City will

explore tax incentives to attract small, locally owned businesses to key areas along the river. In turn, local residents will benefit from the economic activity that results from river improvements.

- The City will work with other public sector entities such as the County, the State, and the federal government; multiagency groups, such as Metro, Metrolink, and the Southern California Association of Governments; and other stakeholders, such as the California High Speed Rail Authority, the Ports of Los Angeles and Long Beach, the Los Angeles Business Council, and the Los Angeles Economic Development Corporation. This cooperation will help to ensure that multibenefit outcomes are achieved in infrastructure projects that are built near, at, along, over, under, upstream or downstream of the Los Angeles River—so that the river functions as a central piece of a resilient infrastructure system.

### SHOCKS/STRESSES



### TIMEFRAME



Long Term

### PARTNERS

DPW / EWDD / DCP / RAP / LACFCO / SMMC / USACE / River Cooperation Committee / River LA / FoLAR / State of California / Watershed cities

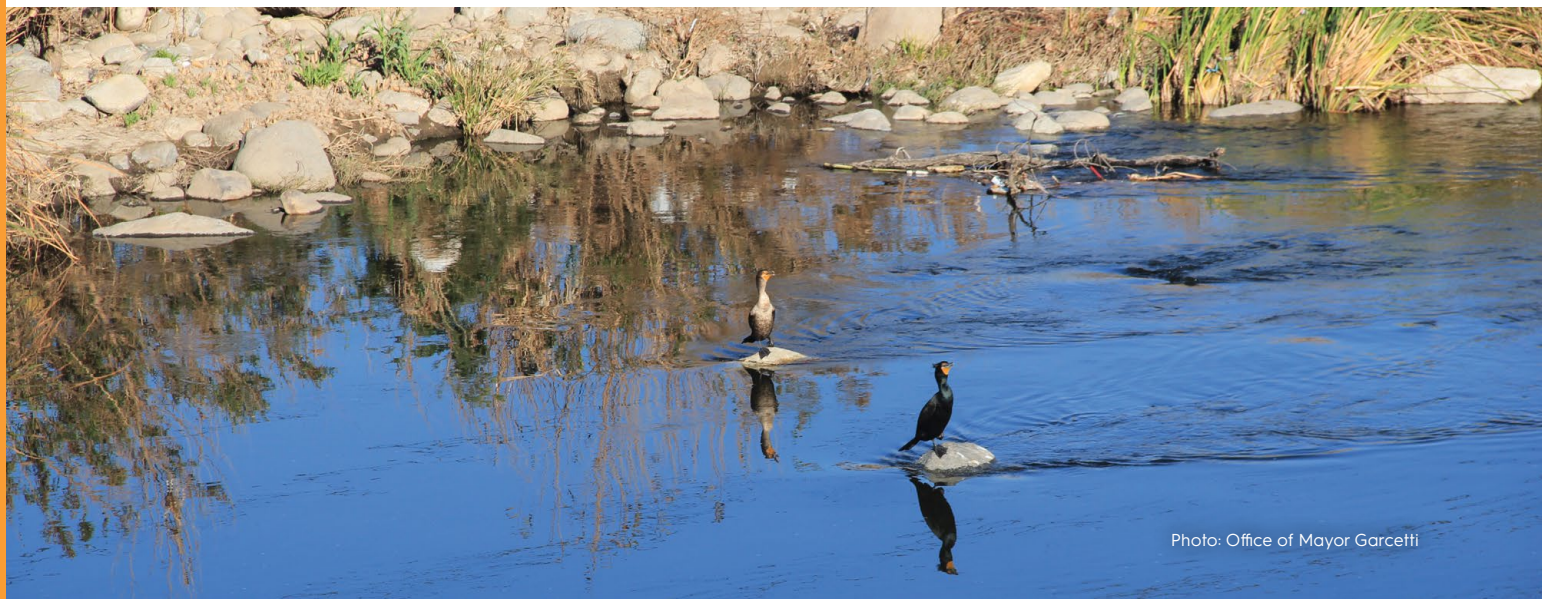


Photo: Office of Mayor Garcetti

## 47 ADOPT EMERGENCY LAND-USE TOOLS TO ADDRESS DISPLACEMENT AND REDEVELOPMENT IN ADVANCE OF A MAJOR EARTHQUAKE OR OTHER CATASTROPHIC EVENT

The City will develop a plan for implementing emergency land-use tools that allow for flexible reuse of properties severely damaged in a disaster. This framework will shorten the recovery period, while creating opportunities to provide community amenities.

Prompt remediation or repurposing of properties damaged in a catastrophic event will allow Angelenos to recover without the additional economic and social stresses that often follow prolonged disuse of damaged buildings, including economic decline, blight, and crime.

The City will develop a plan to implement emergency land-use tools that can be used in the wake of a major disaster to allow for flexible reuse of private properties that have been severely damaged. The City will also study how tools such as the voluntary transfer of

development rights would enable the City to limit future development in an area while replacing any lost development rights in other areas that are deemed able to accommodate development.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

DCP / LADBS / HCID / CAO



Photo: Office of Mayor Garcetti



## 48 DEVELOP NEW CITYWIDE EQUITY INDICATORS TO INFORM AND MEASURE INCLUSIVE INVESTMENTS AND POLICY-MAKING

The City will work with partners to develop equity indicators that support the City’s most vulnerable populations, and can be measured over time for existing and future resilience initiatives.

Los Angeles’ Health Atlas and other City resources have provided high-level data illustrating the disparities in health, education, life expectancy, and access to open space. However, through the development of equity indicators, the City will better understand and measure equity in the city. The equity indicators

could span housing, justice, services, education, health, and the economy. Once developed, they will be used by the City to support existing and future policies and programs that affect disadvantaged and undersupported groups—including disproportionately underrepresented and vulnerable populations such as Angelenos

experiencing homelessness or linguistic isolation, immigrants, youth, seniors, or people with disabilities. These indicators will also help the City measure equity in the budgeting process and demonstrate that resources are being invested where there is the greatest need.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

City departments / Academic partners / CBOs

## 49 SUPPORT SYSTEMS AND SERVICES THAT ARE LINGUISTICALLY INCLUSIVE AND CULTURALLY COMPETENT

In recognition of Los Angeles’ rich cultural and linguistic diversity, the City will develop more robust policies, processes, and training to increase inclusiveness in government, especially to our most underrepresented and vulnerable populations.

Los Angeles is home to people who come from more than 150 countries and speak more than 200 languages. The City will continue to reduce linguistic isolation by encouraging multilingual publications,

communication and engagement opportunities. Through additional programs and training, the City will also continue to foster an environment that recognizes and acknowledges our diversity and

understands that we have diverse values, norms, practices, attitudes, and beliefs about safety, social capital, and economic support systems.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAPL / DOD / DCA / City departments / External partners

## MEASURING EQUITY

In March 2016, the Los Angeles Department of Water and Power (LADWP) established the Equity Metrics Data Initiative (EMDI) to track, measure, and report on how its programs are provided to all customers and residents of Los Angeles. The EMDI establishes a data-driven framework that assesses how well programs, services, and resources are distributed and used throughout the city, both geographically and demographically, to see where any disparities may exist. Data collection and analysis through the EMDI will provide important information about LADWP’s services and operations, and it will help ensure that all customers are reached with fairness and equity. With input from key stakeholders, staff identified equity metrics that are the most relevant to multiple aspects of LADWP’s operations and are also aligned with the department’s priorities. There are 15 equity metrics in four core categories: Water & Power Infrastructure Investments, Customer Incentive Programs, Procurement, and Employment.



Photo: Rachel Marray

## A MULTILINGUAL CITY

Los Angeles’ diversity is a source of great pride and strength. According to “New Americans in Los Angeles,” a report released in early 2017, the foreign-born population of Los Angeles in 2014 was nearly 1.5 million, making up 37.8% of the city’s total population.<sup>51</sup> Many Angelenos, including 63% of youth, speak a language other than English at home.<sup>52</sup> The census estimates that 27.7% of residents speak English “less than very well.”<sup>53</sup> Linguistic isolation impacts involvement in disaster preparedness and recovery, climate mitigation, financial security, and education, which collectively build resilience. Angelenos must be engaged and empowered with accessible tools and resources in the languages that they speak.

### SHARE OF LOS ANGELES RESIDENTS SPEAKING A LANGUAGE OTHER THAN ENGLISH AT HOME IN 2014

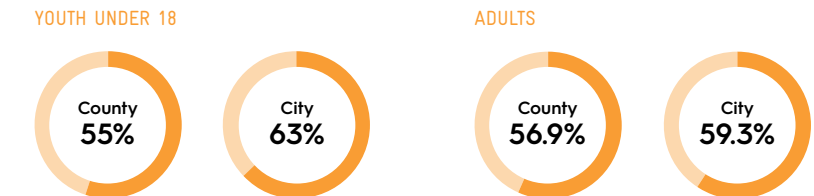


Chart source: New Americans in Los Angeles



## 50 INNOVATE MORE RESILIENT AND SUSTAINABLE BUILDINGS BY ADVANCING BUILDING FORWARD L.A.

Continuing the efforts of Building Forward L.A., the City will work with key stakeholders and experts to develop recommendations that provide strategies for better facilitating high-design, high-performance buildings capable of withstanding multiple hazards and that address goals for sustainability around renewable energy, efficiency, and water.

Building Forward L.A. is a participatory research and design process launched in March 2017 by the Mayor's Office, Rebuild by Design, and core partners A+D Museum, the Los Angeles Chapter of the American Institute of Architects (AIA-LA), the Now Institute, the Structural Engineers Association of Southern California (SEAOSC), and the Los Angeles

Chapter of the U.S. Green Building Council (USGBC-LA). The Building Forward L.A. initiative aims to improve how we design and build our city by integrating advancements and innovations in design, engineering, and construction into more sustainable and resilient buildings. Through a collaborative process, Building Forward L.A. is gathering input from stakeholders

and experts to help identify and prioritize policy, process, and design recommendations. This set of recommendations will address L.A.'s unique challenges, including threats from shocks such as earthquakes and long-term stresses such as drought, damaging heat, and flooding, and prioritize the efficient and sustainable use of resources.

**SHOCKS/STRESSES**



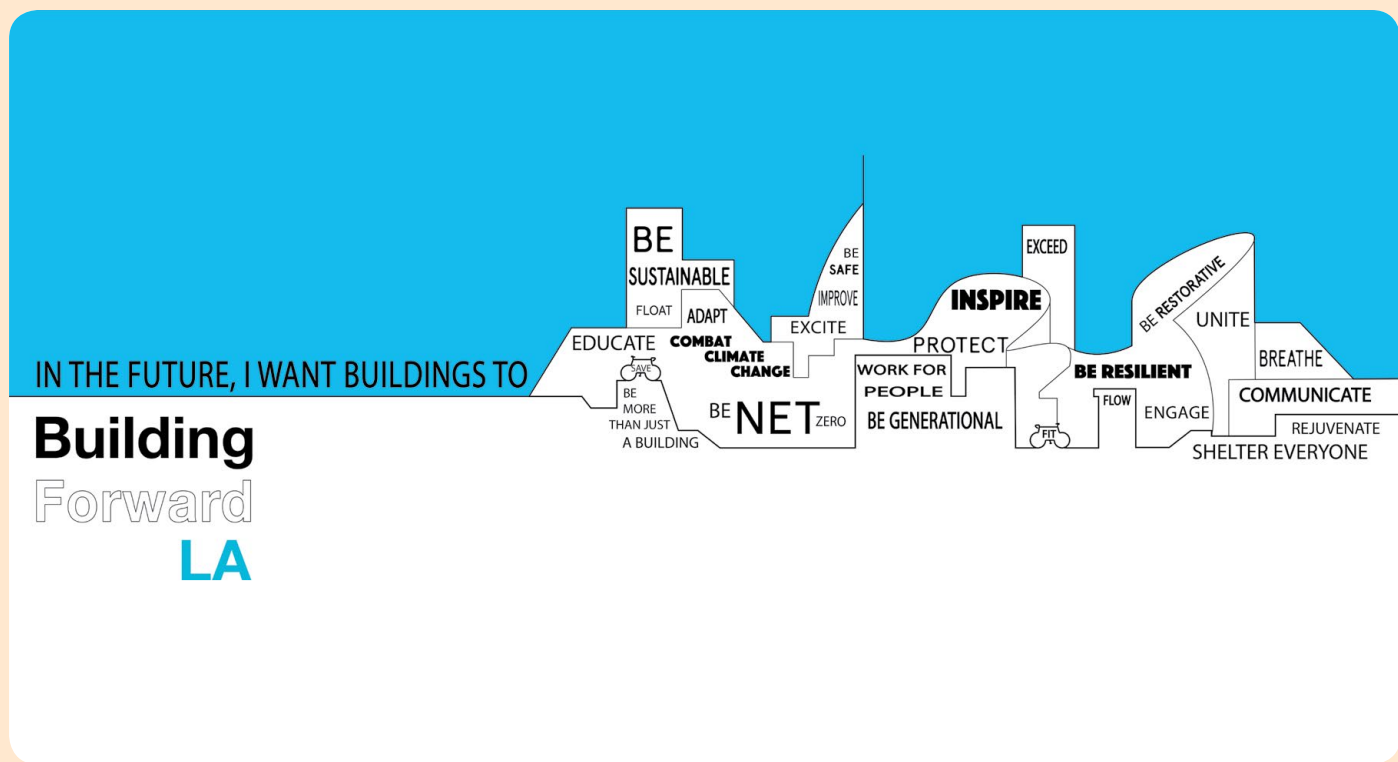
**TIMEFRAME**



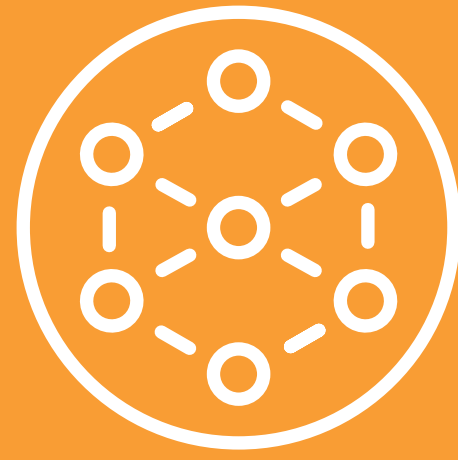
Short Term

**PARTNERS**

Rebuild By Design / LADBS / A+D Museum / AIA-LA / the NOW Institute / SEAOSC / USGBC-LA / BOE / DCP / BOS / LADWP / LAFD



This image illustrates Building Forward LA stakeholder responses when asked to fill in: "In the future, I want buildings to \_\_\_"  
Courtesy of A + D Museum



## GOAL 9: EQUIP GOVERNMENT WITH TECHNOLOGY AND DATA TO INCREASE SITUATIONAL AWARENESS AND EXPEDITE POST-DISASTER RECOVERY

### 51 FACILITATE PARTNERSHIPS WITH LOS ANGELES BUSINESSES THROUGH THE L.A. CYBERLAB, OUR CYBERSECURITY PLATFORM

Support and grow the L.A. CyberLab to share actionable cyberthreat indicators and strategic intelligence across government agencies and the private sector.

The City will serve as a resource to help defend Los Angeles businesses from cyberattacks, particularly medium, small and startup businesses that lack high-level cybersecurity protection or expertise. By offering timely threat awareness and intelligence, the City will bolster its own

resilience to cyberthreats and ensure the security and continuity of vital economic engines. The City will contribute to the development of cybersecurity professionals through the unique offering of cyber warfare simulations focused on cyber attacks against major metropolitan

infrastructure and local businesses. These simulations build up the next generation of cybersecurity leaders to exponentially increase the partnership and defense against cyber crime in Los Angeles.

**SHOCKS/STRESSES**



**TIMEFRAME**



Short Term

**PARTNERS**

ITA / LAPD / BOE / FBI / US Secret Service / Private sector



## 52 PREVENT CRIME AND VIOLENCE THROUGH ENHANCED USE OF DATA

The City will leverage its data processing capabilities to support analysis to reduce crime, similar to its successful efforts reducing domestic violence and human trafficking.

Building on past successful methods of data analysis around domestic violence and human trafficking, the City will engage a wide range of collaborative partners to develop a scale-up strategy around methods to lower crime.

### Use Data to Expand Community Policing

The Los Angeles Police Department (LAPD) is committed to the principles of community policing and the critical importance of continuing to enhance transparency and build trust with all Angelenos. These efforts have included the establishment of a Community Relationship Division dedicated to relationship-based policing, establishment and expansion of the Community Safety Partnership (CSP) Program promoting safe living environments and positive relationships with community members, and countless other related efforts. To further this work, the LAPD will work to expand City-wide surveys of public sentiment, in order to build a deeper understanding of community concerns, and better target resources and efforts to address them.

### Use Data to Combat Domestic Violence

The Los Angeles Police Department (LAPD) partners with domestic violence service providers on the Domestic Abuse Response Teams (DART) program, which offers a coordinated response to survivors of domestic violence and their children. The DART program provides crisis intervention and access to safety and wraparound support to help Angelenos work toward healthy, violence-free lives.

To further leverage this investment, the City is developing a web-based data collection pilot that enables LAPD, service providers, and other departments to automatically monitor cases and track metrics.

### Fight Human Trafficking with Enhanced Data and Outreach

As the level of human trafficking cases surged nationwide, the City partnered with the federal government to expand its human trafficking prevention and victim services while also improving training for law enforcement. By enhancing data collection, the City will anticipate

challenges, formulate effective policy solutions to improve the services available to victims, and increase prosecutions against perpetrators of human trafficking.

In 2016, Los Angeles became the largest city to formalize a partnership with the U.S. Department of Homeland Security's Blue Campaign, which brings together law enforcement, government, nongovernment, and private organizations to raise public awareness of human trafficking. The campaign offers training on how to detect and investigate this crime, leverages partnerships to educate the public on how to recognize and report human trafficking, and protects victims by bringing suspected traffickers to justice. In Los Angeles, partners include the Los Angeles World Airport Police, LAPD, Port Police, the Los Angeles Fire Department (LAFD), the Los Angeles Department of Building and Safety (LADBS), and the Housing and Community Investment Department (HCID).

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAPD / LAFD / LADBS / HCID / LAWA / POLA / Community partners

## CRIME AND VIOLENCE

Communities across America are engaged in an important conversation about the future of policing and criminal justice, and Los Angeles is a leader in that dialogue with a forward-looking approach that is a model for cities around the world. Crime in Los Angeles was at its peak in the early 1990s—rising to its highest point in 1992. That year the City suffered from the highest homicide rates on record. The high levels of crime in that time period have been attributed to the crack cocaine epidemic, and related gang activities.

Today, the City's crime rate remains near historic lows. Overall crime rates are declining, and violent crime, including homicides, has leveled off. 2016 was the eighth safest year in more than 60 years, with per capita crime levels as low as they were in the mid-1950s.

To disrupt cycles of violence, the City will continue making targeted investments in the people and communities most affected by crime. Neighborhood safety, however, isn't just about crime suppression:

It depends on building relationships between communities and officers that are based on trust—on both sides of the badge. Recent events around the country underscore the need for, and importance of, lasting collaborative relationships between local police and the public. These relationships can be built and strengthened through community policing, which promotes greater trust between law enforcement officers and the communities they serve.

## 53 IMPLEMENT CITYWIDE DATA INTEGRATION SYSTEMS TO SUPPORT FIRST RESPONDERS AND CITY DEPARTMENTS IN IDENTIFYING THE MOST URGENT AND HIGHEST NEED SITUATIONS

The City will work with public safety officials and spatial analysts to develop a platform that facilitates situational awareness and communications between key City departments and partner agencies.

The City will continue to increase situational awareness through technology integration that will have an immediate impact on the City's preparedness, response, and recovery. The City is working with technology and research partners to pilot and implement data integration platforms that help with predictive modeling before a major event and increased situational awareness during and after. These efforts help both interdepartmental communications and public messaging so that the City and the public can easily access information, data, and maps, such as evacuation areas and available shelters during a major wildfire.



### SALUS – THE CRISIS HUB

The City will work with the Los Angeles Homeland Security Advisory Council (HSAC) to develop a citywide framework using SALUS, a cloud-based crisis, event management, and information sharing platform. HSAC is partnering with the City to provide this public safety technology platform that integrates private, public, and civic sector data into actionable information during times of disruption or crisis, enabling rapid, data-driven decision-making among first responders and public agencies.



### SEISMIC CONCERN

The City is piloting Seismic Concern, a predictive analytics platform that simulates earthquake scenarios in order to identify potential vulnerabilities and deliver reliable damage estimates and action planning tools after an earthquake. Seismic Concern is a web-based decision-assistive tool that uses realistic simulations rooted in the latest technological understanding of seismic events to train staff, allowing the City to better prioritize resources that get the City back up and running as quickly as possible following an earthquake. By leveraging innovations developed since the 1994 Northridge earthquake, the City will further modernize emergency services in advance of the next catastrophic seismic event.



### WIFIRE

The LAFD is working with the University of San Diego to use real-time remote sensor data to model and visualize wildfires and predict a wildfire's rate of spread using weather patterns and other data. WIFIRE is an integrated, web-based system with a mapping tool that enables what-if analysis of fire scenarios in advance and in addition to real-time fire forecasting. This tool provides information on past fires, weather forecasts, and terrain and vegetation, which are used for planning fire response and management of natural resources well ahead of a wildfire.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

ITA / LAFD / LAPD / LADBS / EMD / DOT / HSAC / One Concern / Private-sector partners / Research institutions



## 54 ESTABLISH POST-DISASTER RESTORATION TARGETS FOR CRITICAL INFRASTRUCTURE

The City will establish performance goals and recovery targets for critical infrastructure, including water, sewer, electricity, gas, communications, and transportation systems.

The Mayor's *Sustainable City pLAN*, which was released in 2015, recommended the development of measurable targets for post-disaster recovery. The creation of this framework, including recovery performance goals, will establish a process to assess service restoration that considers vulnerable populations and uses, critical

infrastructure interdependencies and supply chains. Performance goals will be established for our water, sewer, electricity, gas, communications, and transportation systems. These targets will be incorporated into the City's Continuity of Operations Plans, which ensure that City agencies are able to

continue to perform essential functions. The framework will allow for the established targets to be revised periodically to account for changes in infrastructure, technology, systems management, and interdependencies.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

EMD / LADWP / DPW / DOT / SCG / Telecom firms / Other private-sector partners



## GOAL 10: PROVIDE SAFE AND AFFORDABLE HOUSING FOR ALL ANGELENOS

### 55 DOUBLE THE PACE OF AFFORDABLE HOUSING PRODUCTION AND PRESERVATION AND TRIPLE PRODUCTION OF NEW PERMANENT SUPPORTIVE HOUSING BY CHANGING REGULATION, ADOPTING NEW FINANCING MECHANISMS, AND EXPLORING ADAPTIVE RE-USE OF PUBLICLY-OWNED SITES

By leveraging new funding sources, streamlining processes, and pursuing policies that encourage production and preservation, the City will reach our ambitious goal of 100,000 housing units by 2021.

A robust, diverse, and resilient housing stock is essential to promoting economic prosperity and growth in Los Angeles. Yet, due to the lack of sufficient affordable units and the overall growth of the City's population, L.A. continues to experience the affordability crisis that started in the mid-1970s. With passage of Measure HHH in 2016, the City can issue \$1.2 billion in housing bonds. This source alone

increases annual affordable housing funds by 263% over the next decade. In 2017, Mayor Garcetti signed the affordable housing linkage fee into law, which could generate up to \$100 million annually for affordable housing activities. The City will also continue to deploy mechanisms to expedite the housing permit process, such as the priority housing project program. Our housing laws include protections for

renters that exist in city law, which the City will continue to promote and enforce. To prevent low-income tenants from being displaced, several measures have been taken to increase the capability of the Rent Stabilization Ordinance to investigate complaints of illegal rent increases and pursue enforcement.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

HCID / HACLA / LAHSA

### NIMBLE DISASTER RESPONSE AND RECOVERY

The City of Los Angeles Emergency Management Department (EMD) initiated a mega-contract project that will make on-call contractors available to assist in emergency response, repair, and recovery work following a catastrophic incident. Through this public-private partnership, the City has entered into an agreement with two contractors that will provide equipment, supplies, services, and labor for a wide variety of immediate needs in the event of a large-scale disaster.



La Tuna Canyon Fire Command Post in September 2017  
Photo: Office of Mayor Garcetti



## 56 PROMOTE AND EXPAND HOUSING OPTIONS FOR VULNERABLE POPULATIONS SUCH AS CHRONICALLY HOMELESS AND HOMELESS VETERANS AND VICTIMS OF DOMESTIC VIOLENCE AND HUMAN TRAFFICKING

By expanding supportive and transitional housing options for populations, most in need, the City will reduce the unsheltered homeless population while providing health and support services.

The City is committed to developing supportive housing as quickly as possible to help homeless individuals with special needs remain stably housed. Additionally, the City will focus on homelessness prevention by ensuring housing and support services for other high needs populations. The LAHSA 2017 Greater Los Angeles Homeless Count highlights the overlap for many homeless individuals

having also experienced domestic violence (DV) or sex trafficking in their lifetimes.<sup>54</sup> The L.A. County report found that 50% of homeless women have had some experience with domestic violence and 28% have had some experience with sex trafficking during their lifetimes. To provide services that directly responds to the needs of DV victims experiencing homelessness, the City is increasing the

number of DV shelters and the shelter bed capacity, in addition to expanding staffing and services that help navigate both the shelter experience and the transition to permanent housing. The City will also look into expanding programs focused on human trafficking victims, including launching a human trafficking pilot shelter program.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

HCID / HACLA / LAHSA / Non-profit housing partners

## 57 INCREASE PARTICIPATION IN CITY AND STATE PROGRAMS THAT PROMOTE SAFER HOUSING BY REDUCING EARTHQUAKE RISK

The City will work with partners to encourage voluntary and mandatory participation in seismic retrofits to improve the seismic safety of all housing, while ensuring that structural improvements do not lead to displacement.

The passage of a historic and robust mandatory retrofit policy, led by Mayor Garcetti, will strengthen our most vulnerable soft-story and non-ductile concrete buildings to prevent loss of life in the event of a major earthquake. These mandatory retrofits will need to be completed by 2024 for soft-story buildings and 2043 for

non-ductile concrete buildings. However, these timeframes are maximums, not minimums. Currently hundreds of building owners have retrofitted their buildings. In order to reach a 100% compliance rate, the City will advance our outreach and education programs and continue to partner to advance financing tools for

building owners and tenants experiencing financial hardships.

Furthermore, while not mandatory, all building owners should be aware of the seismic retrofit opportunities, like bracing and bolting of single-family homes and voluntary retrofits for soft-story multi-family buildings with fewer than four units.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

LADBS / HCID / HACLA / LAHSA / Nonprofit partners / State partners / Building owners and tenants / Professional associations / Contractors

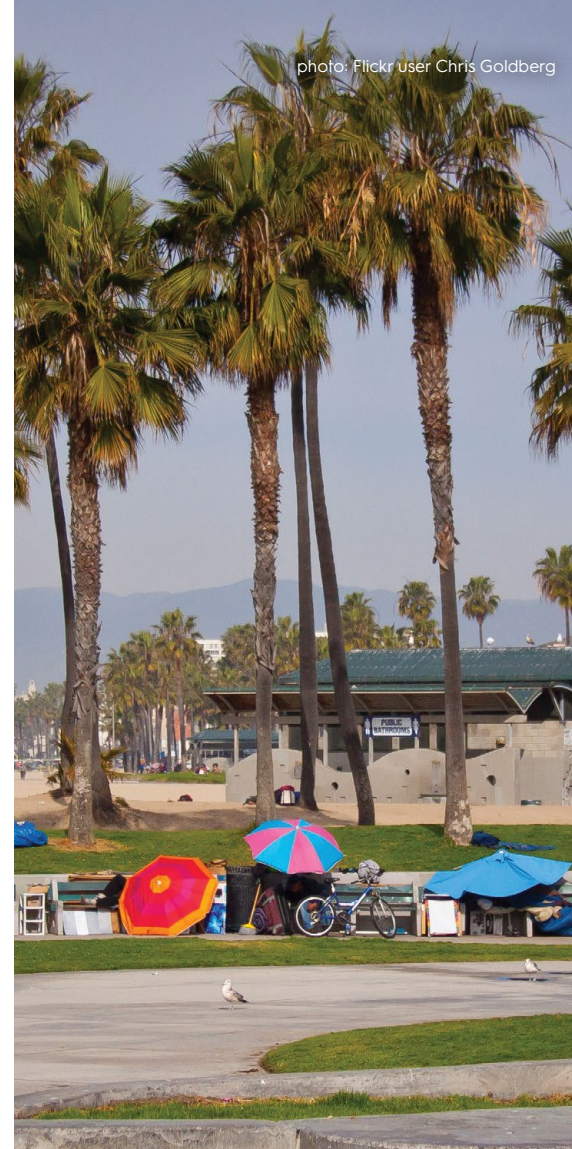


photo: Flickr user Chris Goldberg

## EQUITY, HOUSING, AND HOMELESSNESS

The Los Angeles region is facing a homelessness crisis and a shortfall in affordable housing. Home prices and rental costs in the region have been rising for more than 40 years. According to the California Housing Partnership Corporation, median rent in Los Angeles County has increased 28% since 2000, while median renter household income has declined 8%.<sup>55</sup> Renters comprise 63% of the population and spend 47% of their incomes on rent, earning a median annual household income of \$51,538.<sup>56</sup> Angelenos affected by extreme inequality are most vulnerable to the impacts of a major shock. The lack of affordable housing creates a financial strain that not only limits their financial ability to plan for unanticipated events and costs, but also impacts funds for essentials like food, transportation, and healthcare and can require doubling up (overcrowding) to share housing costs.<sup>57</sup>

The strain on the housing market is one factor that contributes to an increasing homeless population. According to the Los Angeles Homeless Services Authority's 2017 Point in Time count, overall homelessness in the City of Los Angeles increased by 20% over the past year to 34,189

people. In recent years, the homeless population has both grown in size and become more widespread throughout the city. Over 10,600 individuals—nearly one-third of the total homeless population—are chronically homeless.<sup>58</sup> In 2016, the City and County undertook a historic joint effort to address homelessness regionally. The City's Comprehensive Homeless Strategy report takes a three-pillar approach: house those who are currently homeless, prevent residents who have homes from falling into homelessness, and implement a street-based plan that protects public health and public safety along with the civil rights of people experiencing homelessness.<sup>59</sup>

In 2016, and again in 2017, more than two-thirds of local voters agreed to invest in alleviating homelessness. Voters overwhelmingly passed two homelessness initiatives to help combat the crisis: Measure H will pay for services to help lift 45,000 people out of homelessness, and Proposition HHH is estimated to support construction of up to 10,000 units of permanent supportive housing over the next decade.

## 58 COORDINATE A HOMELESS HOUSING SERVICE PROVIDER PREPAREDNESS PROGRAM TO FORTIFY SYSTEMS AND SERVICES TO WITHSTAND FUTURE CHALLENGE

The City will work with service providers and emergency managers to provide emergency preparedness resources, trainings, and coordination to support homeless housing shelter services in the wake of a major disruption.

This coordinated effort will focus on emergency preparedness resources, trainings for staff working at shelters,

and other opportunities to expand communications and planning. It will also make physical improvements to support

emergency housing providers in their continued operations.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

LAHSA / CAO / EMD / RAP / LAFD / LA County OEM / American Red Cross / Homeless service providers



## 59 CONNECT PEOPLE EXPERIENCING HOMELESSNESS NEAR THE RIVER WITH BETTER ACCESS TO SERVICES AND HOUSING

The City and its partners will continue to engage in targeted outreach to homeless populations along the Los Angeles River to better connect them to existing programs and services, such as permanent supportive housing and health services.

A substantial number of homeless individuals seek shelter in and near the Los Angeles River, which exposes them to particular weather-related shocks and stresses, such as high heat, flash flooding, and untreated runoff. Building upon existing citywide homeless outreach efforts, such as the Homeless Outreach

and Proactive Engagement (HOPE) initiative, the City will engage in targeted outreach to the homeless population along the Los Angeles River. The City will work in partnership with agencies such as L.A. County, the USACE, and the Los Angeles Homeless Services Authority (LAHSA) so that existing services and

programs can better reach this vulnerable population. The City will also develop training for dedicated outreach teams to comprehensively understand both the jurisdictional landscape and the needs of the homeless population that are specific to the Los Angeles River.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

LAHSA / EWDD / LAPD / MRCA / BOS / Office of the City Attorney / RAP / LADWP / USACE / LACFCF / Caltrans / State of California

Homeless encampments adjacent to the L.A. River

Photo: Office of Mayor Garcetti



## 60 ESTABLISH NEIGHBORHOOD-BASED, SHORT- AND LONG-TERM POST-DISASTER HOUSING PLANS

Develop comprehensive plans and partnerships that provide Angelenos with access to short- and long-term housing as quickly as possible after a disaster.

The City will develop a community-based, long-term post-disaster housing plan to minimize housing insecurity for Angelenos and to reduce costly planning delays following a major disaster. This plan will build on best practices identified through the Regional Disaster Housing Planning Project, a three-year and five-county planning project that produced resources to support local jurisdictions in developing disaster housing plans. The plan will augment pre-disaster safety inspections and streamline permitting requirements for temporary housing solutions and post-disaster residential repairs. The City, led by Recreation and Parks (RAP), will continue assessing existing sheltering facilities and

develop a framework for the temporary establishment, use, and management of shelters to house displaced individuals following catastrophes.

To ease the transition from shelters to short-term or permanent housing, the plan will also explore tactics such as coordinating with insurance providers to help expedite payments to individuals. The City will use its Asset Management Tool to identify City-owned sites that could accommodate temporary, interim, or permanent housing.

The plan will also build upon policies and programs developed after previous

disasters, such as the 1994 Northridge earthquake, to protect the rights of existing renters and property owners. Recent catastrophic events, such as Hurricanes Harvey, Irma, and Maria, have underscored the need to have post-disaster housing and sheltering plans in place prior to a major disaster to minimize the devastating and costly impacts that can result from major shocks, such as earthquakes. In particular, the post-disaster housing needs of vulnerable populations will be a priority of the plan. These include homeless individuals, people with disabilities; low-income individuals; survivors of domestic violence; and seniors who may be severely impacted.

### SHOCKS/STRESSES



### TIMEFRAME

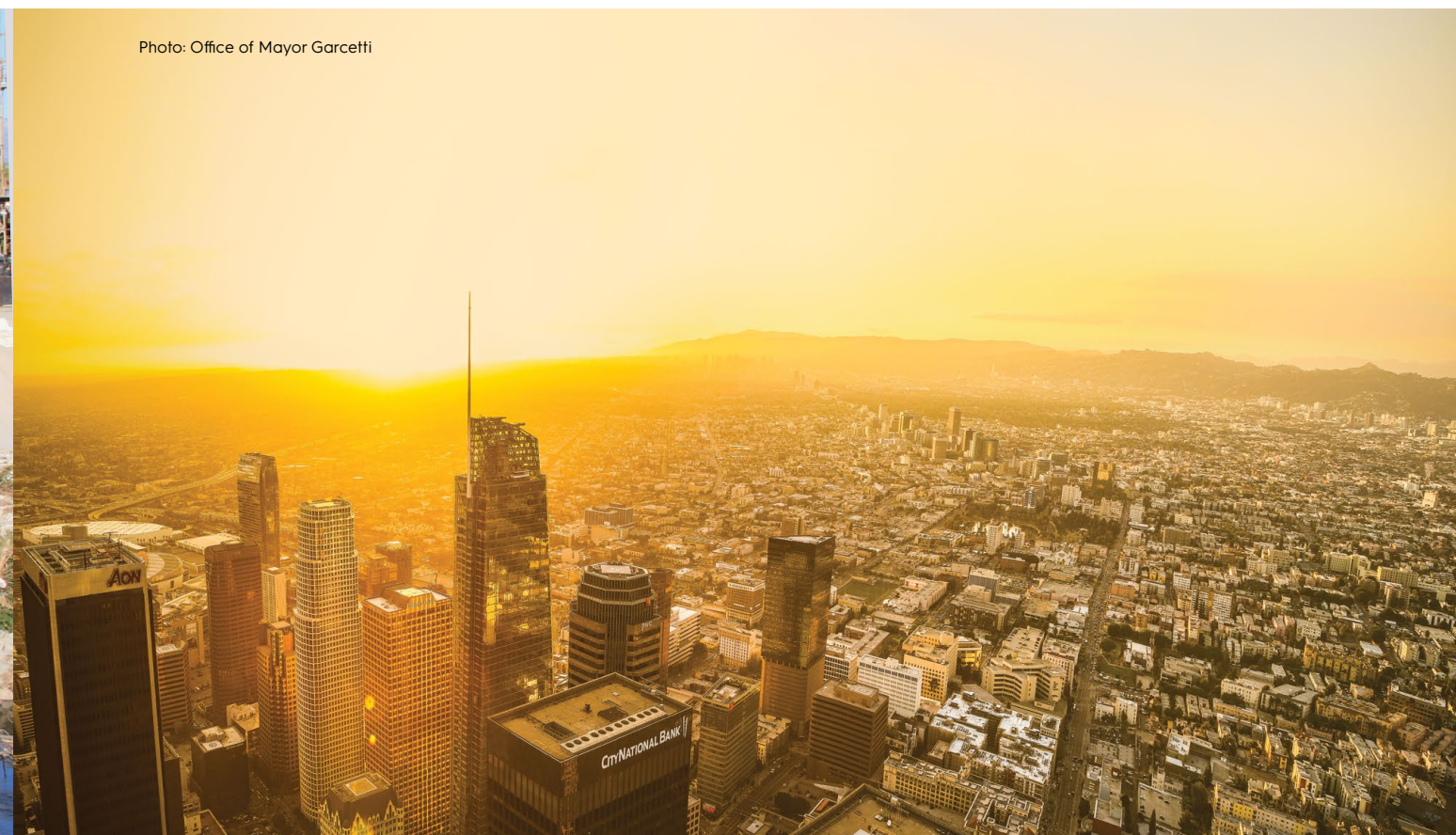


Short Term

### PARTNERS

HCID / EMD / RAP / DCP / HACLA / LADBS / LA County (public health, mental health, public social services) / State of California / HUD / FEMA / ARC

Photo: Office of Mayor Garcetti







# GOAL 11: RESTORE, REBUILD, AND MODERNIZE LOS ANGELES' INFRASTRUCTURE

## EARTHQUAKES

In Los Angeles, we live with the threat of a serious earthquake every day. Most Angelenos are familiar with the impact of earthquakes, but a deeper understanding of what causes them will help people to be better prepared and to respond and recover when one occurs.

An earthquake is a sudden slip on a fault that shakes the ground and radiates seismic energy. The duration of the shaking directly corresponds to the magnitude of the earthquake. The magnitude 6.7 1994 Northridge earthquake occurred on a 10-mile long fault, lasted seven seconds, and caused strong shaking in about 20% of the city.<sup>60</sup> Like the 1906 San Francisco earthquake, future earthquakes generated by the San Andreas Fault are expected to be a magnitude 7.8 or higher, last about two minutes, and cause the same level of strong shaking over thousands of square miles.<sup>61</sup>

Southern California's breathtaking landscape—from Catalina Island to the San Gabriel Mountains—was formed by more than 300 faults in the region, including the San Andreas Fault, located 34 miles north-east of downtown Los Angeles. Significant faults within the City include the Newport-Inglewood, Santa Monica, Hollywood, Puente Hills Blind Thrust, Palos Verdes Hills, Verdugo, San Fernando, Northridge, and Santa Susana faults. There are more than 30 known earthquake faults below the City of Los Angeles. A medium to major earthquake within Los Angeles or the adjacent region could have major impacts to health and safety, as well as the economy.

According to Swiss Re, one of the world's largest reinsurance companies, Los Angeles faces the fourth greatest risk of catastrophic loss resulting from an earthquake of any city in the world, behind Tokyo, Jakarta, and Manila.<sup>62</sup> The USGS

and the Federal Emergency Management Agency (FEMA) analyzed every fault in the U.S. and found that Los Angeles County alone represented one-quarter of the expected losses of the whole country, averaging \$1.5 billion per year.<sup>63</sup>

When the big one occurs, with potentially hundreds of years of annualized loss at once, we will face a catastrophic depression of our regional economy. If infrastructure comes back into service without a long delay, the recovery will be quicker and the regional economy may return to its expected level within a few years. In major earthquakes, however, economic activity may not recover for several decades, resulting in economic catastrophe. Increasing seismic resilience will lessen detrimental impacts to health and safety and improve the chances that the regional economy will bounce back.

## Prepared and Responsive City

# 61 ADVANCE SEISMIC SAFETY, PRIORITIZING THE MOST VULNERABLE BUILDINGS, INFRASTRUCTURE, AND SYSTEMS

The City will work with earthquake experts to share and implement best practices across city agencies to fortify the built environment and improve the City's capacity to prepare for and respond to earthquakes.

### Re-establish the Mayor's Seismic Safety Task Force

By re-establishing the Mayor's Seismic Safety Task Force, the City will leverage state-of-the-art advances in seismic resilience to develop and implement seismic recommendations, beginning with those in the Mayor's *Resilience by Design* report and the Mayor's *Resilient Los Angeles* strategy.

### Evaluate Seismic Risk of City Assets and Management Programs

The City will expand efforts to incorporate seismic risk in asset planning and management by learning from LADWP's seismic pilot programs. The LADWP water system recently undertook a pilot study to investigate methodologies for incorporating seismic risks into their asset management program, which currently assesses infrastructure quality and recommends facility replacements or improvements. Additional seismic analysis will strengthen the system citywide through prioritized asset investments. Other City asset-planning and management programs should consider similar efforts.

### CONTINUE TO STRENGTHEN OUR BUILDINGS

#### Explore financing strategies and incentives for seismic retrofits of privately-owned buildings

The City will work with partners to explore additional funding and financing options for residential and commercial seismic retrofits. Seismic retrofits, such as the installation of earthquake-resistant bracing systems, can protect properties from catastrophic damage. Because not all building owners have the means to afford retrofitting their buildings, the City will explore developing

additional programs for building owners subject to mandatory retrofits, as well as the expansion of the Earthquake Brace+Bolt and CalCAP Seismic Safety Capital Access Loan Program and opportunities to leverage Property Assessed Clean Energy (PACE) financing.

#### Develop recommendations for mandatory retrofits for additional building typologies

As Los Angeles takes historic steps to retrofit our most vulnerable buildings, the Mayor's Seismic Safety Taskforce will re-evaluate whether to recommend mandatory retrofits for additional building typologies that were built using older building codes, such as steel buildings constructed before 1994.

#### Develop a mandatory private school seismic evaluation program

The City will develop additional mandatory seismic evaluation programs that prioritize buildings with private schools and daycares that are not held to the higher seismic safety standards required of public K-12 educational buildings by California's Field Act.

#### Advance immediate occupancy building codes for new buildings

The City will also work with local, state, and federal partners to develop and adopt a "public safety" standard for new buildings and to advance immediate occupancy building codes for new buildings that will allow Angelenos to reoccupy buildings more quickly following an earthquake, minimizing impact on safety, housing, and economic activity. Under current building codes, it may take weeks, months, or longer until buildings are able to be used again. These disruptions can cause minor to serious

safety and economic consequences, which can prolong the immediate effects of an earthquake.

### FORTIFY OUR WATER SYSTEM

#### Expand Seismic Resilient Pipe Network

The City will expand development of the seismic resilient pipe network to include the myriad geohazards located throughout Los Angeles. It will also work to improve coordination among the Bureau of Engineering, the Bureau of Sanitation, Southern California Gas Company, and other agencies that own buried pipe networks and deal with associated hazards. Resilient pipeline planning, design, and construction requires the development of new informational tools and mapping of geohazards that could impact the underground pipe, including seismic activity such as ground movement and deformation, liquefaction, fault lines, and landslides.

#### Develop mitigation alternatives for the L.A. Aqueduct and Elizabeth Tunnel

To ensure a safer and more resilient water system, the City will conduct studies to identify and develop mitigation alternatives for the Elizabeth Tunnel to address the maximum San Andreas Fault rupture. The Los Angeles Aqueduct provides approximately one-third of the City's water supply. However, the aqueduct crosses the San Andreas Fault in the five-mile-long, nine-foot-wide Elizabeth Tunnel, making it vulnerable to severe damage and complete loss of flow in the event of a large fault movement. Mitigation alternatives will assess seismic vulnerabilities from San Andreas Fault events for the California Aqueduct and the Colorado River Aqueduct, two other sources of water for the City of Los Angeles.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

Mayor's Seismic Safety Task Force / LADWP / DPW / USGS / California Geologic Survey / Resilient Expert Panel / SCG / HCID / City departments



## RESILIENCE BY DESIGN

**Resilience by Design (RBD)** is the cornerstone of Los Angeles' commitment to seismic resilience. Developed in 2014 in partnership with seismologist Dr. Lucy Jones and the Mayor's Seismic Safety Task Force, RBD has already had a historic impact on the city's seismic safety. The recommendations focused on the most vulnerable infrastructure by strengthening our buildings, fortifying our water system, and enhancing reliable telecommunications. Below is a summary of the recommendations, current status, and next steps.

### Assess and Retrofit Pre-1980 Soft-Story Buildings

In progress   

In October 2015, Mayor Garcetti signed a historic ordinance requiring the city's most vulnerable buildings to be retrofitted. By the end of 2017, all 13,500 soft-story buildings with four or more residential units will have received orders to comply with the mandatory retrofits within seven years. The first 600 owners have already begun to retrofit these buildings, nearly all of which are subject to the City's Rent Stabilization Ordinance. The City will continue to work with partners to advance the soft-story retrofits within the seven-year timeframe.

### Assess and Retrofit Pre-1980 Non-ductile Concrete Buildings

In progress  

By the end of 2017, approximately 1,500 non-ductile concrete buildings began to receive orders to comply with mandatory retrofits within 25 years, as required by the ordinance signed by Mayor Garcetti in October 2015. The City will continue to work with partners to advance the non-ductile concrete retrofits within the 25-year timeframe.

### Implement a Seismic Safety Rating System for City buildings

In progress  

The City supports advancements in seismic building rating systems and is in the preliminary stages of assessing City buildings. The City's new asset management program will serve as an important tool in the next phase of this process.

### Create a Back to Business Program

In progress   

The LADBS will launch a *Back to Business Accelerated Seismic Safety Assessment Program* to coordinate with building owners in advance of a major earthquake, register high-priority buildings for rapid assessment by LADBS, and integrate other available resources.

### Mandate Retrofit of Buildings that are Substantially Damaged in Earthquakes

Complete   

The City Council adopted an ordinance requiring buildings that experience substantial damage in low levels of shaking to be evaluated and retrofitted rather than repaired. This new policy became effective May 11, 2016.

### Develop an Alternative Water System For Firefighting

In progress   

The LADWP and the LAFD prepared a preliminary plan in July 2015 for addressing the risk of fire following an earthquake. In 2016, research was used to begin identifying and mapping secondary water resources. This research helped to indicate the most vulnerable parts of the city. LADWP, LAFD, DPW, EMD, and other partners are now developing a series of recommendations for short- and long-term strategies for increasing access to primary and secondary water resources after an earthquake. They are also mapping ignition and fuel sources to help departments prioritize policies, programs, and infrastructure investments that will mitigate the risk of fire following an earthquake.

### Fortify the Los Angeles Aqueduct

In progress    

In 2015, LADWP developed the Elizabeth Tunnel Seismic Risk Reduction Preliminary plan that outlines two projects: (1) a risk reduction project to increase opportunities for continued water flow in the event of damage to the Elizabeth Tunnel in the near-term, and (2) a replacement modification project to provide an engineered solution to crossing the San Andreas Fault to minimize long-term service disruption in the event of the anticipated largest offset (approximately 40 feet).

### Fortify Other Aqueducts

In progress  

LADWP, Metropolitan Water District (MWD), and the Department of Water Resources (DWR) formed the Seismic Resilient Water Supply Task Force in 2015 in response to recommendations in RBD to work together to fortify the four aqueducts that bring water to the Los Angeles region. The agencies held an aqueduct workshop in 2016 to develop a five-year action plan.

### Protect Water Storage

In progress    

LADWP is ensuring that dams are maintained in a safe and reliable manner to ensure public safety and a reliable water supply in the event of an earthquake. As part of this effort, LADWP performs regular evaluations of the seismic safety of dams and updates of the inundation maps used to inform emergency action plans for each reservoir.

### Increase Local Water Sources

In progress      

Currently, Los Angeles imports 85% of our water.<sup>64</sup> Local water supply development will enable LADWP to reduce reliance on imported water and cut purchases from MWD, saving Angelenos money. The City has pledged to reduce the purchase of imported water by 50% by 2025 and to increase our local water supply by 50% by 2035. The City continues to make progress on increasing the local water supply by capturing more stormwater, stepping up water recycling, and recharging and cleaning the San Fernando Groundwater Basin while expanding advanced water treatment in the city.

### Create a Seismic Resilient Pipe Network

In progress    

In early 2015, LADWP's Earthquake Resistant Water Pipe pilot program was launched near the epicenter of the 1994 Northridge earthquake. LADWP completed five pilots throughout the city, installing two miles of earthquake-resistant ductile iron pipes (ERDIP) to date. With the pilot program complete, LADWP will continue to install an additional 14 miles or more of ERDIP in the coming three years. LADWP is also developing a seismic resilient pipe network program. (See Action 91 for the next phase of this work.)

### Implement a Resilience by Design Program at LADWP

In progress     

LADWP has a Resilience Manager working full time with partners to implement the Water System Seismic Resilience and Sustainability Program. LADWP is also advancing a power resilience program.

### Enhance Reliable Telecommunications

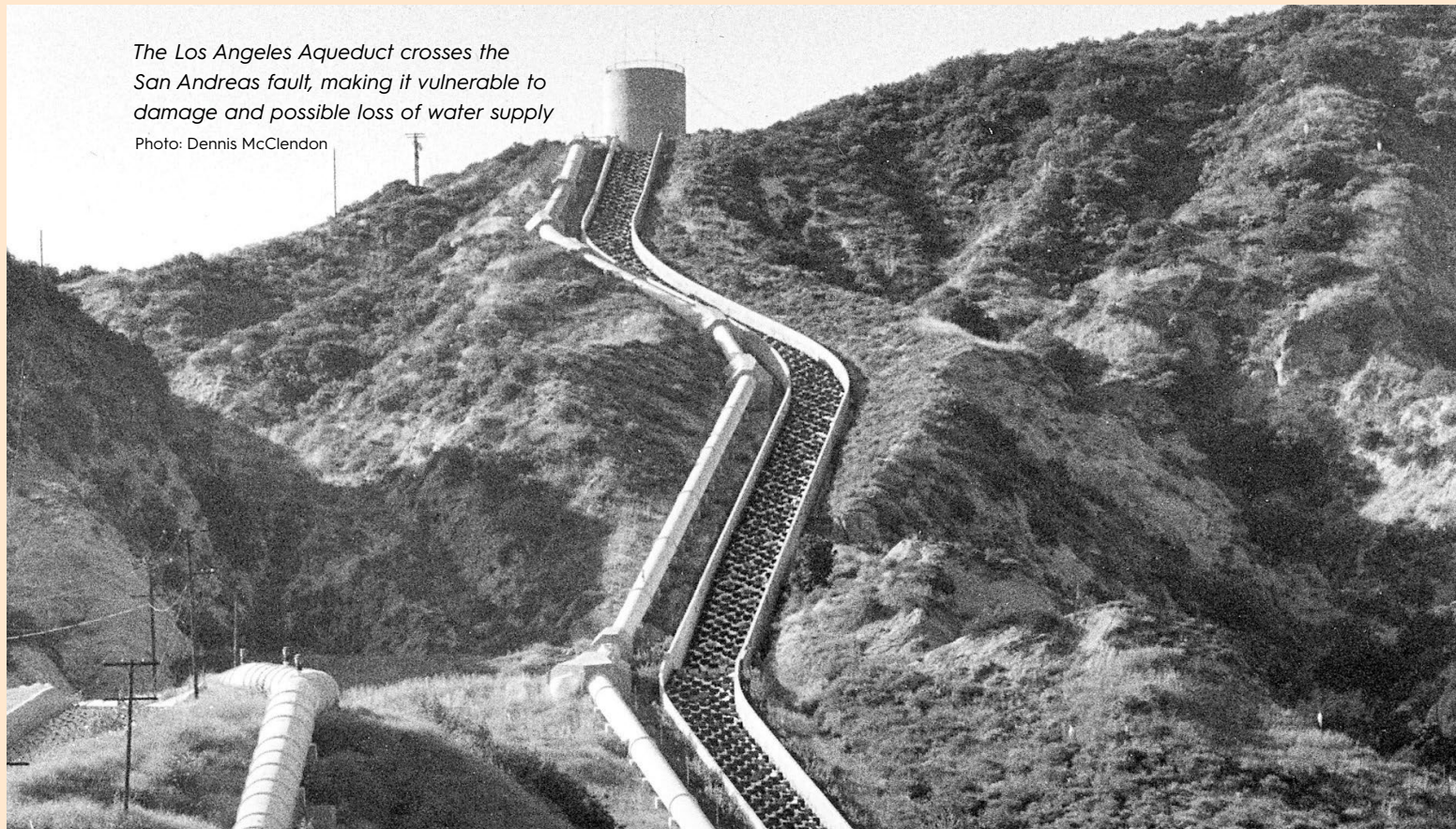
In progress   

In summer 2015, stronger telecommunications standards were passed and signed into law requiring new cell towers to be built to a public safety standard, consistent with other critical infrastructure. In fall 2015, the City signed a memorandum of understanding with AT&T, Verizon, T-Mobile, and Sprint to implement network-sharing capabilities during emergencies to help residents communicate via data and voice networks.

### Advance Earthquake Early Warning

In progress   

In 2015, the City partnered with the U.S. Geological Society (USGS), Caltech, and the LAUSD to begin implementing earthquake early warning (EEW) by utilizing the ShakeAlert software in school classrooms. In partnership with USGS, the Mayor's Office and some City departments are currently serving as ShakeAlert beta testers and beginning to pilot EEW technology. (See Action 90 for the next phase of this work.)



The Los Angeles Aqueduct crosses the San Andreas fault, making it vulnerable to damage and possible loss of water supply  
Photo: Dennis McClendon



## AGING INFRASTRUCTURE

Angelenos rely on a complex and vast infrastructure system to deliver critical services that make Los Angeles a livable, well-run city. The City's infrastructure is aging. Timely repairs and replacements are critical, both to prevent existing infrastructure from failing and to invest in new, modern infrastructure that meets the needs of a large and dynamic city.

Proactive investment in replacing, repairing, and modernizing the City's aging infrastructure can both save money and prevent disruption to people's lives. The Sunset Boulevard water main break in 2014 illustrated the impact a major break can have on the City, residents, and businesses. In the case of major water main breaks, LADWP estimates

that the cost of fixing these breaks after the incident can be three times more expensive than planned infrastructure replacement and repair.<sup>65</sup>

The scale and age of Los Angeles' infrastructure creates a once-in-a-generation chance to rebuild and re-envision major infrastructure projects to achieve multiple resilience goals and maximize benefits. With over \$50 billion in planned investment in City infrastructure over the next decade, this investment offers an opportunity to take a resilient approach by aligning cross-departmental goals and prioritizing and addressing risks from multiple hazards, including climate and seismic vulnerabilities.



A water main break on Sunset Boulevard  
Photo: LAFD Photo I Steve Gentry

## LIVING WITH AND WITHOUT WATER

Between 2012 and 2016, Los Angeles and California experienced the most severe drought in the last 1,200 years.<sup>66</sup> Rising temperatures contributed to a reduced Sierra snowpack, which provides as much as one-third of California's water supply. This loss in water supply resulted in Los Angeles importing up to 80% more water during the drought.<sup>67,68</sup> The warming trend and reduced snowpack are projected to worsen in future droughts, but the severity of their impact will depend on our efforts to reduce greenhouse gas emissions.

A recent study<sup>69</sup> of the warming impacts on California's snowpack during drought found the following:

- In the "snow years" (November–June of 2011–2012 through 2014–2015), human-caused climate warming reduced average Sierra Nevada snowpack levels by 25% compared with a climate model simulation without human-caused warming.

- Using the warming conditions expected in 2081–2100 under a business-as-usual scenario of greenhouse gas emissions, a model simulation of the recent drought saw average snowpack was reduced by 85% compared with what actually occurred in the winters of 2011–2012 through 2014–2015. Nearly all snow is lost at elevations below 8,000 feet.
- Loss of snow in drought years will be made worse by climate change, no matter which greenhouse gas emissions pathway the world follows.

Additionally, periods of severe drought may be followed by extreme precipitation events leading to risk of flooding, mudslides, and damage to water infrastructure. In March 2017, Mayor Garcetti declared a state of emergency to address unprecedented snowmelt in the Owens Valley. After a historic, multiyear drought, the state experienced a wet winter season that led to record snowpack

241% above normal in the Eastern Sierras. In times of extreme precipitation and when there is more rain and less snowpack, the City and State need to manage greater amounts of water earlier in the year. Wet years like 2017 are a reminder that investments in local water supply are crucially important—particularly the expansion of spreading grounds, recycled water infrastructure, stormwater capture, and cleaning our groundwater basins. LADWP plans to invest \$2.4 billion over the next 10 years in water system infrastructure improvements, including local water supply development projects. Resilient water infrastructure will ensure the City is prepared to handle both extreme wet and extreme dry years.

## 62 EXPAND AND PROTECT WATER SOURCES TO REDUCE DEPENDENCE ON IMPORTED WATER AND STRENGTHEN THE CITY'S LOCAL WATER SUPPLY

**To be resilient in the face of multiyear drought and potential seismic activity, the City must reduce its reliance on imported water and meet local water goals by expanding groundwater sources, recycling water, and reusing stormwater.**

California is currently recovering from one of the worst droughts on record. Future drought is an ongoing concern for our region, and its effects will be exacerbated by climate change, which will further reduce key sources of freshwater such as the Sierra snowpack. Seismic activity along the San Andreas Fault further

threatens our imported water supply, which flows through three primary aqueducts that transport water to Southern California from the Owens Valley, Northern California, and the Colorado River. Angelenos and the City should decrease their demand on imported water by reducing overall water consumption

and expanding local water sources. Actions to grow local water supply include cleaning up the San Fernando Groundwater Basin aquifer, increasing the City's production of recycled water at water reclamation facilities, and systematically capturing and reusing stormwater throughout the city.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

LADWP / DPW / RAP /  
LA County / WBMWD / MWD /  
Water Replenishment District

Owens Valley, California  
Photo: Office of Mayor Garcetti





## 63 PRIORITIZE KEY NEIGHBORHOODS FOR STORMWATER CAPTURE, URBAN GREENING, AND OTHER COMMUNITY BENEFITS

The City will identify neighborhoods that would most benefit from a systematic approach to incorporating green stormwater infrastructure solutions into the public right of way and develop a policy for requiring and incentivizing implementation in those areas.

The City will identify priority areas to incorporate green infrastructure into the public right of way to promote benefits such as increasing local water supply, decreasing pollution from urban runoff,

and reducing the heat island effect. Priority neighborhoods will include disadvantaged communities and areas susceptible to flooding. Green infrastructure strategies will vary between simpler

solutions, such as swales and parkway basins, and larger projects, such as underground infiltration galleries under key streets and alleys, where the water supply benefits are greatest.

### SHOCKS/STRESSES



### TIMEFRAME



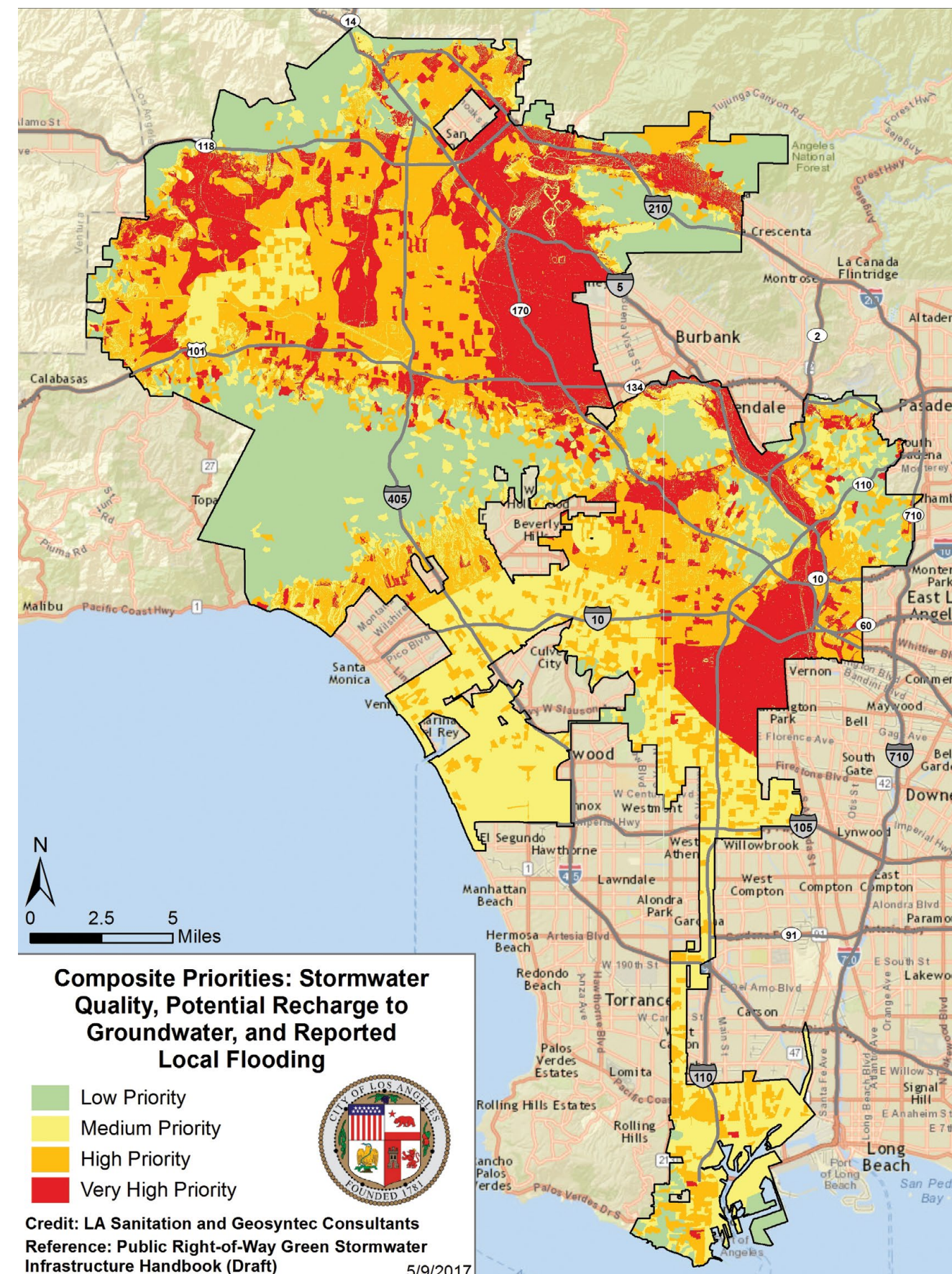
Short Term

### PARTNERS

BOS / BSS / BOE / LADWP / LADOT / Metro / NGOs



Photo: TreePeople





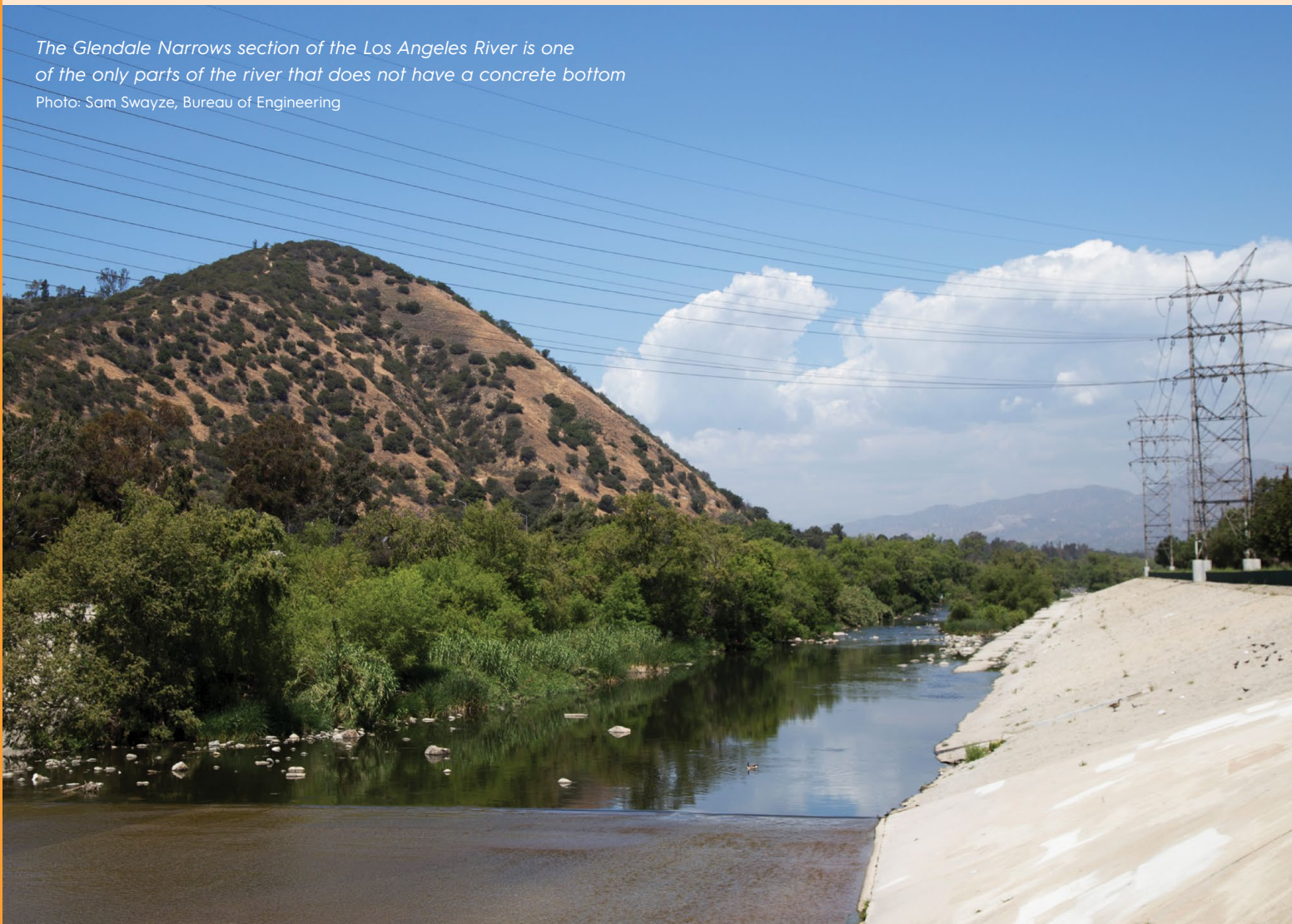
## LOS ANGELES RIVER: A NEW WATER WAY

The 51-mile Los Angeles River connects many of L.A.'s vibrant neighborhoods and serves as the main waterway for an 870-square-mile watershed. Since its channelization in the 1930s, prompted by several damaging flood events in its historic floodplain, the river has enhanced the resilience of Los Angeles and the region by providing engineered drainage—able to endure storms and move rain water swiftly from the land to the sea. However, the same system has caused unintentional yet severe negative effects to the region's ecological and community resilience, stemming from habitat fragmentation, biodiversity loss, and diminished access to open space and natural resources for hundreds of thousands of people in river corridor neighborhoods.

The City—along with other agencies, partners, and local residents—has recognized the need to revitalize the Los Angeles River corridor, as detailed in the 2007 Los Angeles River Revitalization Master Plan (LARRMP) adopted by the City Council, for which implementation is steadily underway. The ongoing revitalization effort offers inherent opportunities to bolster the City's resilience in a number of ways. These include greater ecological biodiversity, community connectedness along an extensive trail and bikeway network, more equitable economic development in a historically underserved part of the city, and engagement and education efforts to increase preparedness for the risks that are always present along waterways.

### RIVER REVITALIZATION TIMELINE

- The Los Angeles River revitalization efforts were launched in earnest in the 1990s and will require long-term attention and an adaptive strategy to see continued success.
- Revitalization efforts are guided by the City's 2007 LARRMP.
- A federally-approved project led by the USACE and commonly referred to as the ARBOR Study aims to provide 719 acres of ecological restoration along an 11-mile section of the river in coming decades.
- In early 2017, the City purchased the 42-acre river-adjacent "Taylor Yard G2" parcel in Cypress Park. The parcel is a key component in both City and federal plans for Los Angeles River restoration and is currently slated for habitat, open space, and public access.



The Glendale Narrows section of the Los Angeles River is one of the only parts of the river that does not have a concrete bottom

Photo: Sam Swayze, Bureau of Engineering

## Prepared and Responsive City

### 64 LEVERAGE FLOOD MITIGATION INFRASTRUCTURE TO ENHANCE LOCAL WATER AVAILABILITY

Leverage infrastructure investments to maintain flood protection and increase the utility of stormwater along the Los Angeles River and throughout the City's watersheds.

Flood mitigation techniques have evolved dramatically since the bed of the Los Angeles River was channelized in concrete. Contemporary approaches allow for flood mitigation techniques to support multiple goals, including

alleviating drought as a persistent stressor and developing additional water storage for firefighting following an earthquake.

In partnership with the USACE and L.A. County Flood Control District (LACFCD),

the City will explore the implementation of off-channel or in-channel facilities, such as green infrastructure or articulating dams along flood channels that can retain stormwater for fire fighting, irrigation, or even drinking water supply.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

DPW / LADWP / LAFD / LACFCD / State of California / EPA / USACE

### 65 PROACTIVELY ADDRESS FLOOD RISK THROUGH POLICY, COMMUNICATION, AND INFRASTRUCTURE PLANNING

The City will incorporate revised floodplains and climate projections into decisions regarding infrastructure planning, facility design, and development limitations and requirements.

An expansion of 1% Annual Chance Exceedance (ACE) floodplain maps along the Los Angeles River in the Atwater Village/Elysian Valley vicinity is expected, following a certification process with the Federal Emergency Management Agency (FEMA). When the maps become effective, property owners within the 1% ACE boundary who have federally-backed mortgages will be required to hold flood insurance. Others may elect

to purchase flood insurance, given the new maps, even if not required to do so. Angelenos are eligible for discounted insurance because the City participates in a floodplain management program and planning process that includes community education and engagement. The City will integrate the new maps into that process and continue existing outreach to affected property owners. The City will apply restrictions to new structures consistent

with 1% flood zones to limit risk, consider the small but present risk of flooding in all development and infrastructure planning in the area, and consider additional actions, informed by climate science and future severe weather event projections, to assist those impacted by the flood risk, including floodproofing design guidelines; a floodplain buyback program; or land use tools, such as an option for transfer of development rights.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

DPW / EMD / DCP / LADBS / DONE / FEMA / USACE / LACFCD / Neighborhood Councils

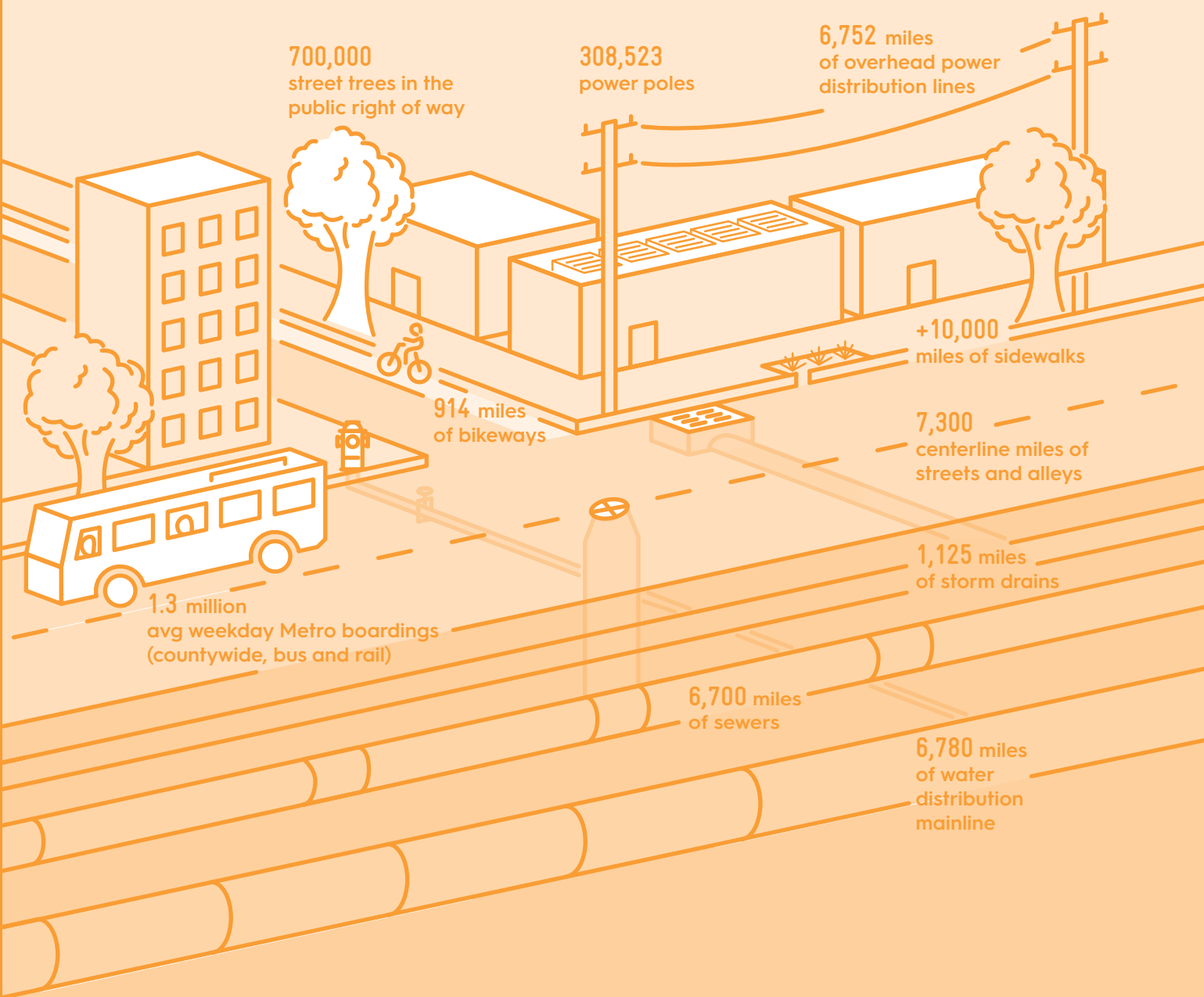


# LOS ANGELES INFRASTRUCTURE

**LAX**  
Fourth busiest airport in the world, second in the U.S., servicing +80.9 million passengers and +2.2 million tons of freight and mail in 2016.

**PORT OF LA**  
Largest containerport in the western hemisphere. Facilitated \$272 billion in trade during 2016.

**LADWP**  
Largest municipal utility in the country with a 7,880 megawatt electric capacity, serving an average 438 million gallons of water per day.



## ALISO CANYON DISASTER

On October 23, 2015, a massive methane leak was discovered at the Aliso Canyon underground natural gas storage field in the hills north of the Porter Ranch neighborhood of Los Angeles. This leak became the largest methane leak in U.S. history, releasing approximately 100,000 metric tons of methane over a four-month period. The environmental effects of the leak are equivalent to driving a million cars for one year.<sup>70</sup>

The Aliso Canyon disaster displaced a community for months, caused health impacts for many residents, and woke the nation to the danger and environmental

harm of natural gas leaks. The current closure of the facility has made the City of Los Angeles' power grid more vulnerable to rolling blackouts during periods of peak energy use.

In addition to taking immediate response and recovery actions, the City began planning for a transition to a 100% renewable energy supply. LADWP is also planning solar and energy storage pilots in Porter Ranch to begin moving the community closer to the vision of a net-zero energy neighborhood weaned from reliance on harmful fossil fuels.

## 66 DEVELOP A CLEAN ENERGY AND SMART GRID INFRASTRUCTURE THAT IS RELIABLE IN THE FACE OF FUTURE CLIMATE IMPACTS AND HAZARDS

The City will collaborate with leading researchers and laboratories to conduct risk and opportunity assessments to support the City's transition to renewable energy, increased transportation electrification, and smart grid infrastructure while maintaining a resilient and reliable grid.

Over the next 15 years, LADWP will transform its power system to support a clean energy future, replacing more than 70% of the existing power supply and modernizing much of the aging power grid infrastructure.<sup>71</sup> These investments in clean energy sources, new technologies, and infrastructure offer an opportunity to integrate and prioritize resilient strategies such as integrating renewable energy

resources and energy storage, expanding microgrid activities, and supporting demand response programs. Additionally, this infrastructure lays the foundation for vehicle to grid integration, which will allow electric vehicles to become load-balancing, emergency energy, and resilience assets. The City will pursue partnership and research opportunities and continue to work with experts to

assess potential impacts and model shocks and stresses, such as a major earthquake or heatwave, on the power infrastructure. This research will help to prioritize infrastructure investments and identify solutions for mitigating risks and further developing smart, dynamic, and clean power infrastructure.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LADWP / Research labs / Academic partners



## 67 EXPAND COMBINED SOLAR AND ENERGY STORAGE PILOTS

The Mayor's Office will work with City departments to identify additional opportunities for municipal solar and storage projects, to ensure critical city facilities are accessible and operational in times of emergency, and for microgrid projects that expand neighborhood resilience.

The Mayor's Office and City departments are leading by example and will expand current efforts to pilot combined solar photovoltaic and energy storage systems. This mayoral, multidepartment effort is focused on identifying critical facilities to use as model for sustainability and resilience interventions that can be duplicated throughout the city. In testing new technologies and energy systems, the City will learn from these pilots and identify process improvements for customers. These improvements will encourage easier adoption of on-site

energy generation and storage, and improved resilience when outages or other major shocks—such as earthquakes or fires—impact the electrical grid.

By prioritizing pilots at critical facilities throughout the city, this action will also ensure that first responders have electricity and can continue to operate when the grid is impacted. For example, fuel pumps at fire stations will continue to work during a grid outage, ensuring that ambulances and fire trucks can continue their work unabated. Pilots will also focus on facilities that serve

constituents, including creating microgrids at cooling centers and emergency shelters so that in cases of extreme heat or emergencies, there are facilities that can continue to provide relief from the heat and undisrupted shelter services. Pilots will consider additional resilience and sustainability strategies such as solar carports for shading and EV charging. The City will also pursue pilot projects in vulnerable neighborhoods to demonstrate the value and potential of the technologies at the neighborhood scale.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

LADWP / GSD / LADBS / LAFD / LAPD / RAP / EMD

## PILOTING SOLAR ENERGY AND STORAGE

As a pilot project, the LADWP is installing both solar and battery power sources at a fire station located in the community of Porter Ranch to offset some of the consumption. In the case of a grid outage, the battery and solar system will be able to keep critical equipment at the facility operational. This innovative model could help deploy resilient solar power and storage for emergency situations, while helping the utility with grid reliability and integrating behind-the-meter storage at the same time.



Photo: Office of Mayor Garcetti

## 68 EXPAND ELECTRIC FLEETS, CHARGING INFRASTRUCTURE, AND ENERGY BACKUP TO REDUCE EMISSIONS AND SUPPORT EMERGENCY AND RESPONSE SERVICES

The City will continue to invest in expanding the City's electric vehicle (EV) fleet, electric buses, and charging infrastructure and will identify opportunities to co-locate energy resilience projects (such as solar photovoltaic systems, storage, and microgrid) for backup power and to charge EVs.

The City is committed to expanding EV fleets, electric buses and goods movement, and charging infrastructure as part of a broader effort to reduce greenhouse gas emissions. As a result of these efforts, LAPD now leases 200 EVs and have installed charging stations at 10 facilities to date, with the remaining 14 underway, the Los Angeles Department of Transportation (LADOT) started running four electric DASH buses and recently won a grant to purchase more, and the City launched the BlueLA

EV car share program to serve portions of Westlake, Pico-Union, Koreatown, Echo Park, and Downtown Los Angeles. These investments also build resilience so that after a disruption, the City can continue to operate buses and draw from vehicle batteries as additional mobile power sources. Expanding access to EV car share programs also increases mobility options.

As City departments continue to expand their EV fleets, the City will explore

new technologies and opportunities to include critical response vehicles in this sustainability initiative. The Mayor's Office with LADOT is currently partnering with Metro and Foothill Transit to develop a downtown electric bus charging depot that could eventually include battery backup. The City will build on these efforts and continue to seek opportunities to co-locate EV fleets and charging infrastructure with renewable energy and power backup.

### SHOCKS/STRESSES



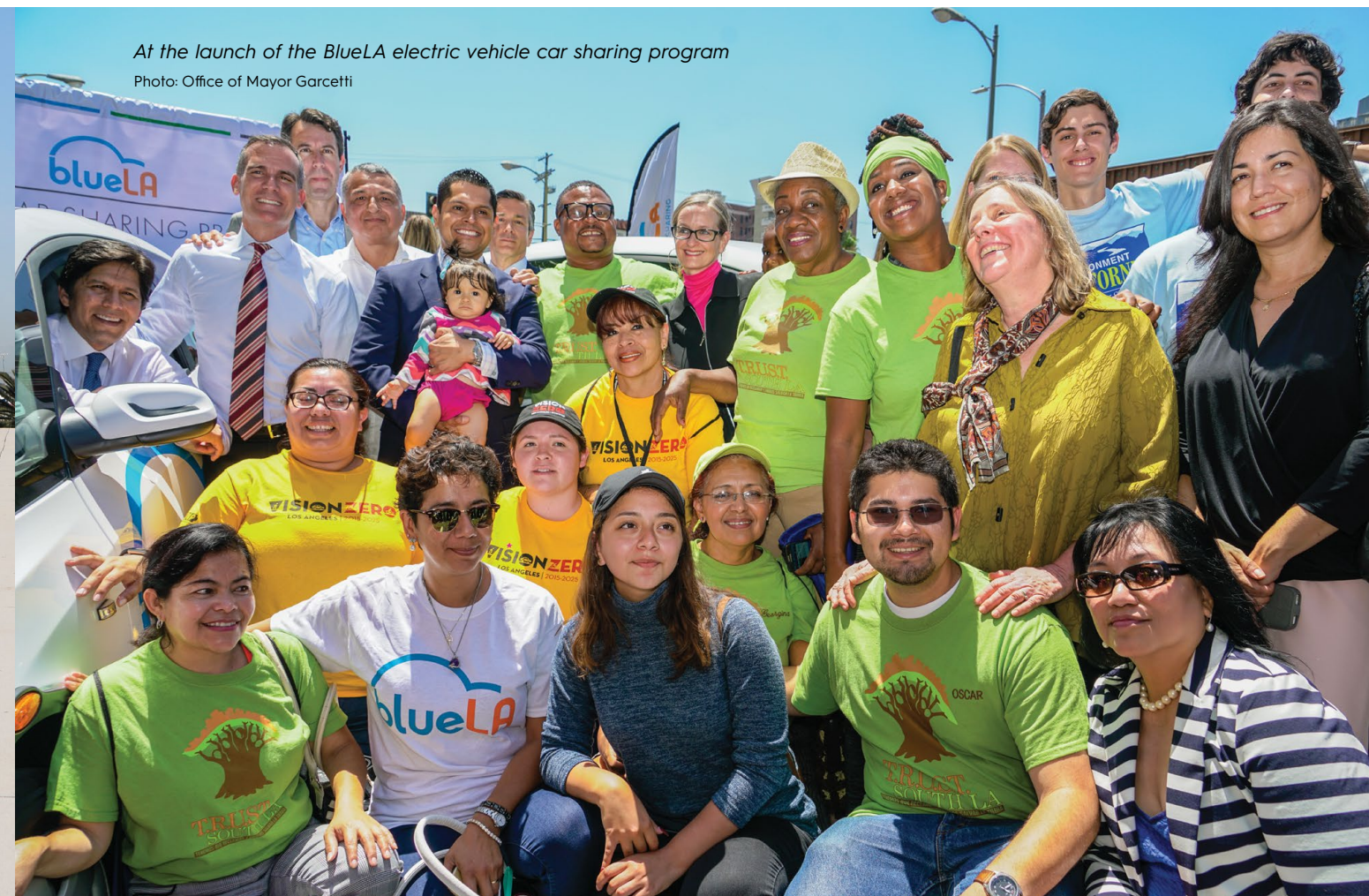
### TIMEFRAME



Medium Term

### PARTNERS

GSD / EMD / LAFD / LAPD / LADWP / LADOT / RAP / LACTD / Regional transportation agencies



At the launch of the BlueLA electric vehicle car sharing program

Photo: Office of Mayor Garcetti





Photo: Office of Mayor Garcetti

## 70 IDENTIFY, ANALYZE, AND MITIGATE LOCAL OIL AND GAS INFRASTRUCTURE RISKS

**Integrate local oil and gas infrastructure data into citywide vulnerability and risk assessments to prioritize collaborative mitigation actions and investments.**

To maintain healthy and safe communities, anticipate potential hazards from legacy oil and gas infrastructure, and protect local oil and gas infrastructure, the City needs to better understand how vulnerable these systems are, as well as how potential infrastructure failure could impact surrounding communities. The City's Petroleum Administrator will work with technical partners to develop

a framework to assess the vulnerability of the City's infrastructure systems by evaluating potential methane gas leaks from existing old and abandoned oil and gas wells and petroleum pipelines, as well as the impact of an earthquake, or extreme weather event on oil infrastructure. Rather than relying on separate infrastructure assessments, the City can use the framework to assess the system

comprehensively and make more holistic recommendations for upgrades. The framework will focus on communities affected by multiple challenges, including homelessness, poverty, naturally occurring methane gas, aged housing stock, and public health issues. This framework will enable the City to prioritize infrastructure upgrades and secure funding to address these vulnerabilities.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DPW / EMD / AFD / LADWP / POLA / LAWA / Technical partners

## 69 LEVERAGE AIRPORT MODERNIZATION AT LOS ANGELES WORLD AIRPORTS TO INCREASE RESILIENCE

**The City will continue to develop infrastructure projects that "futuraize" our critical infrastructure while achieving our sustainability and resilience goals.**

Los Angeles World Airports (LAWA) is the City department that oversees Los Angeles International Airport (LAX) and Van Nuys Airport. LAX is the fourth busiest airport in the world, second in the nation, with more than 80 million passengers passing through the airport in 2016.<sup>72</sup> While modernizing airport infrastructure, LAWA has the opportunity to also incorporate both sustainability and resilience measures that will lead by example and benefit travelers, workers, and the region.

The airport directly supports 620,610 jobs in Southern California and will indirectly support 40,000 more through its \$14 billion LAX Modernization Project, the largest public works project in the City's history.<sup>73</sup> The project has already modernized LAX's Central Utility Plant, saving around \$7 million in yearly energy costs and reducing carbon dioxide emissions by 4,890 tons—equivalent to taking 1,000 cars off the road. The facility was designed to Leadership in Energy and Environmental Design (LEED) Gold standards and will employ cool roof and cool pavement technology to offset

the urban heat island effect.<sup>74</sup> Building on this success, LAX recently started construction on another sustainable project, the Midfield Satellite Concourse, which will provide 12 new gates. The project is designed to achieve LEED Silver and CAL Green Tier 1 certifications and will also utilize cool roof and cool pavement technologies. In 2010, the landmark LAX Theme Building was successfully seismically retrofitted with a tuned mass damper, which will protect the building from earthquakes while also preserving the iconic arched architecture.<sup>75</sup>

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAWA / LADWP / DOT / Metro / FAA

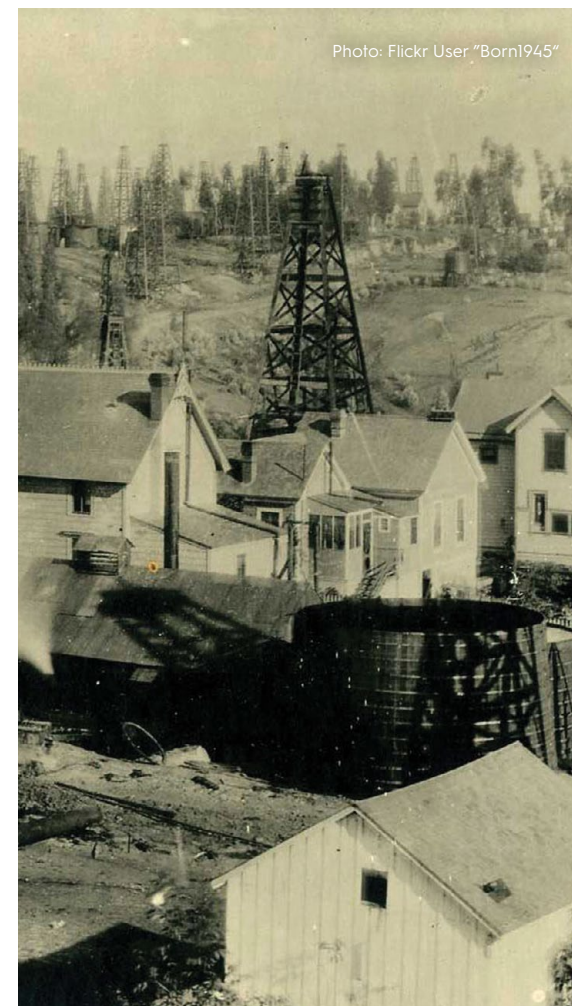


Photo: Flickr User "Born1945"

## OIL RUNS DEEP IN LA

The first modern oil well was drilled in Los Angeles in 1892. By the 1920s, oil production from the L.A. region accounted for nearly 20% of the world's oil production. Today, the Los Angeles basin still remains one of the highest concentrations of crude oil in the world.<sup>76</sup>

Approximately 23 oil fields lie beneath the city boundaries. The fields are either active oil and gas producers, abandoned, or used for natural gas storage. There are more than 5,100 oil wells in the City that are active, idle, buried, orphaned, or abandoned. The fields and wells could create potential methane leak points or become sources of toxic air emissions, oil spills, or fire hazards.

In addition, a large network of underground utility pipelines under the streets and sidewalks of Los Angeles carries crude oil, natural gas, diesel, jet fuel, water, steam, and electricity. In the event of a large-scale emergency,

these pipelines could rupture and create additional leaks, spills, or subsidence—when land sinks or caves in—and become potential fuel for fires or chemical contaminants in waterways or storm drains.

Los Angeles has approximately five refineries within city limits that are susceptible to fire hazards, explosions, toxic chemical releases, petroleum product spills into the stormwater system, and other threats in an extreme emergency or regional disaster.

Regionally, there are four other large petroleum refineries, multiple marine oil terminals at the Ports of Los Angeles and Long Beach, offshore oil drilling islands, and utility pipeline networks adjacent to the City of Los Angeles. While this oil and gas infrastructure is outside city boundaries it could have a substantial impact to Los Angeles residents in the event of large-scale catastrophe.





Mayor Garcetti launches the first city-based Cyber Lab  
Photo: Office of Mayor Garcetti

Los Angeles Memorial Coliseum lit for the Los Angeles 2028 Olympic and Paralympic Games Bid  
Photo: Office of Mayor Garcetti



## 71 ENHANCE PROTECTION OF CRITICAL DIGITAL ASSETS FROM CYBERATTACKS

The City will develop detailed mapping of digital assets deemed critical to essential functions and operations to ensure resilience in the face of a severe cyberattack.

City departments are working to inventory their digital assets, especially those deemed critical to the department's mission and essential functions or to the privacy of City employees or residents. Network activities related to such assets are assigned higher importance and monitored closely to better protect them against a cyberattack. Additionally, departmental IT Disaster Recovery Plans will be developed and tested to ensure business continuity during a disaster, even in the absence of key technologies. Additional ongoing work includes integrating physical locations of critical digital assets with emergency management mapping tools.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

ITA / LAPD / BOE / LADOT / POLA / LAWA / Finance / EMD / FBI / US Secret Service

## 72 LEVERAGE INFRASTRUCTURE INVESTMENTS LEADING UP TO THE OLYMPICS AND PARALYMPICS TO ADVANCE RESILIENCE GOALS

As infrastructure investments are made over the next decade, the City and its partners will incorporate resilience principles and ensure the investments benefit future generations.

To be the best city Los Angeles can be in time to host the Olympics and Paralympics, the City and partners will be investing in modernized and new infrastructure to prepare for hosting the games and leveraging other infrastructure investments that are scheduled to be complete before 2028. These investments will expand transit options, build new housing, improve access to open space, and collectively shape the Los Angeles of the future. The City will ensure these investments drive innovation, job creation and training, and small business development, promote climate leadership, are inclusive, and advanced technology, both for a successful Olympics and to build a legacy for future generations to thrive.

**SHOCKS/STRESSES**



**TIMEFRAME**



**PARTNERS**

DPW / LADOT / LAWA / LADWP / POLA / ITA / Metro / DCTD / USC / UCLA





CHAPTER 4

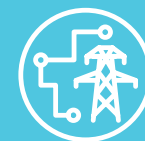
# PIONEERING AND COLLABORATIVE PARTNER



**GOAL 12:** Use climate science to develop adaptation strategies consistent with the Paris Climate Agreement



**GOAL 13:** Foster a healthy and connected Los Angeles River system



**GOAL 14:** Strengthen regional systems and fortify critical infrastructure



**GOAL 15:** Grow public, private, and philanthropic partnerships that will increase resources dedicated to building resilience





## SETTING THE COURSE

As the largest city in the nation’s most populous state, Los Angeles has long been a leader in advancing innovation, technology, and forward-thinking policies. This pioneering spirit can be traced to the City’s partnerships with research institutions, businesses, community leaders, and public agencies. In looking beyond our city boundaries, we constantly seek to leverage our investments, collaborate meaningfully, and learn with and from others.

In partnership with leading universities and labs—including world-class academics, scientists, and researchers—the City uses cutting-edge science and data to inform planning and decision-support processes. Given Los Angeles’ size and infrastructure, the City encourages and supports sustainable and resilient marketplaces to grow through purchasing power, broader citywide policies, and partnerships.

Los Angeles boasts extraordinary diversity in its people, neighborhoods, and natural habitats. This diversity attracts both private and public partners to pioneer new pilots, technologies, and programs to meet challenges, reach for opportunities, and serve as a model for other cities around the world. As part of the 100 Resilient Cities (100RC) Network, Los Angeles is collaborating with global resilience leaders and helping to set a course for the emerging resilience field.

*A resilient partner is nimble, resourceful and excited to bring others to the table.*





## GOAL 12: USE CLIMATE SCIENCE TO DEVELOP ADAPTATION STRATEGIES CONSISTENT WITH THE PARIS CLIMATE AGREEMENT

### 73 ENSURE CLIMATE RESILIENCE AND ADAPTATION PLANNING IS ROBUST AND CONSISTENT WITH THE PARIS CLIMATE AGREEMENT

The City will collaborate with regional, state, national, and international partners, including the 100RC Network, C40 Cities Climate Leadership Group, and Climate Mayors, to develop technical assistance and coordination programs and policies that advance climate resilience consistent with the Paris Climate Agreement.

Climate change is creating hazards such as extreme heat, drought, severe weather, and coastal flooding that pose significant environmental, social, and economic risks for cities across the globe. The City of Los Angeles is committed to being a global leader in reducing greenhouse gas emissions and contributing to efforts to limit the rise in global temperatures. The City is developing a roadmap for climate action planning consistent with the Paris

Climate Agreement and has set targets to reduce emissions 45% below 1990 levels by 2025 and 80% by 2050. The reduction of emissions is essential in preventing additional climate impacts in Los Angeles and building climate resilience both locally and globally. The City will work with experts to develop a climate risk and vulnerability assessment to help inform which people, places, and systems will be impacted by climate change. To mitigate

these hazards and protect residents, it is crucial to engage partners on building the knowledge, skills, and governance and finance structures for effective climate resilience planning. The City will also coordinate actions and policies with state-level leaders and other cities in the Southern California region to ensure we are building upon one another's priorities and successes.

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

100RC / C40 / Climate Mayors / State of California / ARCCA / LARC / DCP / City departments

#### Pioneering and Collaborative Partner

### 74 TRANSITION TO ZERO-EMISSIONS TECHNOLOGY AT THE PORT OF L.A. TO REDUCE EMISSIONS, IMPROVE AIR QUALITY, AND BUILD DISASTER RESILIENCE

Leverage clean air investments and energy innovation at the Port of L.A. to improve air quality, achieve significant emission reductions, and address energy vulnerabilities.

The Port of Los Angeles is an important national and economic asset. It is the entry point for 41% of cargo entering the West Coast and indirectly supports one in 13 jobs in Los Angeles.<sup>77</sup> Although the Port of Los Angeles is an industry leader in air pollution reductions, it remains a regional source of air pollution and greenhouse gas emissions. To address these emissions, San Pedro Bay Ports adopted ambitious new targets in an updated Clean Air Action Plan in November 2017. This plan

outlines the ramp-up of near-zero and zero-emissions standards for trucks, in order to meet a goal of a 100% zero-emission truck fleet by 2035.

The Port is investing in projects and partnerships that will both reduce emissions and increase on-site energy resilience through combined generation, storage, and backup capabilities. For example, in partnership with Pasha and the California Air Resources Board

(CARB), the port launched the Green Omni Terminal Demonstration project in 2016. At full build out, the terminal will be the first in the world to generate all of its energy needs from renewables. It will utilize zero- or near zero-emission equipment, capture and treat ship exhaust, and feature its own solar microgrid, backed up by battery storage and an energy management system to allow the terminal to operate off the grid during system outages.<sup>78</sup>

#### SHOCKS/STRESSES



#### TIMEFRAME



#### PARTNERS

POLA / POLB / LADWP / CARB / Maritime partners

Photo: Office of Mayor Garcetti



### THE PORT OF L.A. LEADS IN AIR QUALITY ACTION

In November 2017, the ports of Los Angeles and Long Beach unanimously approved the Clean Air Action Plan (CAAP) Update, setting the course for eliminating harmful air emissions from port-related sources. The 2017 CAAP builds off of the clean air achievements of the 2006 plan and set out measures to reduce greenhouse gases from port-related sources to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050. To reduce emissions, the ports will advance the Clean Trucks Program to phase out older trucks and transition to near-zero emissions in the early years and

zero-emission trucks by 2035. The 2017 CAAP includes new strategies to plan for and develop the infrastructure necessary for near-zero and zero-emissions goods movement. The ports will require terminal operators to purchase zero- emissions equipment if feasible, or near-zero or cleanest available when procuring new equipment. These efforts will protect public health and improve air quality with targets to reduce the population-weighted residential cancer risk of Port-related DPM emissions by 85% by 2020 and to reduce port-related emissions by 59% for NOx, 93% for SOx, and 77% for DPM by 2023.<sup>79</sup>



## 75 TRANSITION TO FOSSIL-FUEL-FREE STREETS TO FIGHT AIR POLLUTION AND HELP TACKLE THE GLOBAL THREAT OF CLIMATE CHANGE

The City is committed to the C40 Fossil-Fuel-Free Streets Declaration to purchase only zero-emissions buses by 2025 and eliminate emissions in one major area by 2030.

In October 2017, Mayor Garcetti joined mayors from around the world in committing to new policies that will make cities greener, healthier, and more prosperous by signing the C40 Fossil-Fuel-Free Streets Declaration. The City is committed to purchasing only zero-emission buses by 2025 and to eliminating emissions in a designated area by 2030. These policies

build on Los Angeles' leadership and efforts to implement zero emissions technology, including building one of the largest municipal electric vehicle (EV) fleets in America and launching the first EV carshare program designed for disadvantaged communities. To further improve regional air quality, L.A. Metro and LADOT have set targets to fully

electrify their bus fleets by 2030. The City's numerous different fleets are all piloting and actively pursuing medium and heavy duty electric vehicle opportunities, including a recent pilot of an EV trash truck, electric utility bucket trucks, and a procurement opportunity for electric buses to be used on the airfield at LAX.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LADOT / GSD / LADWP / LAWA / POLA / BOS / Metro / C40

## 76 INCORPORATE SEA LEVEL RISE MODELING INTO LOCAL PLANS

The City will work with stakeholders and regional partners to incorporate leading science, modeling, and policy guidance into planning efforts in neighborhoods impacted by projected sea level rise.

Incorporating the best available coastal climate and tsunami science in coastal planning and land use policy development will make Los Angeles more resilient to the impacts of future events. The City will work with its own agencies, the Regional AdaptLA program, the U.S. Geological Survey (USGS), and regional stakeholders to assess its socio-economic, physical, economic, and ecosystem-focused

vulnerabilities. Understanding current and future vulnerabilities will help inform planning policy through Local Coastal Programs (LCP), General Plan updates, Hazard Mitigation Plans, Capital Improvement Planning, and strategic land use policy updates ranging from managed retreat to transfer of development rights. The City will ensure that its plans and policies are consistent with the state

guidance documents and flexible enough to accommodate guidance updates and ever-evolving and improving scientific knowledge. As a first step, the City will develop a model LCP with the Venice neighborhood that incorporates both resilience strategies and the best available science. This model will be replicated for other coastal areas in the city.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DCP / POLA / BOS / LADWP / USGS / USC Sea Grant / Neighboring coastal cities

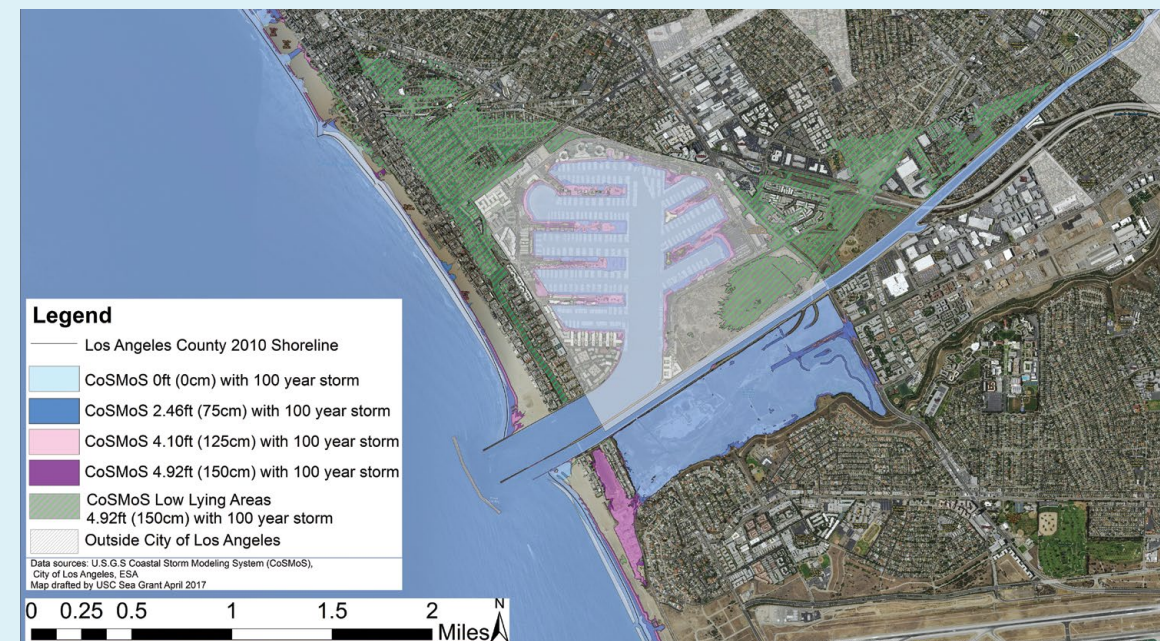
## COASTAL HAZARDS

Los Angeles will experience accelerated **SEA LEVEL RISE** of one to two feet over the next 30 years and six feet or more by the end of the century.<sup>80</sup> This increase will impact coastal infrastructure, ports, and beaches, leading to flooding during high tides, increased coastal erosion, potential for landslides, and saltwater contamination of freshwater sources. In addition to physical vulnerabilities, many coastal communities also face socioeconomic challenges. For example, the low-lying communities around the Port of Los Angeles are vulnerable because of lower per capita income and linguistic

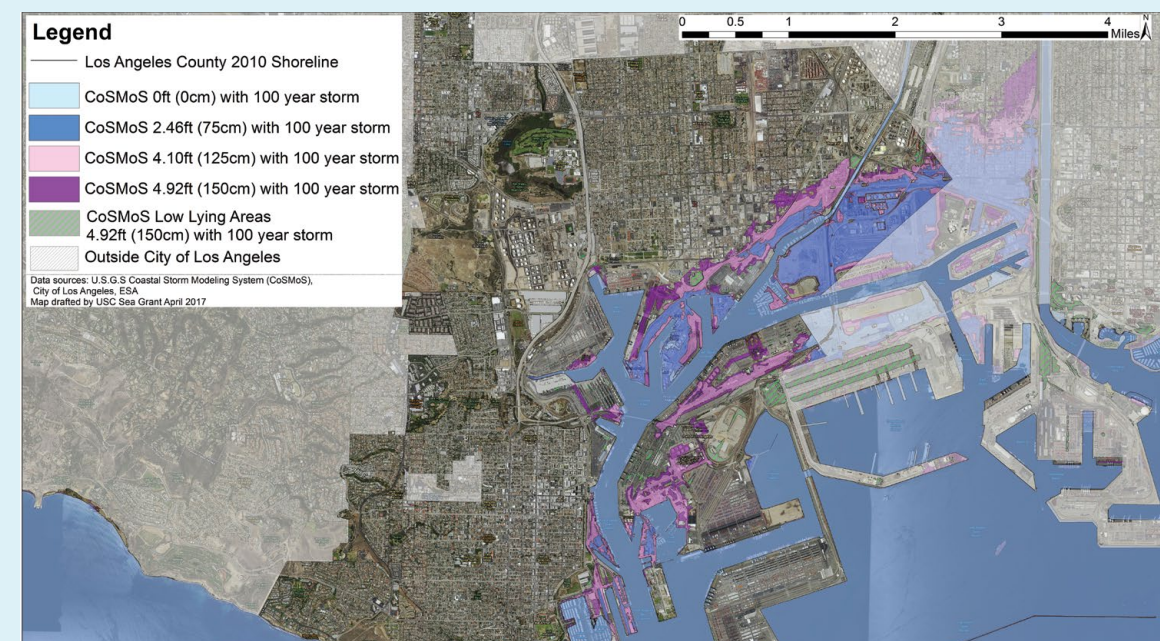
isolation, while communities like Venice are vulnerable because of older housing stock and the high percentage of renters. These impacts will have consequences for both residents and the economy. As climate change increases the likelihood of coastal impacts like severe storms, higher sea levels will increase the severity of such events.

While not related to climate change, **TSUNAMIS** can cause rapid coastal impacts on a catastrophic scale. Tsunamis are a series of waves caused by an earthquake event. The majority of the City

of Los Angeles' tsunami inundation zone is densely populated, with nearly 20,000 residents and just under 10,000 jobs.<sup>81</sup> The tsunami risk disproportionately impacts low-lying areas of southern Los Angeles, but boats, coastal marinas, beaches, and container and vehicle cargo systems such as the Port of Los Angeles are also at risk during an event. While a tsunami would impact a small percentage of the city, the amount of potential damage to residents, businesses, and the coastal beaches in the inundation zone is significant. Estimates for the cost of tsunami damage to Los Angeles have approached \$8 billion.<sup>82</sup>



USGS CoSMoS sea-level rise flood extent projections for the west section of the City of Los Angeles  
Map via USC Sea Grant



USGS CoSMoS sea-level rise flood extent projections for the southern section of the City of Los Angeles  
Map via USC Sea Grant



## 77 IMPLEMENT STORMWATER PROJECTS THAT REDUCE POLLUTION AND CAPTURE LOCAL WATER SUPPLY

The City will work with L.A. County and regional partners to implement multibenefit water resilience projects identified in the City's Enhanced Watershed Management Programs that capture and reuse stormwater.

The City, County, and other municipalities recognize that the long-term impacts of climate change will permanently affect our region's water reliability and that stormwater capture, infiltration, and reuse are important solutions. Municipalities

throughout L.A. County collaborated to develop enhanced watershed management programs that prioritize multibenefit regional projects to reduce pollution and produce local water supply. Now, the City will partner with regional

entities to implement those solutions in our primary watersheds, including the Los Angeles River, Ballona Creek, and the Santa Monica Bay.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LADWP / DPW / Neighboring cities / LA County / Environmental organizations / Community organizations / Business community / Water agencies



## A GREATER L.A.: CLIMATE ACTION FRAMEWORK

A *Greater L.A.: Climate Action Framework* presents an overview of the key issues related to climate change facing the Los Angeles region, both to reduce greenhouse gas emissions and to adapt to the likely impacts of climate change, creating a more resilient region. Developed by the Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC), a cross-sectional network of climate practitioners and decision makers, the document maximizes regional benefits while helping California achieve its ambitious target of reducing greenhouse gas emissions to 40% below 1990 levels by

2030. The document synthesizes the mass of information on climate change science, mandated state policies, and priority actions in a clear and concise way so that local practitioners can make wise choices and investments appropriate for their communities. The Framework addresses resilience in the following areas: Energy, Transportation and Land Use, Ocean and Coastal Resources, Water, and Public Health. In addition, it contains a guidebook to regional climate science impacts for local government practitioners and a summary of relevant policy mandates.



The LA River  
Photo: Sam Swayze, Bureau of Engineering

## WHY BIODIVERSITY?

Biodiversity is the variety of life in a habitat or ecosystem and is important at the genetic, species, and community levels. While all ecosystems contain a degree of biodiversity, some are "richer" than others. Regions that are naturally rich in biodiversity but have lost a significant amount are called "biodiversity hotspots." Los Angeles is situated in the California Floristic Province, one of 36 global biodiversity hotspots. Due to California's naturally dynamic climate and variable topography, our diverse body of plants, animals, and other living organisms is relatively well-adapted to the climate shifts expected as a result of global warming. However, California's biodiversity is also threatened by anthropogenic factors such as habitat destruction, an increased frequency of fires and landslides, and the introduction of opportunistic invasive species.

## 78 DEVELOP A STRATEGY TO SUSTAIN THE REGION'S BIODIVERSITY AND TREE HEALTH TO SUPPORT LONG-TERM ECOLOGICAL RESILIENCE

The City is working with an expert council of scientists to develop biodiversity tools and metrics and establish realistic targets meeting resilience goals.

Biodiversity is an important factor in building ecological resilience. When multiple species serve similar functions or a diverse gene pool exists within a species, it increases the likelihood that an ecosystem will be able to recover from environmental shocks and stressors. By addressing threats to biodiversity, we can build systems that are better adapted to the demands of climate change and

can continue to perform their ecological functions in the face of various disruptions. The Mayor's expert council for biodiversity will advise City departments on recommendations to incorporate biodiversity enhancements into citywide policies and practices. Early steps will include the development of tools and metrics to evaluate existing biological resources and set realistic targets. Data

and expertise from local partners such as the Los Angeles County Natural History Museum and The Nature Conservancy will play an important role in establishing the City's goals. These partners will also serve as a nexus for community engagement and participation. The council will assist the City in meeting the *Sustainable City pLAN* outcome of developing a Biodiversity Strategy.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

BOS / RAP / BSS / DCP / LA Zoo / POLA / LAWA / Los Angeles County Natural History Museum / The Nature Conservancy / UCLA





# GOAL 13: FOSTER A HEALTHY AND CONNECTED LOS ANGELES RIVER SYSTEM

## 79 REVITALIZE, ENHANCE, AND PROTECT THE LOS ANGELES RIVER WATERSHED'S ECOSYSTEM AND BIODIVERSITY

**Improve soil and water quality, repurpose brownfields, and restore native habitat along the Los Angeles River to benefit regional, human, plant, and animal health.**

Los Angeles exists in a rare Mediterranean-type climate zone. Such zones cover just 2% of Earth's land area but support 20% of all known plant species.<sup>85</sup> The continued improvement of the Los Angeles River's ecological health and biodiversity will provide region-wide benefits and could potentially strengthen the ecological and human health of the entire southwestern United States. Given this extensive influence, the City and its partners will continue complex and ongoing efforts to re-establish the river's freshwater marsh

and aquatic habitats—further protecting and improving the river's ecosystem and biodiversity by establishing open space in the river corridor, in some cases by land conversion and acquisition. The river can serve as a model for urban ecological revitalization, driven by participation from the City's strong scientific research institutions and drawing from international examples. Together, these efforts will leverage the river as a living laboratory in a unique urbanized setting.

The City's 2007 LARRMP and the U.S. Army Corps of Engineers' (USACE) 2016 Los Angeles River Ecosystem Restoration Feasibility Project (authorized by Congress in December 2016) both call for restoration of habitat and ecosystem function in and along the Los Angeles River, which has been degraded by urbanization and channelization. These outcomes will also be achieved by creating additional open spaces in the Los Angeles River corridor, to be populated with native habitat to the maximum practical extent.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DPW / DCP / RAP / LADWP / GSD / LACFCD / USACE / CA State Parks / FoLAR / River LA / Watershed cities / Burbank / Glendale

### Pioneering and Collaborative Partner

## 80 IDENTIFY STRATEGIES TO REDUCE POLLUTION IN THE LOS ANGELES RIVER SYSTEM

**Improve the Los Angeles River's water quality to help protect watershed-scale biodiversity and thereby promote the health of local ecosystems.**

The Los Angeles River was channelized with concrete in the late 1930s and continues to be significantly impacted by polluted urban runoff year-round. These conditions negatively impact the river's water quality and the flora and fauna

native to this ecosystem. The City is working with stakeholders to identify strategies to protect and enhance the biodiversity of the region. These strategies will likely include stormwater capture, stream and tributary protection, increased tree canopy, restored

native vegetation and riparian habitat, removal of invasive species, and habitat improvements for birds and mammals. In addition, stormwater capture strategies are in the planning phase and will benefit the river ecosystem.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

DPW / LADWP / RAP / NGOs / USACE / LA County / Watershed cities / Burbank / Glendale

## 81 PROVIDE EDUCATION PROGRAMMING TO MAINTAIN A HEALTHY WATERSHED AND KEEP ANGELENOS SAFE

**The City and nonprofit organizations will build on existing educational programs focused on connecting people with the Los Angeles River and will engage communities by asking for their input on biodiversity, health and recreation, and Los Angeles River stewardship.**

The City will partner with local organizations to promote opportunities for the community to learn about the Los Angeles River system and resilience. These efforts include:

- Expanding a **wayfinding program** to further enhance visitor connections to the Los Angeles River and demonstrate the value of revitalization projects to all visitors.
- Building awareness of river and flooding risk and the ways in which individuals can better prepare and respond to such risk. The City will partner with organizations to establish a **flood-risk education**

**program** for neighborhoods adjacent to the river. This program will include both in-person trainings and an online training module, providing residents in flood-prone areas with the information they need to be better prepared for a flood event. Broader safety messaging will also raise awareness for visitors and residents around general river safety.

- Using art to draw a wider audience to the Los Angeles River and enhance its role as a center for community engagement. The City will work with partners to identify **physical opportunities to incorporate art** along the river, as

recommended in the Los Angeles River Revitalization Master Plan (LARRMP), and to bring greater attention to risks faced by surrounding communities.

- The City will partner with agencies such as the Mountains Recreation and Conservation Authority and Los Angeles Conservation Corps to continue the seasonal Recreation Zone program and expand the River Rangers and River Ambassadors programs, which provide critical in-person public education opportunities within river-adjacent communities.

### SHOCKS/STRESSES



### TIMEFRAME

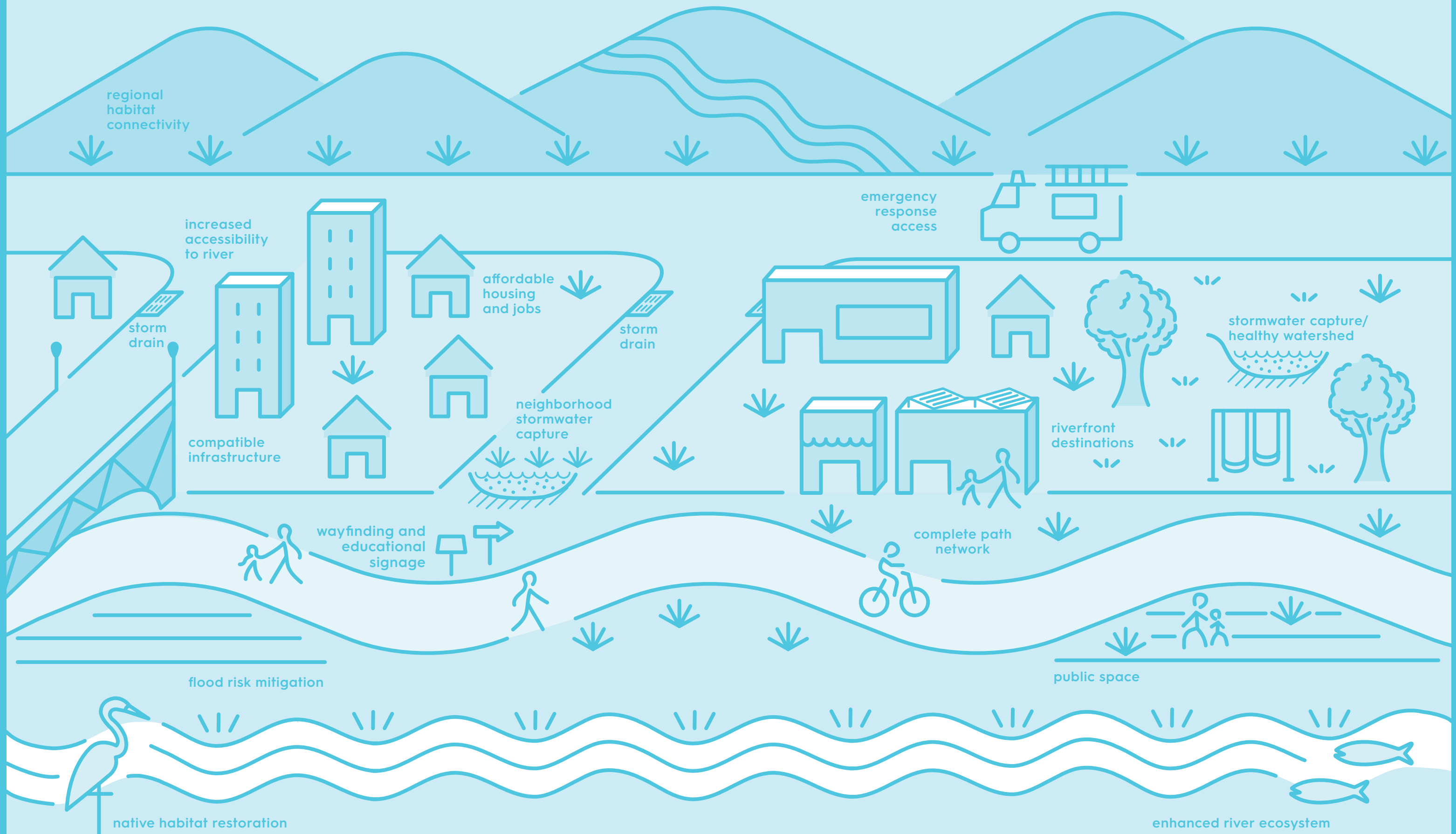


### PARTNERS

LAUSD / DCA / RAP / River LA / FoLAR / CURRENT:LA Water / Arts organizations / Watershed cities / Burbank / Glendale



# REVITALIZED AND HEALTHY RIVER





## 82 LEVERAGE THE LARIVERWAY FOR EMERGENCY ACCESS AND EVACUATION ROUTES TO INCREASE CITYWIDE PREPAREDNESS AND DISASTER RESPONSE CAPACITY

Through LARiverWay projects, the City will enhance connectivity along and across the river to bolster the safety of communities during both blue-sky days and times of disaster.

A revitalized Los Angeles River will play a critical role in facilitating disaster preparedness and response across Los Angeles. Building upon recommendations

in the LARRMP, the City will continue to build out LARiverWay projects, including safe, grade-separated crossings and pedestrian connections to surrounding

neighborhoods, which can serve as important evacuation routes.

### SHOCKS/STRESSES



### TIMEFRAME



Long Term

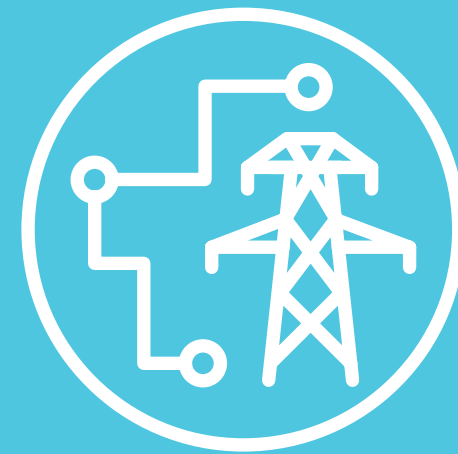
### PARTNERS

DPW / LAFD / LAPD / EMD / DOT / DCP / Metro / USACE / FoLAR / River LA / LACFCD / Lower LA River cities / Burbank / Glendale

## CREATING AN LARIVERWAY

The recommendations to create a continuous LARiverWay bike path and greenway and improve neighborhood connections to the Los Angeles River are identified in the LARRMP. Multiple bike and trail projects have already been completed and more are in progress. The Los Angeles County Metropolitan Transportation Authority (Metro) is planning an LARiverWay bike path segment through Downtown L.A. to complete an eight-mile gap and connect two major existing bike paths, which will allow continuous travel from Griffith Park to Long Beach. On top of that, the City is leading LARiverWay design in the Valley, which includes 12 miles of bikeway gaps and 23 intersection crossings that will lead to a continuous LARiverWay from the San Fernando Valley to Griffith Park, Downtown L.A., and Long Beach. Local funding through Measure M is in place to complete all LARiverWay gaps in the city.

An existing stretch of the LARiverWay  
Photo: Sam Swayze, Bureau of Engineering



## GOAL 14: STRENGTHEN REGIONAL SYSTEMS AND FORTIFY CRITICAL INFRASTRUCTURE

### 83 COLLABORATE WITH CALIFORNIA CITIES TO ADVANCE REGIONAL SEISMIC SAFETY

The City will share knowledge and research with other California cities that are mandating retrofits for seismically vulnerable buildings and infrastructure in the region.

The 2016 Safer Cities Survey identifies vulnerable building types based on previous seismic events and identifies regional jurisdictions that are taking action to implement mandatory and voluntary

retrofit programs for the most vulnerable buildings. As additional cities in Southern California join Los Angeles in mandating retrofitting for seismically vulnerable buildings and investing in more resilient

infrastructure, these efforts will be shared with others and the total impact of these collective actions evaluated for the region.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

Dr. Lucy Jones Center for Science & Society / SEAOSC / SCAG



## 84 EXPLORE "PRECOVERY" FUNDING OPPORTUNITIES IN COLLABORATION WITH REGIONAL, STATE, AND FEDERAL PARTNERS

The City and its partners will explore funding mechanisms that will support investments made before a disaster in order to reduce recovery costs following the event.

After every major disaster, the City makes significant investments in recovery. But "precovery" investments, made before a disaster strikes, could produce much greater benefits. For every dollar invested in advance, a minimum of four dollars can be saved for when communities

need it most. At the 2016 U.N. Habitat III Conference, the World Bank asserted that "over the next 15 years, annual investments of US\$6 billion in appropriate disaster risk management strategies could generate total risk reduction benefits of US\$360 billion." The City

will work with local, regional, and state partners to develop multiple funding pathways to achieve greater resilience. One such pathway could involve developing a Statewide Seismic Resilience Bond Measure to help fortify our critical infrastructure.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

SCAG / Metro / Caltrans / CalOES / USDOD / DOTR / DHS / EPA / USDOT / FEMA / HUD / SBA / USDA

## 86 ENCOURAGE INCREASED ACCESS TO EMERGENCY POWER FOR CRITICAL SERVICES

The City will partner with local and state agencies and officials, along with utility providers, to explore incentives to increase back up power for critical services.

Emergency backup power for critical services like gas stations, food businesses, hospitals, or shelters, is key to ensuring the health and well-being of communities during an emergency. The City plans to work alongside local and state agencies and officials, and utility providers, to explore and advance the creation of

government incentives that will encourage critical services to maintain backup power. Other states, including Florida, Louisiana, and New York, have implemented such programs for backup power for gas stations in response to major natural disasters, and this assessment will greatly inform next steps for an increasingly

timely and effective response to a similar emergency in California. Programs and policies would also need to be aligned with interdependent lifeline services, including water availability and fire prevention strategies.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

LA County / State of California / LADWP / LADOT / LAFD / City of Los Angeles' Office of Petroleum and Natural Gas Administration / Metro

## 85 FORTIFY CRITICAL LIFELINE INFRASTRUCTURE AND SUPPLY CHAINS THROUGH CONTINUED ASSESSMENTS, COORDINATION, AND INVESTMENT

The City will continue to work with county, state, and federal partners to identify risks and solutions that ensure continued flow of essential goods and services into the region following an emergency, through our ports, airports, and highway corridors such as the Cajon pass.

Los Angeles relies on an interdependent network of ports, airports, and highway corridors to provide essential goods and services. If these supply chains and critical lifeline infrastructures experience an interruption following a disaster, the region's health, safety, and economy could be at risk in a matter of days. The City will continue to work with county, state, and federal governments—in partnership with the private

sector—to better analyze the risks and interdependencies associated with water, electricity, fuel, medical goods, pharmaceuticals, transportation lifelines, and supply chains. Partners will work collaboratively to find interdisciplinary solutions to fortify each lifeline and supply chain and address their interdependencies. Existing efforts include the Southern California Critical Lifelines Workgroup (SCCLW) and critical supply

chain resilience studies conducted by the Emergency Management Department (EMD). The City will also develop stronger collaborative relationships with key public- and private-sector supply chain providers. This collaboration will help advance research priorities, develop policies and programs that address the greatest needs and potential gaps, and create training exercises that assess and address vulnerabilities.

### SHOCKS/STRESSES



### TIMEFRAME



Long Term

### PARTNERS

EMD / LADWP / LAWA / POLA / DOT / BOS / USDOT / LAFPC / SCG / SCAG / SCCLW / FEMA / Private-sector partners



Photo: Office of Mayor Garcetti





# 87) COORDINATE AMONG TRANSIT AGENCIES TO ADVANCE REGIONAL TRANSPORTATION AND TRANSIT RESILIENCE

The City will partner with key transit agencies to facilitate the exchange of data and information to coordinate and prioritize transportation and transit investments to develop a robust system, capable of withstanding shocks and stresses.

During and after a disaster, it is critical that our regional transportation and transit operators maintain or quickly restore service. The Mayor's Office will collaborate with the Los Angeles Department of Transportation (LADOT), the California Department of Transportation (Caltrans), and the Los Angeles County Metropolitan

Transportation Authority (Metro) to facilitate the exchange of data and information to coordinate resilience-building transit investments. This shared information will draw from existing efforts, including Metro's "Resiliency Indicator Framework," Caltrans' "Resiliency Score," and the City's "Mobility Plan 2035," which was guided in part by LADOT. These

efforts establish indicators and metrics to evaluate the capacity of transportation infrastructure to withstand the effects of shocks and stresses. By linking these efforts and ensuring that the findings of each are mutually accessible, the City will promote effective prioritization of resilience-building transit investments.

### SHOCKS/STRESSES

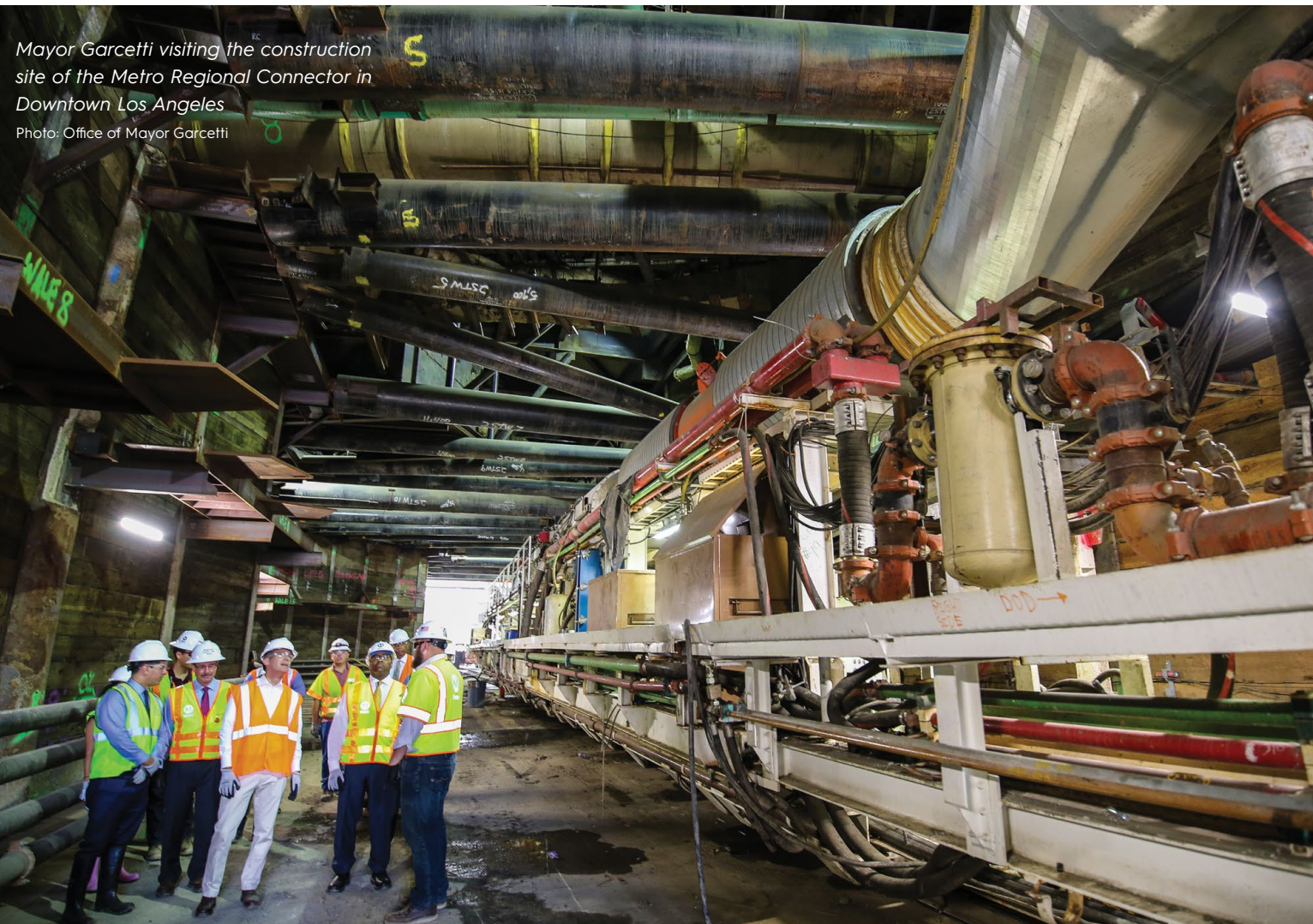


### TIMEFRAME



### PARTNERS

LADOT / Metro / Caltrans / USDOT / Academic and private-sector partners



Mayor Garcetti visiting the construction site of the Metro Regional Connector in Downtown Los Angeles  
Photo: Office of Mayor Garcetti



# 88) FORTIFY PUBLIC HEALTH AND HEALTHCARE CRITICAL INFRASTRUCTURE AND LEVERAGE PARTNERSHIPS WITH PUBLIC HEALTH ORGANIZATIONS TO IMPROVE COMMUNITY HEALTH AND WELLNESS

The City will expand coordination with hospitals, public health organizations, and health providers to address health disparities, prepare for disasters, and increase community wellness.

Local hospital networks and public health organizations are critical partners that promote community health and wellness every day and are also critical partners during emergencies and catastrophic events. The City will leverage existing networks of healthcare organizations, clinics, hospitals, and agencies to fortify critical health infrastructure and leverage new and existing partnerships to advance community health and wellbeing.

### LAFD NURSE PRACTITIONER RESPONSE UNIT (NPRU):

In January 2016, the Los Angeles Fire Department (LAFD) launched a Nurse Practitioner Response Unit—a converted ambulance with modern point-of-care testing and patient referral capabilities, operated by an experienced nurse practitioner and a firefighter/paramedic with public health training. Nurse practitioners have a broader scope of practice, as well as training in health promotion and recognizing social determinants of health. They can also

function autonomously and treat and release patients on the scene. NPRUs are currently treating and releasing on-scene patients at a rate of 55%.

### NPRU Goals and Objectives

- Decrease unnecessary ambulance transports, thereby increasing ambulance availability.
- Reduce Emergency Department overcrowding.
- Emphasize primary and preventative care and empower patients to self-actuate and thrive.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LACDPH / EMD / LAFD / LADWP / DOA / DOD / RAP / Hospitals / Hospital Associations / Medical Associations / Academic Institutions / Public Health Organizations



## 89 EXPAND CLIMATE AND EMERGENCY PREPAREDNESS THROUGHOUT OUR LOCAL FOOD SYSTEM

The City will work with the Los Angeles Food Policy Council (LAFPC) to identify opportunities to increase the resilience of the City's food network for all communities.

A major shock can cause a disruption to food access and distribution. The potential for disruption is greater for communities that are already food insecure, or have limited access to nearby grocery stores or healthy neighborhood markets. The less access to food that a community has today, the more vulnerable it will be following a disaster.

In January 2017, the Initiative for a Competitive Inner City released *The Resilience of America's Urban Food Systems: Evidence from Five Cities* with support from the Rockefeller Foundation. According to this report, Los Angeles' food distribution system faces considerable vulnerability. Compared with national and regional chains, smaller grocery stores and neighborhood markets may face longer periods of closure after a major event. Communities with fewer retail food options are more vulnerable and face a higher risk of negative impacts to the food supply chain in the wake of a major disaster.

To address these risks, build food security, and invest in the local food economy and system, the City will work closely with the LAFPC to explore partnership opportunities and support initiatives that meet the following objectives:

- Expand food access and choices in communities that are food insecure.
- Expand urban farms and community gardens, as these spaces contribute to local food production, urban greening and cooling, stormwater capture, and social cohesion.
- Promote the local Good Food movement, championed by LAFPC, and consider using the City's procurement and purchasing opportunities to support and grow the local food economy.
- Encourage companies to reduce food waste and increase food access by partnering with local communities and nonprofits to donate excess food products.

The City will also support local food businesses in developing resilience plans through the following actions:

- Partner with researchers to further study food resilience in Los Angeles by developing case studies, identifying additional key distribution and retail vulnerabilities, and highlighting opportunities to build and sustain food resilience.
- Provide training, educational resources, and technical assistance to neighborhood and corner stores and create plans to ensure continued operations during and after a disaster.
- Encourage and prioritize resilient building improvements, from seismic retrofits to backup power, for food distribution suppliers in Los Angeles.
- Identify opportunities to increase capacity for distribution points, such as food banks, schools, and hospitals, to serve larger numbers of people after a disaster.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

LAFPC / EMD / LADWP / BOS / Food distributors and retailers / Researchers / Food recovery organizations / Data and technology partners



# GOAL 15: GROW PUBLIC, PRIVATE, AND PHILANTHROPIC PARTNERSHIPS THAT WILL INCREASE RESOURCES DEDICATED TO BUILDING RESILIENCE

## 90 LAUNCH AN EARTHQUAKE EARLY WARNING SYSTEM

By the end of 2018, the City will deploy earthquake early warning technologies that will provide Angelenos with advance warning of earthquakes through smartphones, desktops, and other notification systems.

In partnership with the USGS, the City is developing a ShakeAlert portal, a technology developer program, and pilot programs that will integrate earthquake early warning technology into City systems.

This will allow the City to communicate quickly and directly to Angelenos through smartphones, desktops, and notification systems such as public address systems. Los Angeles has the highest concentration

of earthquake early warning sensors in the country, making the City an ideal site for pilot programs and attracting state and federal partners that continue to invest in the West Coast system as a whole.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

ITA / EMD / LADWP / LAWA / POLA / LAFD / LAPD / GSD / USGS / California Seismic Safety Commission / CalOES / Metro / LAUSD / Dr. Lucy Jones Center for Science & Society / Private-sector partners



## 91 FURTHER THE MARKETPLACE FOR SEISMIC-RESILIENT PIPES

The City will continue to develop standards and specifications that enhance the innovation surrounding seismically resilient pipes, to support LADWP in developing a citywide seismically resilient underground water supply.

Current standards and specifications for underground water pipes lack specific seismic design specifications. As a result, the city's entire water supply is at risk in the event of an earthquake. Prompted by seismic-resilient pipe pilot programs at the Los Angeles Department of Water and

Power (LADWP), the City is pursuing an effort to develop standard specifications for water pipelines to ensure that they are able to withstand seismic-induced forces. Consistent design and construction procedures will help ensure that Angelenos maintain access to the city's water supply,

even in the event of an earthquake. These specifications will also encourage manufacturers to innovate and create new products for the marketplace, resulting in greater competition and reduced cost to achieve water-system resilience.

### SHOCKS/STRESSES



### TIMEFRAME



Short Term

### PARTNERS

LADWP / DPW / Private-sector manufacturers and contractors / Municipal Water Agencies / ASCE / USGS / CGS / Resilient expert panel / Mayor's Seismic Safety Task Force / Cities experiencing seismic risk



Earthquake resistant pipes being installed by a Los Angeles Department of Water and Power work crew  
Photo: Office of Mayor Garcetti

## 92 LEAD DEVELOPMENT OF A CROSS-SECTOR CYBERSECURITY INNOVATION INCUBATOR

The City will continue to grow the Cybersecurity Innovation Incubator in partnership with local universities and technology defense firms.

L.A.'s Cybersecurity Innovation Incubator is a simulated network built into the City's existing cybersecurity operations center that will train City analysts, private-sector analysts, and local university students

to rapidly detect and eliminate cyber intrusions. This virtual laboratory will simulate institutional attacks and allow multiple technology firms to gain intelligence and showcase their technologies. By

combining resources from the City, the private sector, and local universities, the lab will help train the next generation of cybersecurity professionals and develop innovative defenses to future attacks.

### SHOCKS/STRESSES



### TIMEFRAME



Medium Term

### PARTNERS

ITA / Local technology defense firms / MFLA / Local universities

## 93 ADVANCE COUNTER-TERRORISM EFFORTS IN THE SOUTHERN CALIFORNIA REGION

The City will work with local, regional, and federal law enforcement agencies to coordinate and integrate detection of radiological/nuclear materials that are out of regulatory control and may be used as weapons.

The Los Angeles Securing the Cities program is a partnership with the U.S. Department of Homeland Security's Domestic Nuclear Detection Office. Through the partnership the City of

Los Angeles and other Southern California municipalities have collaborated to detect, analyze, and report nuclear and other radioactive materials out of regulatory control. The partnership includes

awareness of radiological/nuclear threats, a multilayered detection systems, and a coordinated network.

### SHOCKS/STRESSES



### TIMEFRAME



Long Term

### PARTNERS

LAPD / LASD / LAWA Police Department / POLA Police Department / LAFD / LA County Fire Department / DHS / Orange County Sheriff's Department / CHP / LA County Public Health / Long Beach Police Department



## 94 EXPAND EDUCATION AND CAPACITY-BUILDING TO PROMOTE PLURALISTIC VALUES AND SOCIAL INCLUSION

The City will raise awareness around hate, bias, and violent extremism and work to strengthen the capacity of nonprofits and community partners.

Community engagement and outreach are at the heart of the City's strategy to combat hate, bias, and violent extremism. The City is working with mental health experts, educators, academic institutions, and private-sector partners to leverage resources and further ensure

a multidisciplinary, community-led approach. The City's partners include a wide range of community-based organizations working to build capacity, raise awareness, and consolidate resources in an open network that is accessible to community members.

The City and its partners are collaborating to improve learning and subject-matter expertise, provide trainings to organizations working on prevention, and expand education and awareness efforts that foster positive intergroup relations.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

HRC / LA County DHS / Nonprofit service providers / LAUSD / DHS

## 95 INTEGRATE NEW AND EMERGING SCIENCE INTO POLICY THROUGH PARTNERSHIPS WITH ACADEMIC, LOCAL, STATE, AND FEDERAL SCIENTISTS

The City will continue to partner with leading scientists, researchers and resilience experts to foster the integration of City policies and programs with current and future science discovery.

Through a new "Science You Can Use" forum, the Mayor's Office will provide learning opportunities for City employees

featuring science experts and grow critical partnerships with the science community through expert

panels, workshops, trainings, and collaborative research.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

Academics / Scientists / County, regional, state and federal agencies / City departments / Academic partners



Climate leaders announce commitments to cut greenhouse emissions at the first ever U.S. China Climate Summit  
Photo: Office of Mayor Garcetti

## 96 COLLABORATE WITH CITIES TO BUILD RESILIENCE AROUND THE GLOBE

As a member of the 100RC, C40, USDN, SCN, Climate Mayors, U.S. Conference of Mayors, and other networks contributing to resilience-building, including the United Nations Sustainable Development Goals, the City of Los Angeles is committed to leading resilience-building efforts toward a safer and stronger world.

Approximately 1.4 million people are moving into cities every week.<sup>84</sup> People are drawn to cities as the centers of economic mobility, opportunity, social connections, and opportunity. Now, more

than ever, cities are seen as leaders in driving innovative policies and programs that promote resilience. Los Angeles will continue to partner with these global and national organizations to share

best practices for building resilience and advocate for additional resources to address growing risks and vulnerabilities.

### SHOCKS/STRESSES



### TIMEFRAME



### PARTNERS

100RC / C40 / USDN / SCN / Climate Mayors / U.S. Conference of Mayors / Private-sector partners



## OUR LINKS TO THE 100RC NETWORK

As part of the global network of 100 Resilient Cities pioneering a resilient future, Los Angeles is inspired by the efforts of these cities to build resilience. We look forward to strengthening our partnerships as we continue to share best practices and measure our collective impact. This map shows just a few examples of cities in the network with initiatives that are closely aligned with the goals of *Resilient Los Angeles*.



**GOAL 2:** Oakland is supporting small-business owners and entrepreneurs through a loan program and an online business portal.



**GOAL 4:** Berkeley has partnered with community organizations to launch the Community Resilience Center program, providing disaster planning assistance and supplies to promote community preparedness, particularly for historically underserved residents.



**GOAL 11:** San Francisco is promoting seismic safety by retrofitting buildings, expanding financing programs for seismic improvements, and assessing critical infrastructure risks.



**GOAL 12:** Boulder is using integrated planning to manage green infrastructure and address climate change impacts to foster a healthy ecosystem and enhance quality of life.



**GOAL 4:** New Orleans is using property condition data to promote recovery post disaster as well as strategies to enhance neighborhoods on an everyday basis.



**GOAL 9:** Mexico City is using data in innovative ways to address mobility challenges, including improved safety for pedestrians and cyclists.



**GOAL 13:** Bangkok is strengthening connections between residents and the Chao Phraya River, which runs through the center of the city, by building a promenade that includes a walkway, cycling path, and public green space.



**GOAL 8:** Semarang is integrating planning and city budgeting systems to improve coordination of services and improve social and economic outcomes.



**GOAL 1:** Greater Christchurch is collaborating with the central government of New Zealand to promote affordability of insurance premiums while educating the public about insurance, enhancing the region's preparedness.



**GOAL 10:** Boston is building upon on-going efforts in their comprehensive plan and housing strategy to maintain and build more affordable housing and prevent displacement by advocating for a state-level anti-displacement legislative package, strengthening policies promoting affordable housing production, and increasing home ownership.



**GOAL 15:** Glasgow is partnering with academic institutions and other local partners to promote economic growth and advance climate resilience.



**GOAL 1:** Rotterdam is sharing best practices and advancing innovations to help the private sector and residents increase cybersecurity.



**GOAL 6:** Athens is taking a multi-prong approach to preparing the city for and mitigating the effects of extreme heat through green infrastructure, building upgrades, and enhancing city data and services to build awareness and ensure accessibility to all residents.



**GOAL 13:** Pittsburgh is working to improve the environmental health and water quality of its three rivers by expanding green infrastructure.



**GOAL 2:** New York City is training New Yorkers in growing industries in order to foster economic mobility.



**GOAL 7:** Bristol is enhancing the health and wellness its citizens and addressing health inequalities to close the gap between different communities and neighborhoods by creating better access to services, increasing connectivity to open space, and improving air quality across the city.



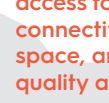
**GOAL 6:** Paris is pioneering an approach to battle heat waves and the urban heat island effect through green space and infrastructure in school courtyards that will increase cooling, reduce urban flood risk, and provide open and public space in all city neighborhoods.



**GOAL 5:** Amman is welcoming migrants by expanding immigrant youth employment programs, building on a 100RC Network Exchange event that brought together eight cities, including Los Angeles, to share best practices.



**GOAL 9:** Medellin's Agency for the Management and Integration of Information is coordinating and sharing information through a single platform, fostering transparency and a decision-making culture.



**GOAL 14:** Dakar is advancing early warning tools to inform residents quickly in the event of a shock and enhance the city's preparedness.



**GOAL 3:** Rio de Janeiro is integrating resilience in educational programming, teaching youth about subjects such as climate change, disaster preparedness, and sustainability.





# APPENDICES



### Shocks and Stresses Key

- Earthquake
- Homelessness
- Air Quality/Pollution
- Fire
- Lack of Affordable Housing
- Urban Heat Island
- Landslides
- Crime and Violence
- Extreme Heat
- Cybercrime and Terrorism
- Disparities in Employment
- Drought
- Riot/Civil Unrest
- Disparities in Health
- Severe Weather and Flooding
- Public Health Emergencies
- Disparities in Access to Open Space
- Sea Level Rise
- Chemical Emergencies
- Disparities in Access to Transit
- Extreme Cold
- Tsunami
- Food Insecurity
- Aging Infrastructure
- Inequity
- Climate Change
- Infrastructure or Building Failure
- Education

### Timeframe Key

- Short Term
- Medium Term
- Long Term

### CHAPTER 1: SAFE AND THRIVING ANGELENOS

## GOAL 1: EDUCATE AND ENGAGE ANGELENOS AROUND RISK REDUCTION AND PREPAREDNESS SO THEY CAN BE SELF-SUFFICIENT FOR AT LEAST SEVEN TO 14 DAYS AFTER A MAJOR SHOCK

ACTION	TIMEFRAME	SHOCKS/STRESSES
1 LAUNCH A COORDINATED PREPAREDNESS CAMPAIGN THAT ENCOURAGES ANGELENOS TO TAKE ACTIONS THAT IMPROVE THEIR RESILIENCE		
2 EXPAND WORKFORCE PREPAREDNESS TRAINING OPPORTUNITIES AND PROGRAMS TO QUICKLY RESTORE ESSENTIAL CITY SERVICES AFTER A MAJOR SHOCK		
3 INCREASE THE NUMBER OF ANGELENOS WITH PREPAREDNESS RESOURCES AND TRAINING IN OUR MOST VULNERABLE COMMUNITIES		
4 TEACH ANGELENOS HOW TO PROTECT THEMSELVES FROM CYBERATTACKS		
5 GROW PARTNERSHIPS BETWEEN THE PUBLIC, PRIVATE, AND NONPROFIT SECTORS TO PROVIDE CRITICAL SERVICES TO VULNERABLE ANGELENOS IN TIMES OF CRISIS		
6 INCREASE ACCESS TO EMERGENCY PREPAREDNESS AND MITIGATION RESOURCES FOR BUSINESSES		
7 PROVIDE ANGELENOS ACCESS TO ADDITIONAL TRAUMA RESOURCES		
8 GROW PARTNERSHIPS THAT EXPAND SUPPORT FOR ANIMALS AFTER A MAJOR SHOCK		





**GOAL 2: DEVELOP ADDITIONAL PATHWAYS TO EMPLOYMENT AND THE DELIVERY OF FINANCIAL LITERACY TOOLS TO SUPPORT OUR MOST VULNERABLE ANGELENOS**

ACTION	TIMEFRAME	SHOCKS/STRESSES
9 EXPAND ACCESS TO FINANCIAL LITERACY AND SECURITY RESOURCES FOR ALL ANGELENOS	🕒	⚖️ 🏠 🏢 🔥 🌪️ 📖
10 ESTABLISH A CAPITAL PROJECT PIPELINE THAT CREATES LIVING WAGE JOBS FOR LOS ANGELES' MOST DISADVANTAGED	🕒	⚖️ 📧 🚗
11 COLLABORATE WITH ANCHOR INSTITUTIONS TO TARGET INVESTMENT	🕒	⚖️ 🚗 🏥
12 INCREASE ACCESS TO FREE WI-FI TO HELP REDUCE TECHNOLOGY DISPARITIES	🕒	⚖️ 🏠
13 IDENTIFY, CULTIVATE, AND INCUBATE HIGH-GROWTH SECTORS WHILE PROMOTING ECONOMIC MOBILITY	🕒	⚖️ 🏠 📖
14 EXPAND PARTNERSHIPS THAT ENCOURAGE REINTEGRATION AND SUCCESSFUL REENTRY OF PREVIOUSLY INCARCERATED INDIVIDUALS	🕒	⚖️ 🦟



**GOAL 3: CULTIVATE LEADERSHIP, STEWARDSHIP, AND EQUITY WITH YOUNG ANGELENOS**

ACTION	TIMEFRAME	SHOCKS/STRESSES
15 BUILD PARTNERSHIPS THAT STRENGTHEN THE EDUCATION-TO-CAREER PIPELINE	🕒	📖 ⚖️ 📧
16 STRENGTHEN OPPORTUNITIES FOR YOUNG ANGELENOS TO CONNECT WITH CIVIC LEADERSHIP PROGRAMS	🕒	🏥 🦟 📖 ⚖️
17 INCREASE ECONOMIC OPPORTUNITIES BY GENERATING AWARENESS AND USE OF CITY PROGRAMS AND SERVICES THAT REDUCE VIOLENCE	🕒	🦟 🏥 ⚖️ 📖
18 DEPLOY EMPLOYMENT DEVELOPMENT PROGRAMS AND PARTNERSHIPS TO PREVENT AND REDUCE YOUTH HOMELESSNESS	🕒	🏠 ⚖️
19 WORK WITH YOUNG ANGELENOS TO REDUCE CRIME AND VIOLENCE, ESPECIALLY WHERE TEENS AND YOUTH ARE VICTIMS	🕒	🦟 📖
20 DEVELOP THE NEXT GENERATION OF STEWARDS OF LOS ANGELES TO BE LEADERS IN CLIMATE AND DISASTER RESILIENCE	🕒	📖 🌪️ 🏠 🌞 ☣️ 🌪️

CHAPTER 2: STRONGER AND CONNECTED NEIGHBORHOODS



**GOAL 4: BUILD SOCIAL COHESION AND INCREASE PREPAREDNESS THROUGH COMMUNITY COLLABORATION**

ACTION	TIMEFRAME	SHOCKS/STRESSES
21 INTEGRATE RESILIENCE INTO COMMUNITY PLAN UPDATES INCLUDING RISK AND VULNERABILITY ANALYSIS AND POLICIES AND IMPLEMENTATION MEASURES THAT ADDRESS THEM	🕒	⚖️ 🏥 🔥 🧠 🚗
22 CONNECT COMMUNITY ORGANIZATIONS WITH EXPERTS AND RESOURCES TO GUIDE AND EFFICIENTLY SUPPORT THE DEVELOPMENT OF NEIGHBORHOOD RESILIENCE HUBS	🕒	🏠 🔥 📖 🌪️ ⚖️ 🌞
23 LAUNCH THE CAMPUS RESILIENCE CHALLENGE	🕒	🏠 🌪️ 📖 🌪️ 📖
24 PROMOTE NEIGHBORHOOD PLANNING PROGRAMS TO SUPPORT ALL LOS ANGELES NEIGHBORHOODS IN DEVELOPING PREPAREDNESS PLANS	🕒	📖 🏠 🔥 🌞 ❄️ ⚖️
25 INCREASE NEIGHBORHOOD OUTREACH AND EDUCATION AROUND WILDFIRE AND MUDSLIDE RISK REDUCTION IN OUR MOST VULNERABLE NEIGHBORHOODS	🕒	📖 🔥 📖 🌪️ 🌪️ 🌪️
26 LAUNCH THE "NEIGHBORLY" MICROGRANTS PROGRAM TO BUILD SOCIAL CONNECTIONS BETWEEN NEIGHBORS	🕒	🏠 🔥 📖 🌪️ ☣️ ⚖️











**GOAL 5: INCREASE PROGRAMS AND PARTNERSHIPS THAT FOSTER WELCOMING NEIGHBORHOODS**















ACTION	TIMEFRAME	SHOCKS/STRESSES
27 PROMOTE DIVERSITY IN COMMUNITY LEADERSHIP BY PURSUING POLICIES AND PROGRAMS THAT DEVELOP MORE LEADERS REFLECTING THE COMMUNITIES THEY REPRESENT	🕒	⚖️ 📧 📖
28 EXPAND ACCESS TO CITY SERVICES FOR HOMELESS, MARGINALIZED, AND VULNERABLE COMMUNITIES	🕒	⚖️ 🏠 🏠
29 CONTINUE TO SUPPORT AND EXPAND THE LOS ANGELES JUSTICE FUND	🕒	⚖️ 📖
30 INCREASE PARTICIPATION FROM AND PLAN WITH NEW ANGELENOS TO ENCOURAGE WELCOMING NEIGHBORHOODS	🕒	⚖️ 📖
31 EXPAND AN INCLUSIVE NETWORK OF SERVICES THAT STRENGTHEN INDIVIDUALS, FAMILIES, AND COMMUNITIES TO COMBAT ALL FORMS OF VIOLENT EXTREMISM	🕒	📖 ⚖️ 🦟



 **GOAL 6: PREPARE AND PROTECT THOSE MOST VULNERABLE TO INCREASING EXTREME HEAT**

















ACTION	TIMEFRAME	SHOCKS/STRESSES
<b>32</b> DEVELOP AN URBAN HEAT VULNERABILITY INDEX AND MITIGATION PLAN TO PREPARE FOR HIGHER TEMPERATURES AND MORE FREQUENT EXTREME HEAT		
<b>33</b> DEVELOP AND LAUNCH A NEIGHBORHOOD RETROFIT PILOT PROGRAM TO TEST COOLING STRATEGIES THAT PREPARE FOR HIGHER TEMPERATURES		
<b>34</b> PLANT TREES IN COMMUNITIES WITH FEWER TREES TO GROW A MORE EQUITABLE TREE CANOPY BY 2028		
<b>35</b> EXPAND THE CITY'S NEIGHBORHOOD COOLING CENTER PROGRAM		

 **GOAL 7: REDUCE HEALTH AND WELLNESS DISPARITIES ACROSS NEIGHBORHOODS**

ACTION	TIMEFRAME	SHOCKS/STRESSES
<b>36</b> INCREASE THE HEALTH AND WELLNESS OF ANGELENOS THROUGH 2028 OLYMPIC AND PARALYMPIC PARTNERSHIPS		
<b>37</b> EXPAND PARTNERSHIPS AND PROGRAMS TO REDUCE NEIGHBORHOOD FOOD DISPARITIES		
<b>38</b> EXPAND MOBILE CITY SERVICES FOR VULNERABLE POPULATIONS		
<b>39</b> INVEST IN HEALTHY AND SAFE HOUSING TO IMPROVE PUBLIC HEALTH AND INCREASE EQUITY		
<b>40</b> INCREASE ACCESS TO OPEN SPACE IN UNDERSERVED NEIGHBORHOODS		
<b>41</b> INCREASE STABILITY THROUGH INVESTMENTS IN AFFORDABLE HOUSING, JOBS, AND OPEN SPACE IN COMMUNITIES ADJACENT TO THE LOS ANGELES RIVER		
<b>42</b> IMPROVE THE HEALTH AND WELL-BEING FOR ALL AGES THROUGH IMPROVEMENTS IN MOBILITY		

CHAPTER 3: PREPARED AND RESPONSIVE CITY

 **GOAL 8: INTEGRATE RESILIENCE PRINCIPLES INTO GOVERNMENT TO PRIORITIZE OUR MOST VULNERABLE PEOPLE, PLACES, AND SYSTEMS**

ACTION	TIMEFRAME	SHOCKS/STRESSES
<b>43</b> MAKE RESILIENCE-BUILDING A PERMANENT PART OF THE CITY OF LOS ANGELES' SYSTEMS AND SERVICES		
<b>44</b> REQUIRE RESILIENCE AS A GUIDING PRINCIPLE FOR LAND USE DECISIONS IN THE LOS ANGELES GENERAL PLAN AND ZONING CODE UPDATES		
<b>45</b> INTEGRATE RESILIENCE AND SUSTAINABILITY PRINCIPLES INTO CITY CAPITAL PLANNING		
<b>46</b> INTEGRATE ADDITIONAL RESILIENCE MEASURES IN THE IMPLEMENTATION OF LOS ANGELES RIVER WATERWAY REVITALIZATION EFFORTS		
<b>47</b> ADOPT EMERGENCY LAND-USE TOOLS TO ADDRESS DISPLACEMENT AND REDEVELOPMENT IN ADVANCE OF A MAJOR EARTHQUAKE OR OTHER CATASTROPHIC EVENT		
<b>48</b> DEVELOP NEW CITYWIDE EQUITY INDICATORS TO INFORM AND MEASURE INCLUSIVE INVESTMENTS AND POLICY-MAKING		
<b>49</b> SUPPORT SYSTEMS AND SERVICES THAT ARE LINGUISTICALLY INCLUSIVE AND CULTURALLY COMPETENT		
<b>50</b> INNOVATE MORE RESILIENT AND SUSTAINABLE BUILDINGS BY ADVANCING BUILDING FORWARD L.A.		



**GOAL 9: EQUIP GOVERNMENT WITH TECHNOLOGY AND DATA TO INCREASE SITUATIONAL AWARENESS AND EXPEDITE POST-DISASTER RECOVERY**

ACTION	TIMEFRAME	SHOCKS/STRESSES
51 FACILITATE PARTNERSHIPS WITH LOS ANGELES BUSINESSES THROUGH THE L.A. CYBERLAB, OUR CYBERSECURITY PLATFORM	🕒	🏠 📱 🌐
52 PREVENT CRIME AND VIOLENCE THROUGH ENHANCED USE OF DATA	🕒	🌐 ⚖️
53 IMPLEMENT CITYWIDE DATA INTEGRATION SYSTEMS TO SUPPORT FIRST RESPONDERS AND CITY DEPARTMENTS IN IDENTIFYING THE MOST URGENT AND HIGHEST NEED SITUATIONS	🕒	🔥 🏠 🌪️ 📊
54 ESTABLISH POST-DISASTER RESTORATION TARGETS FOR CRITICAL INFRASTRUCTURE	🕒	🏠 📊 📱 🚗 🌪️ 📺

**GOAL 10: PROVIDE SAFE AND AFFORDABLE HOUSING FOR ALL ANGELENOS**

ACTION	TIMEFRAME	SHOCKS/STRESSES
55 DOUBLE THE PACE OF AFFORDABLE HOUSING PRODUCTION AND PRESERVATION AND TRIPLE PRODUCTION OF NEW PERMANENT SUPPORTIVE HOUSING BY CHANGING REGULATION, ADOPTING NEW FINANCING MECHANISMS, AND EXPLORING ADAPTIVE RE-USE OF PUBLICLY-OWNED SITES	🕒	⚖️ 🏠 🚗 📊
56 PROMOTE AND EXPAND HOUSING OPTIONS FOR VULNERABLE POPULATIONS SUCH AS CHRONICALLY HOMELESS AND HOMELESS VETERANS AND VICTIMS OF DOMESTIC VIOLENCE AND HUMAN TRAFFICKING	🕒	⚖️ 🏠 📊
57 INCREASE PARTICIPATION IN CITY AND STATE PROGRAMS THAT PROMOTE SAFER HOUSING BY REDUCING EARTHQUAKE RISK	🕒	🏠 ⚖️ 🏠 🚗 📊
58 COORDINATE A HOMELESS HOUSING SERVICE PROVIDER PREPAREDNESS PROGRAM TO FORTIFY SYSTEMS AND SERVICES TO WITHSTAND FUTURE CHALLENGES	🕒	📊 🏠 ☀️ 🌪️ 🌐 📺
59 CONNECT PEOPLE EXPERIENCING HOMELESSNESS NEAR THE RIVER WITH BETTER ACCESS TO SERVICES AND HOUSING	🕒	📊 🏠 🚗 🌪️ 🌐
60 ESTABLISH NEIGHBORHOOD-BASED, SHORT- AND LONG-TERM POST-DISASTER HOUSING PLANS	🕒	🏠 🔥 🌪️ ⚖️ 🏠 📊

**GOAL 11: RESTORE, REBUILD, AND MODERNIZE LOS ANGELES' INFRASTRUCTURE**

ACTION	TIMEFRAME	SHOCKS/STRESSES
61 ADVANCE SEISMIC SAFETY, PRIORITIZING THE MOST VULNERABLE BUILDINGS, INFRASTRUCTURE, AND SYSTEMS	🕒	🏠 🔥 📊 📱 🚗 🌪️
62 EXPAND AND PROTECT WATER SOURCES TO REDUCE DEPENDENCE ON IMPORTED WATER AND STRENGTHEN THE CITY'S LOCAL WATER SUPPLY	🕒	🏠 🌪️ ☀️ 📊 🌪️ 🌐 🌡️
63 PRIORITIZE KEY NEIGHBORHOODS FOR STORMWATER CAPTURE, URBAN GREENING, AND OTHER COMMUNITY BENEFITS	🕒	🌪️ ☀️ 🌪️ ⚖️ 🚗 🌡️
64 LEVERAGE FLOOD MITIGATION INFRASTRUCTURE TO ENHANCE LOCAL WATER AVAILABILITY	🕒	🏠 🔥 📊 🌪️ 🚗 🌪️
65 PROACTIVELY ADDRESS FLOOD RISK THROUGH POLICY, COMMUNICATION, AND INFRASTRUCTURE PLANNING	🕒	🌪️ 📊 🚗 ⚖️ 🏠 📱
66 DEVELOP A CLEAN ENERGY AND SMART GRID INFRASTRUCTURE THAT IS RELIABLE IN THE FACE OF FUTURE CLIMATE IMPACTS AND HAZARDS	🕒	🏠 🔥 ☀️ 📱 🚗
67 EXPAND COMBINED SOLAR AND ENERGY STORAGE PILOTS	🕒	🏠 🔥 📊 ☀️
68 EXPAND ELECTRIC FLEETS, CHARGING INFRASTRUCTURE, AND ENERGY BACKUP TO REDUCE EMISSIONS AND SUPPORT EMERGENCY AND RESPONSE SERVICES	🕒	🏠 ☀️ 📱 🚗
69 LEVERAGE AIRPORT MODERNIZATION AT LOS ANGELES WORLD AIRPORTS TO INCREASE RESILIENCE	🕒	🏠 ☀️ 📱 🚗
70 IDENTIFY, ANALYZE, AND MITIGATE LOCAL OIL AND GAS INFRASTRUCTURE RISKS	🕒	🏠 🔥 ☣️ 📱 🚗
71 ENHANCE PROTECTION OF CRITICAL DIGITAL ASSETS FROM CYBERATTACKS	🕒	📱 📱 🌐
72 LEVERAGE INFRASTRUCTURE INVESTMENTS LEADING UP TO THE OLYMPICS AND PARALYMPICS TO ADVANCE RESILIENCE GOALS	🕒	🚗 📱 🏠 🚗 🌐



CHAPTER 4: PIONEERING AND COLLABORATIVE PARTNER

**GOAL 12: USE CLIMATE SCIENCE TO DEVELOP ADAPTATION STRATEGIES CONSISTENT WITH THE PARIS CLIMATE AGREEMENT**

ACTION	TIMEFRAME	SHOCKS/STRESSES
73 ENSURE CLIMATE RESILIENCE AND ADAPTATION PLANNING IS ROBUST AND CONSISTENT WITH THE PARIS CLIMATE AGREEMENT	🕒	🌊 ☀️ 💧 🌪️ 🏠 ⚖️
74 TRANSITION TO ZERO-EMISSIONS TECHNOLOGY AT THE PORT OF L.A. TO REDUCE EMISSIONS, IMPROVE AIR QUALITY, AND BUILD DISASTER RESILIENCE	🕒	🏠 🏢 🌊 🚚
75 TRANSITION TO FOSSIL-FUEL-FREE STREETS TO FIGHT AIR POLLUTION AND HELP TACKLE THE GLOBAL THREAT OF CLIMATE CHANGE	🕒	🏠 🏢 🌊 🚚
76 INCORPORATE SEA LEVEL RISE MODELING INTO LOCAL PLANS	🕒	🌪️ 🏠 🏠
77 IMPLEMENT STORMWATER PROJECTS THAT REDUCE POLLUTION AND CAPTURE LOCAL WATER SUPPLY	🕒	💧 🌪️ 📊 🚗
78 DEVELOP A STRATEGY TO SUSTAIN THE REGION'S BIODIVERSITY AND TREE HEALTH TO SUPPORT LONG-TERM ECOLOGICAL RESILIENCE	🕒	💧 🔥 📊 🌪️ ☀️ 🚚

**GOAL 13: FOSTER A HEALTHY AND CONNECTED LOS ANGELES RIVER SYSTEM**

ACTION	TIMEFRAME	SHOCKS/STRESSES
79 REVITALIZE, ENHANCE, AND PROTECT THE LOS ANGELES RIVER WATERSHED'S ECOSYSTEM AND BIODIVERSITY	🕒	💧 🏠 🌱 🚚
80 IDENTIFY STRATEGIES TO REDUCE POLLUTION IN THE LOS ANGELES RIVER SYSTEM	🕒	🚚 🌱 🏠 ☀️ 🌪️ 🚗
81 PROVIDE EDUCATION PROGRAMMING TO MAINTAIN A HEALTHY WATERSHED AND KEEP ANGELENOS SAFE	🕒	📖 🌪️ 🔑 🌊 ⚖️ 🌱
82 LEVERAGE THE LARIVERWAY FOR EMERGENCY ACCESS AND EVACUATION ROUTES TO INCREASE CITYWIDE PREPAREDNESS AND DISASTER RESPONSE CAPACITY	🕒	🏠 🔥

**GOAL 14: STRENGTHEN REGIONAL SYSTEMS AND FORTIFY CRITICAL INFRASTRUCTURE**

ACTION	TIMEFRAME	SHOCKS/STRESSES
83 COLLABORATE WITH CALIFORNIA CITIES TO ADVANCE REGIONAL SEISMIC SAFETY	🕒	🏠 🏠
84 EXPLORE "PRECOVERY" FUNDING OPPORTUNITIES IN COLLABORATION WITH REGIONAL, STATE, AND FEDERAL PARTNERS	🕒	🏠 🔥 🚗 📊 🌪️
85 FORTIFY CRITICAL LIFELINE INFRASTRUCTURE AND SUPPLY CHAINS THROUGH CONTINUED ASSESSMENTS, COORDINATION, AND INVESTMENT	🕒	🏠 🌪️ 🌊 🚗 📊
86 ENCOURAGE INCREASED ACCESS TO EMERGENCY POWER FOR CRITICAL SERVICES	🕒	🏠 🌪️ 📊 🏠 🌊
87 COORDINATE AMONG TRANSIT AGENCIES TO ADVANCE REGIONAL TRANSPORTATION AND TRANSIT RESILIENCE	🕒	🏠 🌊 🚗 🚗
88 FORTIFY PUBLIC HEALTH AND HEALTHCARE CRITICAL INFRASTRUCTURE AND LEVERAGE PARTNERSHIPS WITH PUBLIC HEALTH ORGANIZATIONS TO IMPROVE COMMUNITY HEALTH AND WELLNESS	🕒	🏠 🔑 🏠
89 EXPAND CLIMATE AND EMERGENCY PREPAREDNESS THROUGHOUT OUR LOCAL FOOD SYSTEM	🕒	📊 🌊 🏠

**GOAL 15: GROW PUBLIC, PRIVATE, AND PHILANTHROPIC PARTNERSHIPS THAT WILL INCREASE RESOURCES DEDICATED TO BUILDING RESILIENCE**

ACTION	TIMEFRAME	SHOCKS/STRESSES
90 LAUNCH AN EARTHQUAKE EARLY WARNING SYSTEM	🕒	🏠 🔥 📊
91 FURTHER THE MARKETPLACE FOR SEISMIC-RESILIENT PIPES	🕒	🏠 📊 🔥 📊 🚗
92 LEAD DEVELOPMENT OF A CROSS-SECTOR CYBERSECURITY INNOVATION INCUBATOR	🕒	📊 📊
93 ADVANCE COUNTER-TERRORISM EFFORTS IN THE SOUTHERN CALIFORNIA REGION	🕒	📊 📊 📊
94 EXPAND EDUCATION AND CAPACITY-BUILDING TO PROMOTE PLURALISTIC VALUES AND SOCIAL INCLUSION	🕒	📊 ⚖️
95 INTEGRATE NEW AND EMERGING SCIENCE INTO POLICY THROUGH PARTNERSHIPS WITH ACADEMIC, LOCAL, STATE, AND FEDERAL SCIENTISTS	🕒	🌊 🏠 🏠 📊 🔑 🚚
96 COLLABORATE WITH CITIES TO BUILD RESILIENCE AROUND THE GLOBE	🕒	⚖️ 🚗 🏠 🌊 📊 🏠




















































DISASTER PREPAREDNESS AND RECOVERY

CHAP	GOAL	ACTION	TIMEFRAME	SHOCKS/STRESSES
1		2 EXPAND WORKFORCE PREPAREDNESS TRAINING OPPORTUNITIES AND PROGRAMS TO QUICKLY RESTORE ESSENTIAL CITY SERVICES AFTER A MAJOR SHOCK		
1		3 INCREASE THE NUMBER OF ANGELENOS WITH PREPAREDNESS RESOURCES AND TRAINING IN OUR MOST VULNERABLE COMMUNITIES		
1		4 TEACH ANGELENOS HOW TO PROTECT THEMSELVES FROM CYBERATTACKS		
1		5 GROW PARTNERSHIPS BETWEEN THE PUBLIC, PRIVATE, AND NONPROFIT SECTORS TO PROVIDE CRITICAL SERVICES TO VULNERABLE ANGELENOS IN TIMES OF CRISIS		
1		6 INCREASE ACCESS TO EMERGENCY PREPAREDNESS AND MITIGATION RESOURCES FOR BUSINESSES		
1		7 PROVIDE ANGELENOS ACCESS TO ADDITIONAL TRAUMA RESOURCES		
1		8 GROW PARTNERSHIPS THAT EXPAND SUPPORT FOR ANIMALS AFTER A MAJOR SHOCK		
2		24 PROMOTE NEIGHBORHOOD PLANNING PROGRAMS TO SUPPORT ALL LOS ANGELES NEIGHBORHOODS IN DEVELOPING PREPAREDNESS PLANS		
2		25 INCREASE NEIGHBORHOOD OUTREACH AND EDUCATION AROUND WILDFIRE AND MUDSLIDE RISK REDUCTION IN OUR MOST VULNERABLE NEIGHBORHOODS		
2		35 EXPAND THE CITY'S NEIGHBORHOOD COOLING CENTER PROGRAM		
3		46 INTEGRATE ADDITIONAL RESILIENCE MEASURES IN THE IMPLEMENTATION OF LOS ANGELES RIVER WATERWAY REVITALIZATION EFFORTS		



































3		47 ADOPT EMERGENCY LAND-USE TOOLS TO ADDRESS DISPLACEMENT AND REDEVELOPMENT IN ADVANCE OF A MAJOR EARTHQUAKE OR OTHER CATASTROPHIC EVENT		
3		51 FACILITATE PARTNERSHIPS WITH LOS ANGELES BUSINESSES THROUGH THE L.A. CYBERLAB, OUR CYBERSECURITY PLATFORM		
3		53 IMPLEMENT CITYWIDE DATA INTEGRATION SYSTEMS TO SUPPORT FIRST RESPONDERS AND CITY DEPARTMENTS IN IDENTIFYING THE MOST URGENT AND HIGHEST NEED SITUATIONS		
3		57 INCREASE PARTICIPATION IN CITY AND STATE PROGRAMS THAT PROMOTE SAFER HOUSING BY REDUCING EARTHQUAKE RISK		
3		60 ESTABLISH NEIGHBORHOOD-BASED, SHORT- AND LONG-TERM POST-DISASTER HOUSING PLANS		
3		68 EXPAND ELECTRIC FLEETS, CHARGING INFRASTRUCTURE, AND ENERGY BACKUP TO REDUCE EMISSIONS AND SUPPORT EMERGENCY AND RESPONSE SERVICES		
3		71 ENHANCE PROTECTION OF CRITICAL DIGITAL ASSETS FROM CYBERATTACKS		
4		82 LEVERAGE THE LARIVERWAY FOR EMERGENCY ACCESS AND EVACUATION ROUTES TO INCREASE CITYWIDE PREPAREDNESS AND DISASTER RESPONSE CAPACITY		
4		84 EXPLORE "PRECOVERY" FUNDING OPPORTUNITIES IN COLLABORATION WITH REGIONAL, STATE, AND FEDERAL PARTNERS		
4		86 ENCOURAGE INCREASED ACCESS TO EMERGENCY POWER FOR CRITICAL SERVICES		
4		90 LAUNCH AN EARTHQUAKE EARLY WARNING SYSTEM		



 <b>ECONOMIC SECURITY</b>				
CHAP	GOAL	ACTION	TIMEFRAME	SHOCKS/STRESSES
1		9 EXPAND ACCESS TO FINANCIAL LITERACY AND SECURITY RESOURCES FOR ALL ANGELENOS		
1		10 ESTABLISH A CAPITAL PROJECT PIPELINE THAT CREATES LIVING WAGE JOBS FOR LOS ANGELES' MOST DISADVANTAGED		
1		11 COLLABORATE WITH ANCHOR INSTITUTIONS TO TARGET INVESTMENT		
1		14 EXPAND PARTNERSHIPS THAT ENCOURAGE REINTEGRATION AND SUCCESSFUL REENTRY OF PREVIOUSLY INCARCERATED INDIVIDUALS		
1		15 BUILD PARTNERSHIPS THAT STRENGTHEN THE EDUCATION-TO-CAREER PIPELINE		
1		17 INCREASE ECONOMIC OPPORTUNITIES BY GENERATING AWARENESS AND USE OF CITY PROGRAMS AND SERVICES THAT REDUCE VIOLENCE		
1		18 DEPLOY EMPLOYMENT DEVELOPMENT PROGRAMS AND PARTNERSHIPS TO PREVENT AND REDUCE YOUTH HOMELESSNESS		
1		19 WORK WITH YOUNG ANGELENOS TO REDUCE CRIME AND VIOLENCE, ESPECIALLY WHERE TEENS AND YOUTH ARE VICTIMS		
2		26 LAUNCH THE "NEIGHBORLY" MICROGRANTS PROGRAM TO BUILD SOCIAL CONNECTIONS BETWEEN NEIGHBORS		
2		28 EXPAND ACCESS TO CITY SERVICES FOR HOMELESS, MARGINALIZED, AND VULNERABLE COMMUNITIES		
2		29 CONTINUE TO SUPPORT AND EXPAND THE LOS ANGELES JUSTICE FUND		
2		30 INCREASE PARTICIPATION FROM AND PLAN WITH NEW ANGELENOS TO ENCOURAGE WELCOMING NEIGHBORHOODS		






















































































2		37 EXPAND PARTNERSHIPS AND PROGRAMS TO REDUCE NEIGHBORHOOD FOOD DISPARITIES		
2		38 EXPAND MOBILE CITY SERVICES FOR VULNERABLE POPULATIONS		
3		55 DOUBLE THE PACE OF AFFORDABLE HOUSING PRODUCTION AND PRESERVATION AND TRIPLE PRODUCTION OF NEW PERMANENT SUPPORTIVE HOUSING BY CHANGING REGULATION, ADOPTING NEW FINANCING MECHANISMS, AND EXPLORING ADAPTIVE RE-USE OF PUBLICLY-OWNED SITES		
3		56 PROMOTE AND EXPAND HOUSING OPTIONS FOR VULNERABLE POPULATIONS SUCH AS CHRONICALLY HOMELESS AND HOMELESS VETERANS AND VICTIMS OF DOMESTIC VIOLENCE AND HUMAN TRAFFICKING		
3		58 COORDINATE A HOMELESS HOUSING SERVICE PROVIDER PREPAREDNESS PROGRAM TO FORTIFY SYSTEMS AND SERVICES TO WITHSTAND FUTURE CHALLENGES		
3		59 CONNECT PEOPLE EXPERIENCING HOMELESSNESS NEAR THE RIVER WITH BETTER ACCESS TO SERVICES AND HOUSING		


































 <b>CLIMATE ADAPTATION</b>				
CHAP	GOAL	ACTION	TIMEFRAME	SHOCKS/STRESSES
2		<b>32</b> DEVELOP AN URBAN HEAT VULNERABILITY INDEX AND MITIGATION PLAN TO PREPARE FOR HIGHER TEMPERATURES AND MORE FREQUENT EXTREME HEAT		
2		<b>33</b> DEVELOP AND LAUNCH A NEIGHBORHOOD RETROFIT PILOT PROGRAM TO TEST COOLING STRATEGIES THAT PREPARE FOR HIGHER TEMPERATURES		
2		<b>34</b> PLANT TREES IN COMMUNITIES WITH FEWER TREES TO GROW A MORE EQUITABLE TREE CANOPY BY 2028		
3		<b>62</b> EXPAND AND PROTECT WATER SOURCES TO REDUCE DEPENDENCE ON IMPORTED WATER AND STRENGTHEN THE CITY'S LOCAL WATER SUPPLY		
3		<b>63</b> PRIORITIZE KEY NEIGHBORHOODS FOR STORMWATER CAPTURE, URBAN GREENING, AND OTHER COMMUNITY BENEFITS		
3		<b>65</b> PROACTIVELY ADDRESS FLOOD RISK THROUGH POLICY, COMMUNICATION, AND INFRASTRUCTURE PLANNING		
4		<b>74</b> TRANSITION TO ZERO-EMISSIONS TECHNOLOGY AT THE PORT OF L.A. TO REDUCE EMISSIONS, IMPROVE AIR QUALITY, AND BUILD DISASTER RESILIENCE		
4		<b>75</b> TRANSITION TO FOSSIL-FUEL-FREE STREETS TO FIGHT AIR POLLUTION AND HELP TACKLE THE GLOBAL THREAT OF CLIMATE CHANGE		
4		<b>76</b> INCORPORATE SEA LEVEL RISE MODELING INTO LOCAL PLANS		
4		<b>78</b> DEVELOP A STRATEGY TO SUSTAIN THE REGION'S BIODIVERSITY AND TREE HEALTH TO SUPPORT LONG-TERM ECOLOGICAL RESILIENCE		
4		<b>80</b> IDENTIFY STRATEGIES TO REDUCE POLLUTION IN THE LOS ANGELES RIVER SYSTEM		

4		<b>89</b> EXPAND CLIMATE AND EMERGENCY PREPAREDNESS THROUGHOUT OUR LOCAL FOOD SYSTEM		
4		<b>95</b> INTEGRATE NEW AND EMERGING SCIENCE INTO POLICY THROUGH PARTNERSHIPS WITH ACADEMIC, LOCAL, STATE, AND FEDERAL SCIENTISTS		
















































 <b>INFRASTRUCTURE MODERNIZATION</b>				
CHAP	GOAL	ACTION	TIMEFRAME	SHOCKS/STRESSES
1		<b>12</b> INCREASE ACCESS TO FREE WI-FI TO HELP REDUCE TECHNOLOGY DISPARITIES		 
2		<b>39</b> INVEST IN HEALTHY AND SAFE HOUSING TO IMPROVE PUBLIC HEALTH AND INCREASE EQUITY		   
2		<b>40</b> INCREASE ACCESS TO OPEN SPACE IN UNDERSERVED NEIGHBORHOODS		  
2		<b>41</b> INCREASE STABILITY THROUGH INVESTMENTS IN AFFORDABLE HOUSING, JOBS, AND OPEN SPACE IN COMMUNITIES ADJACENT TO THE LOS ANGELES RIVER		    
2		<b>42</b> IMPROVE THE HEALTH AND WELL-BEING FOR ALL AGES THROUGH IMPROVEMENTS IN MOBILITY		   
3		<b>45</b> INTEGRATE RESILIENCE AND SUSTAINABILITY PRINCIPLES INTO CITY CAPITAL PLANNING		    
3		<b>50</b> INNOVATE MORE RESILIENT AND SUSTAINABLE BUILDINGS BY ADVANCING BUILDING FORWARD L.A.		   
3		<b>54</b> ESTABLISH POST-DISASTER RESTORATION TARGETS FOR CRITICAL INFRASTRUCTURE		     
3		<b>61</b> ADVANCE SEISMIC SAFETY, PRIORITIZING THE MOST VULNERABLE BUILDINGS, INFRASTRUCTURE, AND SYSTEMS		     
3		<b>64</b> LEVERAGE FLOOD MITIGATION INFRASTRUCTURE TO ENHANCE LOCAL WATER AVAILABILITY		     
3		<b>66</b> DEVELOP A CLEAN ENERGY AND SMART GRID INFRASTRUCTURE THAT IS RELIABLE IN THE FACE OF FUTURE CLIMATE IMPACTS AND HAZARDS		    
3		<b>67</b> EXPAND COMBINED SOLAR AND ENERGY STORAGE PILOTS		   
3		<b>69</b> LEVERAGE AIRPORT MODERNIZATION AT LOS ANGELES WORLD AIRPORTS TO INCREASE RESILIENCE		   

3		<b>70</b> IDENTIFY, ANALYZE, AND MITIGATE LOCAL OIL AND GAS INFRASTRUCTURE RISKS		    
4		<b>77</b> IMPLEMENT STORMWATER PROJECTS THAT REDUCE POLLUTION AND CAPTURE LOCAL WATER SUPPLY		   
4		<b>79</b> REVITALIZE, ENHANCE, AND PROTECT THE LOS ANGELES RIVER WATERSHED'S ECOSYSTEM AND BIODIVERSITY		   
4		<b>85</b> FORTIFY CRITICAL LIFELINE INFRASTRUCTURE AND SUPPLY CHAINS THROUGH CONTINUED ASSESSMENTS, COORDINATION, AND INVESTMENT		    
4		<b>88</b> FORTIFY PUBLIC HEALTH AND HEALTH-CARE CRITICAL INFRASTRUCTURE AND LEVERAGE PARTNERSHIPS WITH PUBLIC HEALTH ORGANIZATIONS TO IMPROVE COMMUNITY HEALTH AND WELLNESS		  



 LEADERSHIP AND ENGAGEMENT

CHAP	GOAL	ACTION	TIMEFRAME	SHOCKS/STRESSES
1		1 LAUNCH A COORDINATED PREPAREDNESS CAMPAIGN THAT ENCOURAGES ANGELENOS TO TAKE ACTIONS THAT IMPROVE THEIR RESILIENCE		
1		13 IDENTIFY, CULTIVATE, AND INCUBATE HIGH-GROWTH SECTORS WHILE PROMOTING ECONOMIC MOBILITY		
1		16 STRENGTHEN OPPORTUNITIES FOR YOUNG ANGELENOS TO CONNECT WITH CIVIC LEADERSHIP PROGRAMS		
1		20 DEVELOP THE NEXT GENERATION OF STEWARDS OF LOS ANGELES TO BE LEADERS IN CLIMATE AND DISASTER RESILIENCE		
2		21 INTEGRATE RESILIENCE INTO COMMUNITY PLAN UPDATES INCLUDING RISK AND VULNERABILITY ANALYSIS AND POLICIES AND IMPLEMENTATION MEASURES THAT ADDRESS THEM		
2		22 CONNECT COMMUNITY ORGANIZATIONS WITH EXPERTS AND RESOURCES TO GUIDE AND EFFICIENTLY SUPPORT THE DEVELOPMENT OF NEIGHBORHOOD RESILIENCE HUBS		
2		23 LAUNCH THE CAMPUS RESILIENCE CHALLENGE		
2		27 PROMOTE DIVERSITY IN COMMUNITY LEADERSHIP BY PURSUING POLICIES AND PROGRAMS THAT DEVELOP MORE LEADERS REFLECTING THE COMMUNITIES THEY REPRESENT		
2		31 EXPAND AN INCLUSIVE NETWORK OF SERVICES THAT STRENGTHEN INDIVIDUALS, FAMILIES, AND COMMUNITIES TO COMBAT ALL FORMS OF VIOLENT EXTREMISM		
2		36 INCREASE THE HEALTH AND WELLNESS OF ANGELENOS THROUGH 2028 OLYMPIC AND PARALYMPIC PARTNERSHIPS		

3		43 MAKE RESILIENCE-BUILDING A PERMANENT PART OF THE CITY OF LOS ANGELES' SYSTEMS AND SERVICES		
3		44 REQUIRE RESILIENCE AS A GUIDING PRINCIPLE FOR LAND USE DECISIONS IN THE LOS ANGELES GENERAL PLAN AND ZONING CODE UPDATES		
3		48 DEVELOP NEW CITYWIDE EQUITY INDICATORS TO INFORM AND MEASURE INCLUSIVE INVESTMENTS AND POLICY-MAKING		
3		49 SUPPORT SYSTEMS AND SERVICES THAT ARE LINGUISTICALLY INCLUSIVE AND CULTURALLY COMPETENT		
3		52 PREVENT CRIME AND VIOLENCE THROUGH ENHANCED USE OF DATA		
3		72 LEVERAGE INFRASTRUCTURE INVESTMENTS LEADING UP TO THE OLYMPICS AND PARALYMPICS TO ADVANCE RESILIENCE GOALS		
4		73 ENSURE CLIMATE RESILIENCE AND ADAPTATION PLANNING IS ROBUST AND CONSISTENT WITH THE PARIS CLIMATE AGREEMENT		
4		81 PROVIDE EDUCATION PROGRAMMING TO MAINTAIN A HEALTHY WATERSHED AND KEEP ANGELENOS SAFE		
4		83 COLLABORATE WITH CALIFORNIA CITIES TO ADVANCE REGIONAL SEISMIC SAFETY		
4		87 COORDINATE AMONG TRANSIT AGENCIES TO ADVANCE REGIONAL TRANSPORTATION AND TRANSIT RESILIENCE		
4		91 FURTHER THE MARKETPLACE FOR SEISMIC-RESILIENT PIPES		
4		92 LEAD DEVELOPMENT OF A CROSS-SECTOR CYBERSECURITY INNOVATION INCUBATOR		
4		93 ADVANCE COUNTER-TERRORISM EFFORTS IN THE SOUTHERN CALIFORNIA REGION		
4		94 EXPAND EDUCATION AND CAPACITY-BUILDING TO PROMOTE PLURALISTIC VALUES AND SOCIAL INCLUSION		
4		96 COLLABORATE WITH CITIES TO BUILD RESILIENCE AROUND THE GLOBE		



<b>100RC</b>	100 Resilient Cities
<b>AARP</b>	American Association of Retired Persons
<b>ARC</b>	American Red Cross
<b>ARCCA</b>	Alliance Of Regional Collaboratives For Climate Adaptation
<b>ASCE</b>	American Society of Civil Engineers
<b>BID</b>	Business Improvement District
<b>BOE</b>	Bureau of Engineering
<b>BOS</b>	Bureau of Sanitation
<b>BSS</b>	Bureau of Street Services
<b>C40</b>	C40 Cities Climate Leadership Group
<b>CalOES</b>	California Office of Emergency Services
<b>Caltrans</b>	California Department of Transportation
<b>CAO</b>	Chief Administrative Officer
<b>CARB</b>	California Air Resources Board
<b>CDFW</b>	California Department of Fish and Wildlife
<b>CEA</b>	California Earthquake Authority
<b>CERT</b>	Community Emergency Response Team
<b>CES</b>	Coordinated Entry System
<b>CEQA</b>	California Environmental Quality Act
<b>CGS</b>	California Geological Survey
<b>CHP</b>	California Highway Patrol
<b>CRI</b>	City Resilience Index
<b>CRO</b>	Chief Resilience Officer
<b>CSUN</b>	California State University, Northridge
<b>DART</b>	Domestic Abuse Response Teams
<b>DAS</b>	Department of Animal Services
<b>DCA</b>	Department of Cultural Affairs
<b>DCP</b>	Department of City Planning
<b>DHS</b>	U.S. Department of Homeland Security
<b>DNDO</b>	Domestic Nuclear Detection Office
<b>DOA</b>	Department of Aging
<b>DOD</b>	Department on Disability
<b>DONE</b>	Department of Neighborhood Empowerment
<b>DOTR</b>	U.S. Department of the Treasury

<b>DPW</b>	Department of Public Works, City of Los Angeles
<b>DSW</b>	Disaster Service Workers
<b>DTSC</b>	Department of Toxic Substances Control
<b>DWR</b>	California Department of Water Resources
<b>EIFD</b>	Enhanced Infrastructure Finance District
<b>EMD</b>	Emergency Management Department
<b>EPA</b>	Environmental Protection Agency
<b>ESL</b>	English as a Second Language
<b>EWDD</b>	Economic and Workforce Development Department
<b>FEMA</b>	Federal Emergency Management Agency
<b>FIRE</b>	Fire Instruction Recruitment and Education
<b>FoLAR</b>	Friends of the Los Angeles River
<b>GNDA</b>	Global Nuclear Detection Architecture
<b>GRYD</b>	Gang Reduction and Youth Development
<b>GSD</b>	General Services Department
<b>HACLA</b>	Housing Authority of the City of Los Angeles
<b>HCID</b>	Housing and Community Investment Department
<b>HOPE</b>	Homeless Outreach and Proactive Engagement
<b>HRC</b>	Human Relations Commission
<b>HSAC</b>	Homeland Security Advisory Council
<b>HUD</b>	U.S. Department of Housing and Urban Development
<b>ITA</b>	Information Technology Agency
<b>LACCD</b>	Los Angeles Community College District
<b>LACFCD</b>	Los Angeles County Flood Control District
<b>LACTD</b>	Los Angeles Convention and Tourism Development
<b>LADBS</b>	Los Angeles Department of Building and Safety
<b>LADHS</b>	Los Angeles County Department of Health Services
<b>LADOT</b>	Los Angeles Department of Transportation

<b>LADPH</b>	Los Angeles County Department of Public Health
<b>LADWP</b>	Los Angeles Department of Water and Power
<b>LAEDC</b>	Los Angeles Economic Development Corporation
<b>LAFD</b>	Los Angeles Fire Department
<b>LAFPC</b>	Los Angeles Food Policy Council
<b>LAHSA</b>	Los Angeles Homeless Services Authority
<b>LAPD</b>	Los Angeles Police Department
<b>LAPL</b>	Los Angeles Public Library
<b>LARC</b>	Los Angeles Regional Collaborative for Climate Action & Sustainability
<b>LARRMP</b>	Los Angeles River Revitalization Master Plan
<b>LASD</b>	Los Angeles County Sheriff's Department
<b>LAUCC</b>	Los Angeles Urban Cooling Collaborative
<b>LAUSD</b>	Los Angeles Unified School District
<b>LAWA</b>	Los Angeles World Airports
<b>LAX</b>	Los Angeles International Airport
<b>Metro</b>	Los Angeles County Metropolitan Transportation Authority
<b>MFLA</b>	Mayor's Fund for Los Angeles
<b>MRCA</b>	Mountains Recreation and Conservation Authority
<b>MWD</b>	Metropolitan Water District of Southern California
<b>NEAT</b>	New Engineering Associate Training
<b>NGO</b>	Non Governmental Organization
<b>OEM</b>	Los Angeles County Office of Emergency Management
<b>OIG</b>	Office of the Inspector General
<b>POLA</b>	Port of Los Angeles
<b>RAP</b>	Recreation and Parks
<b>RBD</b>	Resilience by Design
<b>RSO</b>	Rent Stabilization Ordinance
<b>SAVE</b>	Strategies Against Violent Extremism
<b>SBA</b>	U.S. Small Business Administration

<b>SCAG</b>	Southern California Association of Governments
<b>SCCLW</b>	Southern California Critical Lifelines Workgroup
<b>SCG</b>	Southern California Gas Company
<b>SCN</b>	Strong Cities Network
<b>SEAOSC</b>	Structural Engineers Association of Southern California
<b>SMMC</b>	Santa Monica Mountains Conservancy
<b>TDR</b>	Transfer of Development Rights
<b>TPL</b>	Trust for Public Land
<b>UCLA</b>	University of California, Los Angeles
<b>USACE</b>	U.S. Army Corps of Engineers
<b>USDA</b>	U.S. Department of Agriculture
<b>USDOD</b>	U.S. Department of Defense
<b>USDOT</b>	U.S. Department of Transportation
<b>USC</b>	University of Southern California
<b>USGBC</b>	U.S. Green Building Council
<b>USGS</b>	U.S. Geological Survey
<b>WBMWD</b>	West Basin Municipal Water District
<b>WDB</b>	Workforce Development Board
<b>WHO</b>	World Health Organizations



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## ACKNOWLEDGMENTS

Resilient Los Angeles would not have been possible without the following individuals and groups.

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### Mayor’s Office of Resilience

**Marissa Aho, Chief Resilience Officer / Sabrina Bornstein, Deputy Chief Resilience Officer / Alexander Yee, Intern / Alondra Cuevas, Intern (former) / Brittany Jang, Intern (former) / Lolly Lim, Intern (former) / Jane Roschen, Intern (former) / Erika Wang, Intern (former)**

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### Office of Mayor Eric Garcetti

**Chief of Staff, Ana Guerrero / Deputy Chief of Staff, Matt Szabo / Deputy Mayor Jeff Gorell, Public Safety / Deputy Mayor Barbara Romero, City Services / Deputy Mayor Brenda Shockley, Economic Opportunity / Deputy Mayor Miguel Sangalang, Budget and Innovation / Deputy Mayor Nina Hachigian, International Affairs / Deputy Mayor William Chun, Economic Development / Deputy Mayor Eileen Decker, Public Safety (former) / Deputy Mayor Kelly Bernard, Economic Development (former) / Deputy Mayor Raymond Chan, Economic Development (former) / Michael Affeldt / Rebecca Andreassen / Christopher Anyakwo / Carol Armstrong / Ashley Atkinson / Joseph Avalos / Ted Bardacke / Neeraj Bhatnagar / Brian Buchner / Dan Caroselli / Jane Chung / Liz Crosson / Zita Davis / Lauren Faber O’Connor / Rita Fernandez / Saira Gandhi / Adam Gertz / Greg Good / Kimberley Guillemet / Ahee Han / Leslie Jimenez / Kelly Jones / Kevin Keller, (former) / Linda Lopez / Nicholas Maricich / Jill Noland, (former) / Uduak Ntuk / Jeanalee Obergfell / Alisa Orduna / Sumi Parekh / Matt Petersen, (former) / Mandy Pifer / Thalia Polychronis / Jennifer Pope McDowell / Shannon Ryan / Celeste Rodriguez / Michael Samulon / Joumana Siyan-Saba / Ashley Stracke / Anne Tremblay / Theadora Trindle / Refugio Valle / Reuben Wilson / Ben Winter**

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### Design

**Place & Page: Colleen Corcoran and Tiffanie Tran**



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### 100 Resilient Cities

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Phyllis Willis / Melanie Winter / Will Wright

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Trimble / U.S. Geological Survey / U.S. Green Building Council / University of California, Los Angeles /  
University of Southern California / Watson Foundation / Wood

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### Chief Resilience Officers and their teams from around the world